AECOM

Former Clifton Manufactured Gas Plant Site

Richmond County, New York

Site Management Plan

New York State Department of Environmental Conservation

Site Number: 2-43-023

Prepared for:

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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

JANUARY 2016

JANUARY 2016

CERTIFICATION STATEMENT

I, Michael Gardner, certify that I am currently a New York State registered professional engineer as in defined in 6 NYCRR Part 375] and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

089344	1/29/16	Michael Gardner
NYS Professional Engineer #	Date	Signature

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Acronyms

AWQSGV	Ambient Water Quality Standards and Guidance Values
bgs	below ground surface
BTEX	Benzene, toluene, ethylbenzene, xylene
C&D	Construction and Demolition
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulation
cm	cubic meter
COC	Contaminants of Concern
DER-10	NYSDEC Technical Guidance for Site Investigation and Remediation, July 2010
DNAPL	Dense non-aqueous phase liquid
DUSR	Data Usability Summary Report
HASP	Health and Safety Plan
IC/EC	Institutional Controls/Engineering Controls
IRM	Interim Remedial Measure
MGP	Manufactured Gas Plant
NAD	North American Datum
NYSDEC	New York State Department of Conservation
NYSDOH	New York State Department of Health
OM&M	Operation and Maintenance Manual
OMP	Operation and Maintenance Plan
OU	Operable Unit
OU-1	Operable Unit 1 (40 Willow Avenue property)
OU-2	Operable Unit 2 (25 Willow Avenue property)
P.E.	Professional Engineer

PAHs	Polycyclic aromatic hydrocarbons
ppm	parts per million
PVC	Poly Vinyl Chloride
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RA/RD	Remedial Action/Remedial Design
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
ROW	Right of Way
SCO	Soil Cleanup Objectives
Site	25 Willow Avenue and Portion of 40 Willow Avenue
SMP	Site Management Plan
SPDES	State Pollution Discharge Elimination Permit
SVOCs	Semi-volatile organic compounds
TAGM	Technical and Administrative Guidance Memorandum
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile organic compounds

1.0 Introduction and Description of Remedial Program

1.1 Introduction

This Site Management Plan is required as an element of the remedial program at the former Clifton Manufactured Gas Plant Site (hereinafter referred to as the "site") under the New York State Inactive Hazardous Waste Disposal Site Remedial Program administered by the New York State Department of Environmental Conservation (NYSDEC). A predecessor company to National Grid owned and operated the former Manufactured Gas Plant until 1957. A predecessor company to National Grid executed an Order on Consent with the NYSDEC (Index #D2-0001-98-04, Site #2-43-023) in 1998 to investigate and remediate the site (NYSDEC, 1998a). The site and surrounding off-site areas were remediated in accordance with the Order on Consent. The locations of the site and surrounding off-site areas are shown on Figure 1-1.

1.1.1 General

National Grid began remediation of the site in 1993, with significant construction efforts from 2004-2013, including remediation of a 3.5 acre property (25 Willow Avenue), a 0.5 acre property (portion of 40 Willow Avenue) and surrounding off-site areas located in Staten Island, Richmond County, New York. This Order on Consent required the Remedial Party, National Grid, to investigate and remediate contaminated media at the site and surrounding off-site areas. The site is separated into two properties of land, portion of 40 Willow Avenue and 25 Willow Avenue. Each property was designated as an Operable Unit (OU). An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The Record of Decisions (NYSDEC, 2004, 2006a) defines OU-1 as the 40 Willow Avenue property of the site. The remaining operable unit for the site is Operable Unit No. 2 which consists of the remainder of the Manufactured Gas Plant on the 25 Willow Avenue property. The 40 Willow Avenue property includes six lots and is owned by National Grid. Several properties adjacent to the OU-1 and OU-2 have been associated with OU-1 and OU-2 respectively over the course of the remedial program and are defined below.

For purposes of further discussion in this Site Management Plan, the term "site" will include:

- Portion of 40 Willow Avenue, Block 2842 Lot 50 (OU-1)
- 25 Willow Avenue, Block 2841 Lot 91 (OU-2)

The term off-site areas will include:

- 53 Lynhurst Avenue (adjacent property to the south of 40 Willow Avenue, OU-1)
- 89 Willow Avenue (adjacent property to the west of 25 Willow Avenue, OU-2)
- The City of New York sidewalks and roads (east and south of 25 Willow Avenue, OU-2)
- Block 2822 Lots 21, 22, 23, 24, and 26 (east of 25 Willow Avenue and Bay Street, OU-2)

An additional off-site area, 1 Edgewater Street, located to the east of the site and Bay Street is covered under a separate NYSDEC-approved Site Management Plan (GEI, 2014). The NYSDEC-approved 1 Edgewater Street Site Management Plan is included as Appendix A. Groundwater

monitoring wells located on 1 Edgewater Street and covered under the 1 Edgewater Street Site Management Plan are also included in the groundwater monitoring well network covered in this Site Management Plan

A figure showing the site location and boundaries of areas subject to this Site Management Plan is provided in Figure 1-2. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement (Appendix B).

After completion of the remedial work described in the various Remedial Action/Remedial Design Work Plans, some contamination remains in the subsurface at the site and the off-site areas (only in portions defined above), which is hereafter referred to as 'remaining contamination." This Site Management Plan was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This Site Management Plan was also prepared to manage remaining contamination within the off-site areas as recommended by the NYSDEC. All reports associated with the site and off-site areas can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This Site Management Plan was prepared by AECOM Technical Services, Inc., on behalf of National Grid, in accordance with the requirements in the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated June, 2010 (NYSDEC, 2010), and site-specific guidelines provided by the NYSDEC. This Site Management Plan addresses the means for implementing the Institutional Controls and Engineering Controls that are required by the Environmental Easement for the site and by the various Remedial Design/Remedial Action Work Plans for the off-site areas.

1.1.2 Purpose

There is remaining contamination at the site and off-site areas after completion of various remedial actions. Engineering Controls have been incorporated into the site remedy to control exposure to remaining contamination, thus ensuring protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Richmond County Clerk, requires compliance with this Site Management Plan and all Engineering Controls and Institutional Controls placed on the site. Due to the limited nature of remaining contamination within the off-site areas, compliance with this Site Management Plan and all Engineering Controls and Institutional Controls for the off-site areas is recommended by the NYSDEC and implemented via access agreements that may exist between National Grid and the off-site area property owner(s). The institutional controls place restrictions on-site and off-site areas use, and mandate operation, maintenance, monitoring and reporting measures for all Engineering Controls and Institutional Controls. This Site Management Plan specifies the methods necessary ensure compliance with all Engineering Controls and Institutional Controls required by the Environmental Easement (s), access agreements, or recommended by the NYSDEC for remaining contamination. This Site Management Plan has been approved by the NYSDEC, and compliance with this Site Management Plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. Compliance with this SMP is a part of all off-site area access agreements between property owner(s) and National Grid. This Site Management Plan may only be revised with the approval of the NYSDEC.

This Site Management Plan provides a detailed description of all procedures required to manage remaining contamination after completion of the various Remedial Actions, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4)

performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this Site Management Plan includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of Engineering Controls and Institutional Controls; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems).

This Site Management Plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to the NYSDEC.

It is important to note that:

- This Site Management Plan details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the Site Management Plan is a violation of the environmental easement, which is grounds for revocation of the Certificate of Completion; and
- Failure to comply with this Site Management Plan is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the Order on Consent Index # D2-0001-98-04, Site # 2-43-023 for the site, and thereby subject to applicable penalties.

The Site Management Plan also details specific implementation procedures for the off-site areas that are recommended by the NYSDEC. This Site Management Plan may be implemented on the off-site areas via access agreements executed between National Grid and owners of the properties comprising the off-site areas.

1.1.3 Revisions

Revisions to this Site Management Plan will be proposed in writing to the NYSDEC project manager. In accordance with the Environmental Easements for the site, the NYSDEC will provide a notice of any approved changes to the Site Management Plan, and append the notice(s) to the Site Management Plan that is retained in the NYSDEC files.

1.2 Site Background

1.2.1 Site Location and Description

The site is located in Staten Island, Richmond County, New York and occupies two properties at the intersection of Bay Street and Willow Avenue and is identified as Block 2841 and Lot 91 and portion of Block 2842 and Lot 50 on the City of New York Tax Map (Figure 1-3). The 25 Willow Avenue portion of the site is an approximately 3.5-acre area bounded by the Staten Island Rapid Transit Operating Authority right of way to the north, Willow Avenue to the south, Bay Street to the east, and commercial property (89 Willow Avenue) to the west (see Figure 1-2). The 40 Willow Avenue portion of the site is an approximately 0.5-acre area bounded by Willow Avenue to the north, private residences to the south, vacant lots that front on Bay Street to the east, and a commercial property to the west. The boundaries of the site are more fully described in Appendix B – Metes and Bounds.

1.2.2 Site History

1.2.2.1 Operational/Disposal History

The Former Clifton Manufactured Gas Plant was operated by the Richmond County Gas Light Co. from 1856 to 1901. The plant was then operated by the New York and Richmond Gas Company from 1901 until 1957. The Brooklyn Union Gas Co. (d/b/a National Grid New York) acquired the latter company in 1957, at which point Manufactured Gas Plant operations ceased. The above ground structures of the Manufactured Gas Plant were demolished in the spring of 1959.

The 25 Willow Avenue property (OU-2) was the location of the main operational facility of the former Manufactured Gas Plant. The manufacture gas plant consisted of a brick retort and water gas house where gas was produced, a purifying house, and other structures, including a 75-foot-diameter relief holder. Tar and fuel oil storage tanks were also located on the property. The 40 Willow Avenue property (OU-1) was the location of an additional relief holder, which used to store manufactured gas.

Over the years, by-products, such as coal tar, generated from the manufacture gas plant operations have leaked or been released from the former relief holders and other structures resulting in the contamination of soil and groundwater.

1.2.2.2 Remedial History

The NYSDEC and National Grid entered into an Order on Consent in April 1998 for the investigation and remediation of the site. Details of the Remedial Investigations and Remedial Actions follow.

1.2.3 Geologic Conditions

1.2.3.1 Operable Unit No. 1 (Portion of 40 Willow Avenue)

The Remedial Investigation conducted at this property revealed four distinctive stratigraphic units. These units are, in order of increasing depth:

- Man-made fill, which consists of silt, sand and gravel mixed with slag;
- Alluvial deposits, ranging in thickness from two feet to approximately ten feet;
- Glacial deposits; and
- Weathered bedrock layer or the embedment stratum.

The embedment stratum is believed to be the lower confining layer of the deep aquifer beneath the site. The top of the embedment stratum ranges from 110 to approximately 120 feet below grade surface. Geologic sections are shown in Figures 1-4A, 1-4B, and 1-4C.

Two aquifers are present beneath Operable Unit No. 1: a shallow unconfined aquifer and a deep semi-confined aquifer. The groundwater table for the shallow unconfined aquifer range from about three feet below ground surface to approximately seven feet below ground surface. The deep aquifer, located within the glacial deposits above the embedment stratum, is under confining pressure and has exhibited a potentiometric surface of +6 feet to +10 feet above the ground surface. Maps showing both shallow and deep aquifer groundwater flow are included in Figure 1-5.

1.2.3.2 Operable Unit No. 2 (25 Willow Avenue)

The Remedial Investigation identified four distinct stratigraphic units underneath Operable Unit No. 2. These units are, in order of increasing depth:

- Imported fill material made up of silt, sand and gravel mixed with slag, coal, brick, concrete, metal, ash, and clinkers. This unit ranges in thickness from a few inches to approximately nine feet;
- Alluvial/marsh deposits, up to 20 feet thick;
- Glacial deposits; and
- A weathered bedrock layer known as saprolite. The top of the saprolite was encountered at depths of 114 to 123 feet.

Geologic sections are shown in Figures 1-6A and 1-6B.

Two aquifers are present beneath Operable Unit No. 2: a shallow, unconfined water table aquifer and a deep semi-confined aquifer. The water table elevations for the shallow unconfined aquifer range from about four feet to approximately nine feet below ground surface. The deep aquifer is located within the glacial deposits above the saprolite. The water in the deeper aquifer is under confining (artesian) pressure. Groundwater in this aquifer generally flows to the northeast and discharges to New York Harbor, located approximately 600 feet from Operable Unit No. 2. Maps showing both shallow and deep aquifer groundwater flow are included in Figure 1-5.

1.3 Summary of Remedial Investigation Findings

Remedial Investigations were performed to characterize the nature and extent of contamination at the site. The results of the Remedial Investigation are described in detail in the following reports:

- Final Remedial Investigation Report, Clifton Former MGP Site, Operable Unit No. 1, July 2004 (GEI, 2004)
- Final Remedial Investigation Report, Clifton Former MGP Site, Operable Unit No. 2, February 2005 (GEI, 2005)
- Supplemental Remedial Investigation Report, Clifton Operable Unit No. 2 Offsite Area (89 Willow Avenue), May 2008 (Paulus, Sokolowski and Sartor Engineering, PC, 2008)

To determine whether the soil, groundwater, surface water, soil vapor, air, and/or sediment contain contamination at levels of concern, data from the Remedial Investigations were compared to the following standards, criteria and guidance:

- Groundwater, drinking water, and surface water standards, criteria, and guidance are based on the NYSDEC “Ambient Water Quality Standards and Guidance Values” and Part 5 of the New York State Sanitary Code (NYSDEC, 1998b).
- Soil standards, criteria, and guidance are based on the NYSDEC “Technical and Administrative Guidance Memorandum 4046; Determination of Soil Cleanup Objectives and Cleanup Levels" (NYSDEC, 2006b.)
- Sediment standards, criteria, and guidance are based on the NYSDEC “Technical Guidance for Screening Contaminated Sediments.”

- Indoor air standards, criteria, and guidance are based on the New York State Department of Health Database "Summary of indoor and outdoor air sample results in control homes collected and analyzed by New York State Department of Health from 1989 through 1996."

Many soil, groundwater, ambient and indoor air, and sediment samples were collected during the Remedial Investigations to characterize the nature and extent of contamination. The main categories of contaminants that exceed their standards, criteria, and guidance are volatile organic compounds and semi-volatile organic compounds. The principal human health and environmental risk posed by this site is related to the widespread distribution of coal tar throughout the site and off-site areas. Coal tar was produced as part of the gas manufacturing process.

Coal tar belongs to a group of organic contaminants known as dense non-aqueous phase liquids (DNAPL). DNAPL do not readily dissolve in water and tend to sink to the bottom of water bodies and aquifers. When released into the subsurface, these liquids can spread out in complex directions that may or may not be the same direction as groundwater flow. Coal tar is an unusual DNAPL because its density is only slightly greater than water. Although coal tar does tend to sink, the relatively slight difference in density between tar and water makes this sinking effect somewhat unpredictable.

Two classes of chemical compounds contained in the coal tar are of concern:

1. Benzene, toluene, ethylbenzene, and xylenes are volatile organic compounds, which are also commonly found in unleaded gasoline, paint thinners, and other solvents. They are somewhat soluble in water. Consequently, groundwater which comes into contact with coal tar often becomes contaminated with these compounds. This contaminated groundwater then moves away from the contamination source along the general groundwater flow direction through the subsurface.

2. Polycyclic aromatic hydrocarbons are a large group of semi-volatile organic compounds with several hundred different individuals known to exist. They are far less soluble than the benzene, toluene, ethylbenzene, and xylene and other volatile organic compounds, and, consequently, polycyclic aromatic hydrocarbons are far less likely to cause groundwater contamination. Polycyclic aromatic hydrocarbons are also less likely to be digested by soil bacteria, and thus are persistent in the environment.

An inorganic contaminant of concern is cyanide. Cyanide, bound to iron to form ferric-ferrocyanide, is a component of some coal tars. While cyanide is not a concern in its iron-bound form, certain conditions can release free cyanide, causing an exposure risk both for humans and the environment.

Table 1-1 and Table 1-2 summarize the analytical data for the contaminants of concern in surface soil, subsurface soil, and groundwater; and compare the data with the standards, criteria, and guidance for the site and off-site areas. The locations of all the samples are noted on Figure 1-7. The extent of observed coal tar contamination during the Remedial Investigations is shown in Figure 1-8.

Remedial Investigation results are summarized by area in the following sections.

1.3.1 40 Willow Avenue (OU-1)

The Remedial Investigation determined that, under future use conditions, absent any remedial action(s), potential exposure pathways were present. These potential exposure pathways, under future use conditions, included:

- Dermal contact with contaminated surface soil, subsurface soil or groundwater, and
- Incidental ingestion of contaminated soils or groundwater.

However, these potential pathways were addressed through remedial action (s) and/or the Site Management Plan. Below is a summary of property conditions when the Remedial Investigation was performed from 1999 to 2002:

Coal Tar

The waste material associated with the site is coal tar. The majority of the coal tar originated from the former relief holder and has migrated downward through the underlying permeable fill and soils. Once released, the coal tar is hypothesized to have continued to migrate downward through the subsurface by micro-fractures and grain-to-grain movement within coarser grained materials and preferentially collected within localized sand and sandy-gravel layers within the glacially derived soil unit (ground moraine). Increased frequency and size of the more permeable sand/gravelly glacial outwash sands facilitated the continued migration of tar downward in the vicinity of the former holder to a depth of approximately 80 feet below ground surface at the 40 Willow Avenue property. The vertical extent of tar ceased at about 100 feet below ground surface prior to encountering saprolite (weathered bedrock) at about 125 feet deep.

Surface Soil

Surface soil samples were collected from the upper zero to six inches across the property. All samples were analyzed for semi-volatile organic compounds, metals, and cyanide. Polycyclic aromatic hydrocarbons were identified in surface soil present on the southern, unpaved portion of the 40 Willow Avenue property. Total polycyclic aromatic hydrocarbons concentrations ranged from 22.4 to 84.7 parts per million. Cyanide was identified in samples with the maximum concentration of 33.6 parts per million found in the location of the former gas holder.

Subsurface Soil

Polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene contamination of subsurface soils was detected in several areas, with the highest contaminant concentrations found in areas where visible coal tar contamination was present. Thus, the highest levels of soil contamination were found in the subsurface soils (generally four to twenty feet below the ground surface) within the former relief holder. Outside of the zones of coal tar contamination, polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene concentrations decrease rapidly. Total benzene, toluene, ethylbenzene, and xylene concentrations ranged from not detectable to 10,670 parts per million, and polycyclic aromatic hydrocarbons concentrations ranged from not detectable to 85,170 parts per million. Cyanide was detected in only a few subsurface samples, at low levels. The highest value, 2.33 parts per million, was found in an area of shallow visible coal tar contamination, which also contained high levels of polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene.

Groundwater

Groundwater beneath the property is contaminated with Manufactured Gas Plant related materials. No measurable DNAPL were observed in any shallow groundwater monitoring wells or piezometers locations. Total benzene, toluene, ethylbenzene, and xylene concentrations in shallow groundwater ranged in concentration from not detected to 20.4 parts per million. Total polycyclic aromatic hydrocarbons concentrations is shallow groundwater ranged in concentration from not detected to 7.9 parts per million. Elevated polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene concentrations are likely attributable to dissolved fractions immediately adjacent to the former Relief Holder.

Measurable amounts of DNAPL (at 70 feet below ground surface) were observed just outside (in the southern side) of the former Relief Holder. Total benzene, toluene, ethylbenzene, and xylene concentrations in deep groundwater aquifer ranged in concentration from not detected to 32.2 parts per million. Total polycyclic aromatic hydrocarbons concentrations in deep aquifer groundwater ranged in concentration from not detected to 8.99 parts per million. Elevated polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene concentrations are consistent with the coal tar-saturated gravelly-sand aquifer.

Soil Vapor Intrusion

The Remedial Investigation concluded that further monitoring of soil vapor and air samples may be required to monitor for potential indoor air exposures for a potential future use change scenario.

1.3.2 53 Lynhurst Avenue (Off-site property adjacent to OU-1)

The Remedial Investigation determined that there were no known complete exposure pathways at the property and that contaminants present at this property did not pose a current nor future risk to human health and the environment.

Below is a summary of property conditions when the Remedial Investigation was performed from 1999 to 2002:

Coal Tar

Coal tar-related observations were noted at discrete soil intervals south of the former relief holder area underneath the property at depths greater than 24 feet below ground surface. These deeper coal tar-related impacts are not contaminating shallow groundwater at this property. Samples of the shallow groundwater in this area do not exhibit contamination from the deeper coal tar impacts.

Surface Soil

Surface soil samples were collected from the upper zero to two inches or zero to six inches across the property. All samples were analyzed for benzene, toluene, ethylbenzene, xylene, semi-volatile organic compounds, metals, and cyanide. Benzene, toluene, ethylbenzene, and xylene were not detected. Polycyclic aromatic hydrocarbons were found in the majority of the surface soil samples across the property. The maximum detections of polycyclic aromatic hydrocarbons were, in the majority of samples, above the individual standards, criteria, and guidance. The highest total polycyclic aromatic hydrocarbon concentration in surface soil was 11.5 parts per million. Cyanide was identified in samples with the maximum concentration of 1.4 parts per million. Some Resource

Conservation Recovery Act metals including high level of lead were detected. These surface soils were remediated through excavation and off-site disposal during an interim remedial measure conducted in September 2004.

Subsurface Soil

For subsurface soils from the ground surface to four feet below ground surface, benzene, toluene, ethylbenzene, and xylene concentrations ranged from not detected to 0.004 parts per million. Total polycyclic aromatic hydrocarbon concentrations ranged from not detected to 14.4 parts per million. The majority of these soils were removed during the excavation and off-site disposal interim remedial measure conducted in September 2004. For soils deeper than 24 feet below ground surface benzene, toluene, ethylbenzene, and xylene concentrations ranged from not detected to 140 parts per million. Total polycyclic aromatic hydrocarbon concentrations ranged from non-detect to 380 parts per million. The elevated levels of benzene, toluene, ethylbenzene, xylene, and polycyclic aromatic hydrocarbons coincide with observations of coal tar-saturated and stained soils at 48 to 52 feet below ground surface.

Groundwater

Analytical samples obtained from areas adjacent and within the property show that shallow groundwater to about 25 feet below ground surface is free of site-related contamination (benzene, toluene, ethylbenzene, xylene, and polycyclic aromatic hydrocarbons.) Subsequent groundwater monitoring conducted via temporary piezometers in the backyard of the property during the 2007 – 2008 remedial action confirmed that groundwater was free of site-related contamination though one piezometer installed in close proximity to the 40 Willow Avenue property had levels of benzene detected that exceeded the NYSDEC Ambient Water Quality Standards and Guidance Values.

Soil Vapor Intrusion

Analysis of potential inhalation of vapors in ambient and indoor air and inhalation of windborn particles present in soils and waters were determined not to be an exposure pathway of concern.

1.3.3 25 Willow Avenue (OU-2)

The Remedial Investigation determined that, under future use conditions, absent any remedial action (s), potential exposure pathways were present. These potential exposure pathways, under future use conditions, included:

- Dermal contact with contaminated surface soil, subsurface soil or groundwater,
- Incidental ingestion of contaminated soils or groundwater, and
- Inhalation of contaminated soil vapors.

However, these potential exposure pathways have been addressed through remedial action (s) and/or the Site Management Plan. Below is a summary of property conditions when the Remedial Investigation was performed from 1999 to 2002:

Coal Tar

Coal tar was observed within the subsurface foundations of the former Manufactured Gas Plant structures and in the subsurface materials surrounding the former manufactured gas plant structures that handled tar. Coal tar generally migrated downward through permeable fill and other permeable soils. Coal tar was observed to a maximum depth of 44 feet where the dense-silty ground moraine limited its migration. Evidence of residual coal tar (staining) was present to a depth of 55 feet. The majority of observations of coal tar were limited to the proximity of the historic Manufactured Gas Plant structures. Figure 1-8 shows the extent of visible coal tar impacts observed in soils during the Remedial Investigation activities.

Observations made during the Remedial Investigation noted that the 25 Willow Avenue property is located within a topographic bowl that was historically a stream bed prior to development of the property. Inferred alluvial sand and gravel, associated with the former stream, is located beneath many of the former tar handling structures in the central portion of the property. Impacts to these subsurface layers may have occurred from the seepage of coal tar from the former tar-handling structures. Once released from these structures, the tar is hypothesized to have migrated downward through the subsurface via micro-fractures and movement through coarser-grained and loose materials collecting within localized sand and sand-gravel layers. The dense silt layer (ground moraine) unit located under the 25 Willow Avenue property appeared to be acting as a relatively impervious limiting layer for coal tar. No physical observations of tar odors were noted below the dense silt layer in the vicinity of former tar-handling structures or at the top of the weathered bedrock interface located at approximately 115 feet below ground surface. A relatively dense clay-silt unit (inferred as the Harbor Hill Terminal Moraine) is bounding the coal tar and is acting as a lateral barrier to coal tar on the northern and eastern sides of the 25 Willow Avenue property.

Surface Soil

Surface soil samples were collected from the upper zero to two inches. Surface soils show total polycyclic aromatic hydrocarbon concentrations ranging from 11 parts per million to 92 parts per million. Benzene, toluene, ethylbenzene, and xylene concentrations range from not detected to 0.8 parts per million. Cyanide was not detected in any of the surface soil samples. Surface soils to a depth of three feet below ground surface were removed in the 2002 during an Interim Remedial Measure.

Subsurface Soil

Polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene contamination of subsurface soils was detected in several areas, with the highest contaminant concentrations found in areas where visible coal tar contamination was present. Thus, the highest levels of soil contamination are found in the subsurface soils (generally two to twenty feet below the ground surface) within and adjacent to former structures. Outside of the zones of coal tar contamination, polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene concentrations decrease rapidly. Total benzene, toluene, ethylbenzene, and xylene concentrations ranged from not detectable to 6,100 parts per million, and total polycyclic aromatic hydrocarbon concentrations ranged from not detectable to 96,090 parts per million. Elevated levels of cyanide were detected in multiple subsurface samples with the highest concentrations detected in the vicinity of the former manufactured gas purifying area.

Groundwater

Groundwater contamination was detected primarily in areas near grossly impacted soils and former tar handling structures. Polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene concentrations in groundwater decrease rapidly with distance away from the former coal tar handling structures.

Shallow groundwater at the southwestern corner of the 25 Willow Avenue property contained traces of benzene, toluene, ethylbenzene, and xylene and low levels of polycyclic aromatic hydrocarbons (4.6 parts per billion). Benzene, toluene, ethylbenzene, and xylene with a concentration of 111 parts per billion and total polycyclic aromatic hydrocarbons at 219 parts per billion were noted along the route of the former stream/storm sewer. Total cyanide was detected in the shallow groundwater. In general, detections of total cyanide in the shallow groundwater were noted downgradient from the former gas purifying area. Detections of cyanide were noted within subsurface soils collected from the areas surrounding the former purifying tanks. No measurable amount of coal tar was observed in any of the shallow monitoring wells at the property.

Measurable coal tar was observed within the 25 to 35 feet below ground surface zone. Deep groundwater did not appear to be significantly contaminated as polycyclic aromatic hydrocarbons and total cyanide were not detected in either of the deep groundwater samples collected during the Remedial Investigation.

Soil Vapor Intrusion

Twelve soil vapor samples were collected beneath the concrete floor slab of the former one-story commercial building. The samples primarily contained concentrations of chlorinated volatile organic compounds, including 1,1,1-trichloroethane (ranging from non-detect to 25,000 micrograms per cubic meter). Other compounds detected were 1,1-dichloroethane, 1,1-dichloroethene and tetrachloroethene at maximum concentrations of 5,400 micrograms per cubic meter, 2,800 micrograms per cubic meter and 960 micrograms per cubic meter respectively. These compounds are typically not associated with the operation of the Manufactured Gas Plant and are likely associated with post-Manufactured Gas Plant operations by others.

1.3.4 Operable Unit No. 2 Off-Site Areas

Operable Unit No. 2 off-site areas include:

- 89 Willow Avenue Property
- The City of New York Right of Ways including Bay Street, Willow Avenue, and associated sidewalks east and south of 25 Willow Avenue
- Block 2822 Lots 21, 22, 23, 24, and 26

A property, 1 Edgewater Street, east of the site is also included within the OU-2 off-site area. The 1 Edgewater Street property is covered under a separate NYSDEC-approved Site Management Plan which is included in Appendix A. The Remedial Investigation determined that, under future use conditions, absent any remedial actions, potential exposure pathways were present. These potential exposure pathways, under future use conditions, included:

- Dermal contact with contaminated subsurface soil or groundwater,

- Incidental ingestion of contaminated soils or groundwater, and
- Inhalation of contaminated soil vapors.

However, these potential exposure pathways have been addressed through remedial action (s) and/or the Site Management Plan. Below is a summary of conditions at the off-site areas when the Remedial Investigation was performed from 1999 to 2009:

Coal Tar

Residual coal-tar contamination was observed at depths greater than eight feet below ground surface in the off-site areas with the exception of underneath Willow Avenue, where coal-tar impacts were observed below the pavement and sidewalk. Evidence of residual coal tar (staining) was present to a depth of 55 feet. Figure 1-8 shows the extent of visible coal tar impacts observed in soils during the Remedial Investigation activities.

Surface Soil

Surface soil samples were collected from the upper zero to two inches. Surface soils show total polycyclic aromatic hydrocarbon concentrations ranging from 29 parts per million to 92 parts per million. Benzene, toluene, ethylbenzene, and xylene concentrations range from not detected to 0.6 parts per billion. Cyanide was not detected in any of the surface soil samples.

Subsurface Soil

Polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene contamination of subsurface soils was detected in several areas, with the highest contaminant concentrations found in areas where visible coal tar contamination was present. Thus, the highest levels of soil contamination are found in the subsurface soils (generally two to twenty feet below the ground surface). Outside of the zones of coal tar contamination, polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene, and xylene concentrations decrease rapidly. Total benzene, toluene, ethylbenzene, and xylene concentrations ranged from not detectable to 1,638 parts per million, and total polycyclic aromatic hydrocarbons concentrations ranged from not detectable to 14,950 parts per million. Elevated levels of cyanide was detected in multiple subsurface samples with the highest concentrations detected in samples collected in the vicinity of the on-site former Manufactured Gas Plant purifying area and on the 89 Willow Avenue property.

Groundwater

Groundwater contamination was detected primarily in areas near grossly impacted soils and adjacent to former tar handling structures. Benzene, toluene, ethylbenzene, and xylene, polycyclic aromatic hydrocarbons, and total cyanide are present in the shallow groundwater at concentrations greater than their respective Ambient Water Quality Standards and Guidances. No measurable amount of coal tar was observed in any monitoring wells installed on the Operable Unit No. 2 off-site areas.

Soil Vapor Intrusion

No soil vapor contamination is believed to present on the 89 Willow Avenue property. For the remainder off-site areas, the Remedial Investigation concluded that further monitoring of soil vapor and air samples may be required to monitor for potential indoor air exposures for a potential future use change scenario

1.4 Summary of Remedial Actions

Several remedial actions and interim remedial measures have been complete at the site and at off-site areas, beginning as early as 1993 and with major remedial construction activities from 2004 to 2013.

1.4.1 40 Willow Avenue and Adjacent Off-Site Areas

The 40 Willow Avenue portion of the site and adjacent off-site areas were remediated in accordance with the NYSDEC-approved Interim Remedial Measure Work Plans (Fanning, Phillips, & Molnar Engineers and Geohydrologists, 1994 and Foster Wheeler Environmental Corporation, 2002) and the NYSDEC-approved Remedial Design Report dated February 28, 2007 (Paulus, Sokolowski and Sartor Engineering, 2007).

The following is a summary of the Interim Remedial Measures and Remedial Actions performed at the 40 Willow Avenue property:

- In 1993, water and hydrocarbon free-product mixture was removed from a 90-foot 8-inch well via a vacuum tanker, approximately 20 cubic yards of soil were removed downgradient of the well, and concrete grout slurry was used to abandon the 90-foot well. Subsequently in a second mobilization, the concrete grout slurry in the 90-foot 8-inch steel well was drilled out by air rotary drilling and coal tar and groundwater within the steel well was removed by pumping. The 90-foot 8-inch well was drilled out to a total depth of 79 feet. The well was subsequently sealed by pressure grouting with cement slurry in accordance with the NYSDEC well abandonment guidelines and with NYSDEC approval.
- In 1994, excavation and removal of contaminated soil for off-site disposal was competed around the 90-foot deep well followed by backfilling with clean soils.
- In 2002, lead impacted soils were removed from the southern portion of the property and adjacent off-site areas to a depth of 3-feet below ground surface.
- In 2004, a Field Pilot Study was implemented to evaluate the performance of overlapping jet grout columns.
- From January 2006 through August 2007, the Waterloo Barrier™ interlocking steel sheet piling (the upper section of the composite vertical containment barrier) was installed to a depth ranging from 25 feet to 65 feet below grade surface.
- In May 2006, during the temporary work stoppage period, another Field Pilot Study (the 2006 Trial Field Study) using new installation methods and parameters was implemented to create overlapping jet grout columns. This 2006 Trial Field Study was successful at accomplishing the Record of Decision requirements and became the standard for the future jet grouting activities proposed for the lower section of the vertical containment barrier.
- In August 2008, in preparation for the full scale jet grout barrier installation, a 20-inch thick reinforced concrete working platform was installed over the containment area. The concrete platform also serves as the final low-permeability cap to prevent human exposure to remaining contaminated soil and groundwater and prevents the infiltration of precipitation.
- From September 2008 through September 2009, 126 subsurface overlapping soil-cement columns (the lower section of the composite vertical containment barrier) were constructed below the concrete pad for containment of the former relief holder foundation and subsurface impacted materials. The soil-cement columns overlap the bottom of the steel sheet piling to

form a continuous subsurface containment barrier keyed into a confining layer at a depth of approximately 125 feet below grade surface.

- In December 2009, three passive DNAPL recovery wells were installed within the shallow (screened 9 to 19 feet below ground surface), intermediate (screened 34 to 44 feet below ground surface), and deep (69 to 79 feet below ground surface) zones.
- This Site Management Plan was developed to: (a) address remaining contaminated soils; (b) evaluate the potential for vapor intrusion in any buildings on or adjacent to the 40 Willow Avenue property, including provision for mitigation of any impacts identified; and (c) identify any use restrictions.
- Imposition of an Institutional Controls in the form of an Environmental Easement that will (a) require compliance with the approved Site Management Plan; (b) limit the use and development of the Site to Restricted Commercial; (c) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by the New York State Department of Health; and (d) require National Grid to complete and submit to the NYSDEC a periodic certification.

1.4.1.1 Removal of Contaminated Materials

Implementation of Interim Remedial Measures and Remedial Actions resulted in the removal of several different types of waste:

- Excavated soils during the Interim Remedial Measures;
- Excavated soils and debris from construction of working platform and other site activities;
- Cuttings from the jet grouting operations (i.e., subsurface soils mixed with water, grout and residual air);
- Clean grout from batch mixing operations;
- Liquid wastes and drilling mud;
- Impacted groundwater and storm water;
- Liquids generated from decontamination operations; and
- Standard refuse (municipal) trash.

A total of 63 cubic yards of contaminated material was removed and transported off-site for disposal in 1993 and 1994.

A total of 4,300.83 tons of non-hazardous soils impacted with lead were removed from 40 Willow Avenue and adjacent off-site areas during the Interim Remedial Measure implemented in 2002 and 2003. A total of 4,166.74 tons, 97.97 tons, and 36.15 tons of lead-impacted soils were transported to and disposed of at Clean Earth Inc. of New Jersey located in Kearny, New Jersey, Clean Earth of Philadelphia, Inc. located in Philadelphia, Pennsylvania, and Clean Earth of Carteret, Inc. located in Carteret, New Jersey respectively.

A total of 62,246 tons of impacted material including hardened grout-soil mix and soil were transported off-site for thermal treatment at Bayshore Soil Management facility in Keasbey, New Jersey and Casie Protank facility in Vineland, New Jersey between 2008 and 2009. A total of 6,568,510 gallons of impacted water was transported off-site for disposal at Clean Waters of New York. A total of 2,343

tons of non-impacted solids including construction debris, non-impacted grout, non-impacted soils, and solids were transported off-site and disposed.

1.4.2 25 and 89 Willow Avenue

The 25 and 89 Willow Avenue properties were remediated in accordance with the NYSDEC-approved Interim Remedial Measure Work Plan for 89 Willow Avenue dated March 4, 2008 (Paulus, Sokolowski and Sartor Engineering, 2008b), Remedial Design Work Plan for 25 Willow Avenue dated December 2008 (AECOM, 2008) and Supplemental Remedial Action Work Plan for 89 Willow Avenue dated April 13, 2009 (AECOM, 2009).

The following is a summary of the Remedial Actions performed at the 25 and 89 Willow Avenue properties:

- Excavation of the diesel fuel and gasoline underground storage tank area in the northeastern portion of 25 Willow Avenue; removal of one 550-gallon diesel fuel underground storage tank, one 4,000-gallon gasoline underground storage tank, four previously closed-in-place 550-gallon underground storage tanks, the fuel dispenser island, and associated piping; and removal of a closed-in-place 550-gallon (waste) oil underground storage tank adjacent to the northwestern corner of the former Automobile Service Station building. This Interim Remedial Measure was completed in September 1993.
- Excavation and removal of contaminated material from within the top six feet of select hot spot locations on 89 Willow Avenue for off-site disposal, followed by backfilling the excavation with certified clean fill and un-impacted overburden soil materials. The remedial activity was completed in July 2008.
- Demolition of the single-story commercial building, installation of two barrier walls (slurry walls) to prevent further migration of on-site impacts, dewatering and construction water treatment, removal of subsurface former Manufactured Gas Plant structures, excavation and off-site disposal of soils saturated with DNAPLs at thermal treatment facilities pre-approved by National Grid, DNAPL recovery well installation, and Site restoration. Remedial activities started in February 2012 and were substantially completed in May 2013. The remedial activities included the entire 25 Willow Avenue property and portions of 89 Willow Avenue property.
- Creation of 15 feet buffer zone around the storm drain located on 25 Willow Avenue during the remedial activities. The buffer zone was created to protect the storm drain during remedial activities and consist of potentially impacted site soils below two feet below ground surface. The slope of the buffer zone was lined to prevent contamination of clean fill placed in the excavation areas. The top 2 feet of the storm drain buffer were excavated and backfilled with clean fill in accordance with the ROD.
- Placement of 2 feet of clean soil over the 25 Willow Avenue property and portion of 89 Willow Avenue property.
- Implementation of a DNAPL recovery program to remove potentially mobile DNAPL from the subsurface.
- This Site Management Plan was developed to identify the Institutional Controls and Engineering Controls required for the property and detail their implementation. The Site Management Plan includes:

a) An Engineering Controls and Institutional Control plan to establish the controls and procedures necessary to;

   i. manage remaining contaminated soils that may be excavated from the properties during future activities, including procedures for soil characterization, handling, health and safety of workers and the community as well as, disposal/reuse in accordance with applicable NYSDEC regulations and procedures;

   ii. evaluate the potential for vapor intrusion for any buildings developed on the 25 Willow Avenue property, including mitigation of any impacts identified;

   iii. maintain use restrictions regarding property development or groundwater use identified in the environmental easement; and

   iv. require National Grid to provide an Engineering Controls and Institutional Controls certification on a periodic basis.

b) A monitoring plan to monitor the vertical barrier walls and DNAPL recovery wells. The effectiveness of the cut-off walls will be determined from sampling results obtained from a periodic groundwater monitoring program; and

c) An Operation and Maintenance Plan to describe the detailed procedures necessary to operate and maintain the remedy, including the groundwater pump and treat located on the 40 Willow Avenue property. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

- Imposition of an Institutional Controls in the form of an Environmental Easement for 25 Willow Avenue that will

  a) require compliance with the approved Site Management Plan;

  b) limit the use and development of the property to Restricted Commercial;

  c) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by the New York State Department of Health; and

  d) require National Grid and, where appropriate, the various property owners within the site and off-site areas, to complete and submit to the NYSDEC a periodic certification.

1.4.2.1 Removal of Contaminated Materials

The remedial goals for the Remedial Actions completed on the 25 and 89 Willow Avenue properties included attainment of 6 New York Codes Rules and Regulations Part 375 Restricted Commercial Use Soil Cleanup Objectives for shallow soils (top six to twenty feet). The Restricted Soil Cleanup Objectives were approved by the NYSDEC and are listed in Table 1-3.

Implementation of the Remedial Actions resulted in the removal of several different types of waste: construction and demolition debris, spoils from both slurry wall and cured slurry wall grading, hazardous soils impacted with lead, non-hazardous residual Manufactured Gas Plant-impacted soils, construction debris (hay bales, etc.), hazardous wastewater generated during treatment system

cleanup, DNAPL (in drums), and treated water generated during construction, including groundwater, stormwater, and decontamination water.

- Construction and demolition debris was generated during the demolition of surface and subsurface structures during the remedial actions, including the demolition of the single-story commercial building, various pavements, chain link fences, former Manufactured Gas Plant foundations, piping, and monitoring wells. Subsurface concrete foundations of former Manufactured Gas Plant structures, cable, pipe, brick, wood piles, and other miscellaneous metal debris were encountered within the excavation limits. All construction and demolition debris that were not used on-site as backfill material, were broken up with an excavator bucket or a hoe ram device if needed, segregated from the soil, stockpiled, and shipped off-site for disposal. Approximately 100 cubic yards of construction and demolition debris was removed and disposed off-site during the Interim Remedial Measure completed in September 1993. A total of 185 tons of non-hazardous construction debris was disposed of at the Waste Management Tullytown, 346 tons at the Action Environmental Services, and 279 tons at the Balemet Recycling Metals facility through duration of the remedial activities in 2012 and 2013.

- Approximately 125 cubic yards of soil and 185 gallons of oil and water mixture were removed and transported off-site in September 1993.

- A total of 1,238.4 tons of non-hazardous, residual Manufactured Gas Plant-impacted soils were excavated from 89 Willow Avenue property and transported off-site for thermal treatment at Mid Atlantic Recycling Technologies in Vineland, New Jersey from July 7 to July 21, 2008.

- A total of 13,968 tons of soils were generated during the construction of the slurry wall and were shipped for thermal treatment at Bayshore Soil Management facility in Keasbey, New Jersey, from May 21, 2012 through July 6, 2012.

- A total of 5,522 tons of non-hazardous, residual Manufactured Gas Plant-impacted soils were excavated and transported off-site for thermal treatment at Clean Earth of Philadelphia in Philadelphia, Pennsylvania between July 30, 2012 and August 7, 2012.

- A total of 90,872 tons of non-hazardous, residual Manufactured Gas Plant-impacted soils were excavated and transported off-site for thermal treatment at Bayshore Soil Management facility in Keasbey, New Jersey, from May 7, 2012 through May 7, 2013.

- A total of 289 tons of residual Manufactured Gas Plant -related soils designated hazardous for lead were excavated and transported off-site for disposal at Clean Earth of New Jersey on June 14, 2012.

Table 1-4 shows the total quantities of each category of material removed from 25 and 89 Willow Avenue properties and the disposal locations.

Significant volumes of construction water were generated during the dewatering activities conducted to support excavation. Water containing Manufactured Gas Plant constituents was also generated during decontamination of debris, trucks, and equipment. Storm-water run-off from impacted areas was also collected. A total of 1,941,847 gallons of water were treated and discharged into the Upper New York Bay under a NYSDEC-issued State Pollution Discharge Elimination System Permit Equivalency. An additional 41,980 gallons of water with hazardous levels of benzene was transported

off-site for disposal to Clean Waters of New Jersey. Table 1-4 details the quantities of water treated and discharged during each discharge event.

A total of 89,419 tons of backfill material and 5,470 tons of gravel backfill material were placed in the excavated areas. All fill material met the Restricted Residential Soil Cleanup Objectives.

Estimated cut and fill thicknesses for remedial activities at the site and off-site areas are included in Figures 1-9 and 1-10 for Operable Unit No. 1 and Operable Unit No. 2 respectively.

1.4.3 Site-Related Treatment Systems

The following treatment systems were installed on the site and off-site areas –

- A DNAPL recovery was installed within the containment cell located on the 40 Willow Avenue property in 2008;
- A passive DNAPL recovery system was installed on the 25 Willow Avenue property and on Bay Street sidewalk in 2013; and
- A groundwater pump and treat system was installed within the containment cell located on the 40 Willow Avenue property.

Details of the treatment systems are described in detail in Section 3 and Section 4.

1.5 Remaining Contamination

The Remedial Actions resulted in the removal of 80% of the shallow contaminated soil (two to 10 feet below ground surface) from the 25 and 89 Willow Avenue properties and containment of 70% of contaminated soils on the 40 Willow Avenue property. Though some deep contaminated soil remains in on-site and off-site areas, it is not expected to have any effect on human health because there is no complete exposure pathway. This section provides a summary of the remaining contamination following the completion of the Remedial Actions.

An orange demarcation fabric was placed at the bottom of all excavations on 25 and 89 Willow Avenue properties to demarcate the clean and contaminated soils. Figure 1-10 shows the location and depth of the excavation at which demarcation fabric was placed. In addition Figure 1-10 also shows the thickness of excavation which corresponds with the thickness of clean fill present on 25 Willow Avenue property and off-site areas.

Table 1-5 summarizes the results of all samples of soil remaining at the site and off-site areas after completion of the Remedial Actions that exceed the Unrestricted Soil Cleanup Objectives.

Table 1-6 and Figures 1-11A and 1-11B summarize results of all samples of soil remaining at the site and off-site areas after completion of Remedial Action that exceed the Restricted Commercial Soil Cleanup Objectives.

1.5.1 40 Willow Avenue (OU-1)

<u>Former Relief Holder Foundation</u>

The former relief holder foundation is located below the ground surface and is known to contain coal tar and contaminated soils. The former relief holder foundation is entirely enclosed by a containment

cell consisting of a 20-inch thick concrete surface pad and Waterloo™ sheet piles that prevent direct contact with the remaining contamination within the foundation.

Soil

The soils within and beneath the former holder have been enclosed by a containment cell consisting of a 20-inch thick pad on the surface, Waterloo™ sheet pile walls from the surface to 25 to 60 feet below ground surface and soil-cement walls below the sheet piles to approximately 125 feet below ground surface. Based on the findings of the Remedial Investigation, contaminated soil is present outside the containment cell footprint at a depth of 2 feet below ground surface to a potential depth of 94 feet below ground surface.

Figures 1-11A and 1-11B provide details of the containment cell and the remaining soil contamination on the 40 Willow Avenue property.

Groundwater

Residual groundwater contamination above NYSDEC Class GA Groundwater Criteria is present throughout the 40 Willow Avenue property. Figure 1-5 provides details of the locations and depth of existing groundwater contamination on the 40 Willow Avenue property.

Soil Vapor

Potential for soil vapor contamination is assumed to be present on the 40 Willow Avenue property based on the presence on shallow residual groundwater contamination.

1.5.2 53 Lynhurst Avenue Property (Off-Site Area)

Soil

The soils on the northern portion of the 53 Lynhurst Avenue property, south of the former Relief Holder location on 40 Willow Avenue property, were excavated to a depth of 3 feet below ground surface and backfilled with clean fill meeting the requirements of the Unrestricted Use Soil Cleanup Objectives. Based on the findings of the Remedial Investigation and subsequent investigations and Remedial Actions, contaminated soils are present at a depth of 24 feet below ground surface to a potential depth of 60 feet ground surface under the property.

Figures 1-11A and 1-11B provide details of the remaining soil contamination on the 53 Lynhurst Avenue property.

Groundwater

Residual groundwater contamination above the NYSDEC Class GA Groundwater Criteria is present throughout the northern portion (back yard) of the 53 Lynhurst Avenue property. Figure 1-5 provides details of the locations and depth of existing groundwater contamination on the 53 Lynhurst Avenue property.

Soil Vapor

Potential for soil vapor contamination is assumed to be present on the northern portion (back yard) of the 53 Lynhurst Avenue property based on the presence on shallow residual groundwater contamination.

1.5.3 25 Willow Avenue (OU-2)

Soil

The soils on the entire property were excavated to a depth of two feet below ground surface and backfilled with clean fill meeting the requirements of the Unrestricted Use Soil Cleanup Objectives. In addition, soils on the majority of the property were excavated to a depth of ten to twenty feet below ground surface (except the on-site storm sewer buffer area) and backfilled with clean fill meeting the requirements of the Unrestricted Use Soil Cleanup Objectives.

Based on the findings of the Remedial Investigation and the observation made during the Remedial Action, contaminated soil is present at a depth of 10 feet below ground surface to a potential depth of 75 feet below ground surface except in the area of the buffer zone. Approximately 2,000 cubic yards of potentially impacted soil were left in place two feet below ground surface within the buffer zone (see Figure 1-10). The slope of the buffer zone was lined to prevent contamination of clean fill placed in the excavation areas.

Figures 1-11A and 1-11B provide details of the remaining soil contamination on the 25 Willow Avenue property.

Groundwater

Residual groundwater contamination above the NYSDEC Class GA Groundwater Criteria is present throughout the 25 Willow Avenue property. Figure 1-5 provides details of the locations and depth of existing groundwater contamination on the 25 Willow Avenue property.

Soil Vapor

Potential for soil vapor contamination is assumed to be present on the 25 Willow Avenue property based on the presence on shallow residual groundwater contamination.

1.5.4 89 Willow Avenue (Off-Site Area)

Soil

During the 2008 Interim Remedial Measure, three areas of known contamination (see Figure 1-10) were excavated to the water table, a depth of 6 feet below ground surface, and backfilled with clean fill meeting the requirements of the Unrestricted Soil Cleanup Objectives. Based on the findings of the Remedial Investigation and the observation made during the Remedial Action, contaminated soils may remain below water table to a potential depth of 25 feet below ground surface at these three Interim Remedial Measure excavation areas.

Figures 1-11A and 1-11B provide details of the remaining soil contamination on the 89 Willow Avenue property.

Groundwater

Residual groundwater contamination above the NYSDEC Class GA Groundwater Criteria is assumed to be present throughout the 89 Willow Avenue property. Figure 1-5 provides details of the locations and depth of historic groundwater contamination on the 89 Willow Avenue property.

Soil Vapor

No soil vapor contamination is believed to present on the 89 Willow Avenue property.

1.5.5 City of New York Right of Way

Soil

Localized hot spots of contaminated soils are present at a depth of two feet below ground surface under the Willow Avenue road surface and sidewalks along 25 Willow Avenue property. Localized hot spots of contaminated soils are present at a depth of two feet below ground surface under the Bay Street road surface and sidewalks along the northern portion of 25 Willow Avenue and along Block 2822 Lots 24, 26, and 30.

Figures 1-11A and 1-11B provide details of the remaining soil contamination on the City of New York Right of Way.

Groundwater

Residual groundwater contamination above the NYSDEC Class GA Groundwater Criteria is assumed to be present on the eastern portion of Willow Avenue along 25 Willow Avenue and on Bay Street along the northern portion of 25 Willow Avenue. Figure 1-5 provides details of the locations and depth of historic groundwater contamination on the City of New York Right of Way.

Soil Vapor

Potential for soil vapor contamination is assumed to be present in the City of New York Right of Way based on the presence on shallow residual groundwater contamination.

1.5.6 Block 2822 Lots 21, 22, 23, 24, and 26 (Off-Site Area between Bay Street and Edgewater Street)

Soil

Based on the findings of the Remedial Investigations and subsequent investigations, contaminated soils may be present at a depth of eight feet below ground surface to a potential depth of 21 feet below ground surface.

Figures 1-11A and 1-11B provide details of the remaining soil contamination within Block 2822.

Groundwater

Residual groundwater contamination above the NYSDEC Class GA Groundwater Criteria is assumed to be present beneath Block 2822 lots 21, 22, 23, 24, and 26. Figure 1-5 provides details of the locations and depth of historic groundwater contamination within Block 2822.

Soil Vapor

No soil vapor contamination is believed to present on the Block 2822 lots 21, 22, 23, 24, and 26.

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2.0 Engineering and Institutional Controls Plan

2.1 Introduction

2.1.1 General

Since remaining contaminated soil and groundwater exists beneath the site and off-site areas, Engineering Controls and Institutional Controls are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all Engineering Controls and Institutional Controls at the site and off-site areas. The Engineering Controls and Institutional Control Plan is one component of the Site Management Plan, and revisions are subject to approval by the NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all Engineering Controls/Institutional Controls on the site;
- A description of all Engineering Controls/Institutional Controls for the off-site areas;
- The basic implementation and intended role of each Engineering Control/Institutional Control;
- A description of the key components of the Institutional Controls set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of Engineering Controls/Institutional Controls, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site and off-site areas; and
- Any other provisions necessary to identify or establish methods for implementing the Engineering Controls/Institutional Controls required by the site remedy, as determined by the NYSDEC.

2.2 40 Willow Avenue Property

2.2.1 Engineering Controls

2.2.1.1 Engineering Control Systems

<u>Composite Cover System</u>

Exposure to remaining contamination in soil/fill at the 40 Willow Avenue property is prevented by a composite cover system placed over the site. The composite cover system is an Engineering Control that provides a physical barrier limiting potential human and environmental exposures to contaminated subsurface soils and groundwater that remain at the 40 Willow Avenue property. This cover system is comprised of a minimum of 20 inches of concrete cap placed over the former holder foundation and

24 inches of clean fill over the remainder of the property (Figure 2-1). The Excavation Work Plan that appears in Appendix C outlines the procedures required in the event the composite cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this Site Management Plan.

Passive Dense Non-Aqueous Phase Liquid Collection System

Removal of DNAPL will be achieved by a passive DNAPL collection system installed on the 40 Willow Avenue Property. The DNAPL collection system consists of two recovery wells fitted with sumps to observe and passively collect any mobile DNAPL that is remaining in the subsurface. The DNAPL collection wells will be inspected at a frequency which assures the sumps do not completely fill with DNAPL between inspections. Any DNAPL collected in the sump and that can be pumped out will be removed, containerized, and disposed of off-site at a facility approved to accept such waste.

Groundwater Pump and Treat System

A groundwater pump and treat system is installed within the containment cell of the 40 Willow Avenue property to hydraulically maintain the inward gradient of groundwater within the containment cell.

Procedures for operating and maintaining the groundwater pump and treat system are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

2.2.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.5 of NYSDEC DER-10.

Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity or until additional remedial action is conducted to remove the remaining contamination.

Passive Dense Non-Aqueous Phase Liquid Collection System

The DNAPL collection system will continue until no pumpable DNAPL is observed in the collection wells over four consecutive inspections and until permission to discontinue is granted in writing by the NYSDEC. If DNAPL is observed at levels that are not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

Groundwater Pump and Treatment System

The groundwater pump and treat system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the groundwater pump and treat system is no longer required, a proposal to discontinue the groundwater pump and treat system will be submitted by the property owner to the NYSDEC.

2.2.2 Institutional Controls

A series of Institutional Controls is required by the Record of Decision to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to Restricted Commercial uses only. Adherence to these Institutional Controls on the 40 Willow Avenue property is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this Site Management Plan by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this Site Management Plan;
- All Engineering Controls must be inspected at a frequency and in a manner defined in the Site Management Plan.
- Groundwater and soil vapor monitoring must be performed as defined, and applicable, in this Site Management Plan;
- Data and information pertinent to site management must be reported to the NYSDEC at the frequency and in a manner defined in this Site Management Plan;

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The 40 Willow Avenue property has a series of Institutional Controls in the form of property restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Restrictions that apply to the 40 Willow Avenue Property are:

- The property may only be used for restricted commercial use provided that the long-term Engineering and Institutional Controls included in this Site Management Plan are employed.
- The property may not be used for a higher level of use, such as restricted residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this Site Management Plan;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for its intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on the property, and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;

- National Grid will submit to the NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Site Management Plan. The NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that the NYSDEC may allow and will be made by a professional engineer or certified environmental professional.

2.3 53 Lynhurst Avenue Property

Due to the limited nature of remaining contamination at this property, an access agreement may be executed between National Grid and the current and future owner(s) of the 53 Lynhurst Avenue property that will allow access on the property to National Grid to perform inspections and long-term monitoring as detailed below.

2.3.1 Engineering Controls

2.3.1.1 Engineering Control Systems

Composite Cover System

Exposure to remaining contamination in soil/fill at the 53 Lynhurst Avenue property is prevented by a composite cover system present over the property. The composite cover system is an Engineering Control that provides a physical barrier that limits potential human and environmental exposures to contaminated subsurface soils and groundwater that remain below the 53 Lynhurst Avenue property. This cover system is comprised of a minimum of 36 inches of clean fill and concrete foundations. The Excavation Work Plan that appears in Appendix C outlines the procedures required to be implemented in the event the composite cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this Site Management Plan.

Monitored Natural Attenuation

Access to 53 Lynhurst Avenue property has not granted access to National Grid to conduct groundwater monitoring activities. Consequently, groundwater monitoring activities to assess monitored natural attenuation will be completed on an annual basis via samples collected from nearby well monitoring wells as described in Section 3.4.

2.3.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.5 of the NYSDEC DER-10.

Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity or until additional remedial action is conducted to remove the remaining contamination.

Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below the NYSDEC standards or have become asymptotic at an acceptable level over a period of a minimum of two years. Monitoring will continue until permission to discontinue it is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

2.3.2 Institutional Controls

A series of Institutional Controls are recommended by the NYSDEC and required by the access agreement executed between National Grid and the property owner to: (1) implement, maintain and monitor Engineering Control systems; and (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination. These Institutional Controls are:

- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by National Grid;
- All Engineering Controls must be inspected by National Grid at a frequency and in a manner defined in the Site Management Plan;
- Groundwater and soil vapor monitoring must be performed by National Grid as defined in this Site Management Plan;
- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan;

Institutional Controls may not be discontinued without the NYSDEC approval and extinguishment of any access agreements between National Grid and the current and future owners.

The 53 Lynhurst Avenue property has a series of Institutional Controls in the form of notifications. Adherence to these Institutional Controls is recommended by the NYSDEC and by any access agreement executed between National Grid and the owner. Three week advance notifications to National Grid are recommended for the following events that apply to 53 Lynhurst Avenue property:

- All future activities on the property that will disturb remaining contaminated material unless they are conducted in accordance with this Site Management Plan;
- The use of the groundwater underlying the property without the approval of the NYSDEC;
- Any modification of existing conditions on the property and for any buildings developed on the property; and;
- Vegetable gardens and farming on the property.

The advance notice will enable National Grid to observe and determine if the activities will pose any environmental risk to human health and the environment, and provide oversight if necessary.

National Grid will submit to the NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the 53 Lynhurst Avenue property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Site Management Plan. This certification shall be submitted annually, or an alternate period of time that the NYSDEC may allow and will be made by a professional engineer or a qualified environmental professional.

2.4 25 Willow Avenue Property

2.4.1 Engineering Controls

2.4.1.1 Engineering Control Systems

Soil Cover System

Exposure to remaining contamination in soil/fill at the 25 Willow Avenue property is prevented by a soil cover system placed over the property. The soil cover system is an Engineering Control that provides a physical barrier that limits potential human and environmental exposures to contaminated subsurface soils and groundwater that remain at the 25 Willow Avenue property. This cover system is comprised of a minimum of two feet of clean fill that meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives (as shown on Figure 2-1). Additionally, on the majority of the property, the soil cover system comprises of a minimum of eleven feet of clean fill that meets the requirements of the 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives. The Excavation Work Plan that appears in Appendix C outlines the procedures required to be implemented in the event the composite cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this Site Management Plan.

Subsurface Barrier Wall

A slag-cement-bentonite barrier wall is installed on the southern and northeastern portion of the property. The slag-cement-bentonite barrier well extends 35 to 55 feet below ground surface and prevents the lateral migration off-site of mobile DNAPL that may be present beneath the property.

Passive Dense Non-Aqueous Phase Liquid Collection System

Removal of DNAPL will be achieved by a passive DNAPL collection system installed on the 25 Willow Avenue Property. The DNAPL collection system consists of 21 recovery wells fitted with sumps to observe and passively collect any mobile DNAPL that is remaining in the subsurface. The DNAPL collection wells will be inspected at a frequency which assures the sumps do not completely fill with DNAPL between inspections. Any DNAPL collected in the sump and that can be pumped out will be removed, containerized, and disposed of off-site at a facility approved to accept such waste.

2.4.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.5 of the NYSDEC DER-10.

Soil Cover System

The soil cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity or until additional remedial action is conducted to remove the remaining contamination.

Subsurface Barrier Wall

The subsurface barrier wall is a permanent control and the quality and integrity of the walls will be inspected at defined, regular intervals in perpetuity or until additional remedial action is conducted to remove the remaining contamination.

Passive Dense Non-Aqueous Phase Liquid Collection System

The DNAPL collection system will continue until no pumpable DNAPL is observed in the collection well over four consecutive inspections and until permission to discontinue is granted in writing by the NYSDEC. If DNAPL is observed at levels that are not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated. A subset of these wells may be converted to groundwater monitoring wells if no DNAPL is observed within these wells over four consecutive gauging events.

2.4.2 Institutional Controls

A series of Institutional Controls is required by the Record of Decision to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to Restricted Commercial uses only. Adherence to these Institutional Controls on the 25 Willow Avenue property is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this Site Management Plan by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this Site Management Plan;
- All Engineering Controls must be inspected at a frequency and in a manner defined in the Site Management Plan.
- Groundwater and soil vapor monitoring must be performed as defined in this Site Management Plan;
- Data and information pertinent to site management must be reported to the NYSDEC at the frequency and in a manner defined in this Site Management Plan;

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The 25 Willow Avenue property has a series of Institutional Controls in the form of property restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Restrictions that apply to the 25 Willow Avenue Property are:

- The property may only be used for restricted commercial use provided that the long-term Engineering and Institutional Controls included in this Site Management Plan are employed.
- The property may not be used for a higher level of use, such as restricted residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this Site Management Plan;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for its intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on the property, and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- National Grid will submit to the NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Site Management Plan. the NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that the NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.5 89 Willow Avenue Property

2.5.1 Engineering Controls

2.5.1.1 Engineering Control Systems

Soil Cover System

Exposure to remaining contamination in soil/fill at the 89 Willow Avenue property is prevented by a soil cover system placed over the property. The soil cover system is an Engineering Control that provides a physical barrier that limits potential human and environmental exposures to contaminated subsurface soils and groundwater that remain at the 89 Willow Avenue property. This cover system is comprised of a minimum of two feet of clean fill that meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives (as shown in Figure 2-1). Additionally, in the eastern, central, and northeastern portion of the property, the soil cover system comprises of a minimum of five feet of clean fill that meets the requirements of 6 New York Codes Rules and Regulations 375 Restricted Residential Soil Cleanup Objectives. The Excavation Work Plan that appears in Appendix C outlines the procedures required to be implemented in the event the composite cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

Monitored Natural Attenuation

Groundwater monitoring activities to assess monitored natural attenuation will be completed on an annual basis. The details of the groundwater monitoring program are provided in Section 3.4.

2.5.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.5 of the NYSDEC DER-10.

Soil Cover System

The soil cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity or until additional remedial action is conducted to remove the remaining contamination.

Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below the NYSDEC standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

2.5.2 Institutional Controls

A series of Institutional Controls is required by the NYSDEC to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to Restricted Commercial uses only. Adherence to these Institutional Controls on the 89 Willow Avenue property is required by the NYSDEC and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with this Site Management Plan by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this Site Management Plan;
- All Engineering Controls must be inspected at a frequency and in a manner defined in the Site Management Plan.
- Groundwater and soil vapor monitoring must be performed as defined in this Site Management Plan; and
- Data and information pertinent to site management must be reported to the NYSDEC at the frequency and in a manner defined in this Site Management Plan.

Institutional Controls may not be discontinued without NYSDEC approval.

The 89 Willow Avenue property has a series of Institutional Controls in the form of property restrictions. Adherence to these Institutional Controls is required by the NYSDEC. Restrictions that apply to the 89 Willow Avenue Property are:

- The property may only be used for restricted commercial use provided that the long-term Engineering and Institutional Controls included in this Site Management Plan are employed.
- The property may not be used for a higher level of use, such as restricted residential use without additional remediation and approval by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this Site Management Plan;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for its intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on the property, and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- National Grid will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Site Management Plan. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.6 City of New York Right of Way

The City of New York Right of Way areas include:

- Willow Avenue and associated sidewalks from the west boundary of 25 Willow Avenue to the intersection with Bay Street;
- Bay Street and associated sidewalks from the northern boundary of 25 Willow Avenue to the southern boundary of Lot 21 of Block 2822; and
- Edgewater Street from the northern boundary of Block 2822 Lot 30 to the southern boundary of Lot 21 of Block 2822.

Due to the limited nature of remaining contamination at the City of New York Right of Way areas, an access agreement may be executed between National Grid and the City of New York that will allow access on the City of New York Right of Way to National Grid to perform inspections and long-term monitoring as detailed below.

2.6.1 Engineering Controls

2.6.1.1 Engineering Control Systems

<u>Composite Cover System</u>

Exposure to remaining contamination in soil/fill at the City of New York Right of Way areas is prevented by a composite cover system present over the City of New York Right of Way areas. The composite cover system is an Engineering Control that provides a physical barrier that limits potential human and environmental exposures to contaminated subsurface soils and groundwater that remain

below the City of New York Right of Way areas. This cover system is comprised of a minimum of 6 inches of clean fill, asphalt pavement, and concrete sidewalks (Figure 2-1). The Excavation Work Plan that appears in Appendix C outlines the procedures required to be implemented in the event the composite cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this Site Management Plan.

Passive Dense Non-Aqueous Phase Liquid Collection System

Migration of potential DNAPL is prevented by a passive DNAPL collection system installed on Bay Street sidewalk along the northeastern boundary of the 25 Willow Avenue property. The DNAPL collection system consists of a shallow and an intermediate recovery well fitted with a sump to observe and passively collect any potential DNAPL that is remaining in the subsurface. The DNAPL collection well will be inspected at a frequency which assures the sumps do not completely fill with DNAPL between inspections. Any DNAPL collected in the sump and that is pumpable will be removed, containerized, and disposed of off-site at a facility approved to accept such waste.

2.6.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.5 of NYSDEC DER-10.

Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity or until additional remedial action is conducted to remove the remaining contamination.

Passive Dense Non-Aqueous Phase Liquid Collection System

The DNAPL collection system will continue until no pumpable DNAPL is observed in the collection well over four consecutive inspections and until permission to discontinue is granted in writing by the NYSDEC. If DNAPL is observed at levels that are not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated. A subset of these wells may be converted to groundwater monitoring wells if no DNAPL is observed within these wells over four consecutive gauging events.

2.6.2 Institutional Controls

A series of Institutional Controls are required by the NYSDEC to: (1) implement, maintain and monitor Engineering Control systems; and (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination. These Institutional Controls are:

- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by the City of New York and National Grid jointly;
- All Engineering Controls must be inspected by National Grid at a frequency and in a manner defined in the Site Management Plan;

- Groundwater and soil vapor monitoring must be performed by National Grid as defined in this Site Management Plan;
- Data and information pertinent to site management must be reported to the NYSDEC by National Grid at the frequency and in a manner defined in this Site Management Plan;

Institutional Controls may not be discontinued without NYSDEC approval and extinguishment of any access agreements between National Grid and the City of New York.

The City of New York Right of Way areas have a series of Institutional Controls in the form of notifications. Adherence to these Institutional Controls is required by the NYSDEC and by any access agreement executed between National Grid and the City of New York. Three weeks advance notifications to National Grid are recommended for the following events that apply to the City of New York Right of Way areas:

- All activities on the City of New York Right of Way areas that will disturb remaining contaminated material unless they are conducted in accordance with this Site Management Plan;
- The use of the groundwater underlying the property without the approval of the NYSDEC;
- Any modification of existing City of New York Right of Way areas condition and for any buildings developed on the City of New York Right of Way areas; and
- Vegetable gardens and farming on the City of New York Right of Way areas;

The advance notice will enable National Grid to observe and determine if the activities will pose any environmental risk to human health and the environment and provide oversight if necessary.

National Grid will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the City of New York Right of Way areas are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Site Management Plan. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.7 Properties East of 25 Willow Avenue

Off-site properties east of 25 Willow Avenue (the Properties) include:

- Block 2822 Lot 26
- 931 Bay Street (Block 2822 Lot 24)
- 32 Edgewater Street (Block 2822 Lot 23)
- 34 Edgewater Street (Block 2822 Lot 22)
- 36 Edgewater Street (Block 2822 Lot 21)

Due to the limited nature of remaining contamination at these properties, an access agreement may be executed between National Grid and the current and future owner(s) of the property (ies) that will allow access on to the properties to National Grid to perform inspections and long-term monitoring as detailed below.

2.7.1 Engineering Controls

2.7.1.1 Engineering Control Systems

Soil Cover System

Exposure to remaining contamination in soil/fill at the Properties is prevented by a soil cover system present over the property. The soil cover system is an Engineering Control that provides a physical barrier that limits potential human and environmental exposures to contaminated subsurface soils and groundwater that remain below the Properties. This cover system is comprised of an 8 feet of fill not contaminated by Manufactured Gas Plant residuals (Figure 2-1). The Excavation Work Plan that appears in Appendix C outlines the procedures required to be implemented in the event the composite cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this Site Management Plan.

Monitored Natural Attenuation

Groundwater monitoring activities to assess monitored natural attenuation will be completed on an annual basis. The details of the groundwater monitoring program are provided in Section 3.4.

2.7.1.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.5 of NYSDEC DER-10.

Soil Cover System

The soil cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity or until additional remedial action is conducted to remove the remaining contamination.

Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

2.7.2 Institutional Controls

A series of Institutional Controls are recommended by the NYSDEC and required by the access agreement executed between National Grid and the property owner(s) to: (1) implement, maintain and monitor Engineering Control systems; and (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; These Institutional Controls are:

- All Engineering Controls must be operated and maintained as specified in this Site Management Plan by National Grid;

- All Engineering Controls must be inspected by National Grid at a frequency and in a manner defined in the Site Management Plan;
- Groundwater and soil vapor monitoring must be performed by National Grid as defined in this Site Management Plan;
- Data and information pertinent to site management must be reported by National Grid at the frequency and in a manner defined in this Site Management Plan;

Institutional Controls may not be discontinued without NYSDEC approval and extinguishment of any access agreements between National Grid and the current and future owners.

The Properties have a series of Institutional Controls in the form of notifications. Adherence to these Institutional Controls is recommended by the NYSDEC and required by any access agreement executed between National Grid and the property owner(s). Three week advance notifications are required for the following events that apply to Properties:

- All activities on the Properties that will disturb remaining contaminated material unless they are conducted in accordance with this Site Management Plan;
- The use of the groundwater underlying the Properties without the approval of the NYSDEC;
- Any modification of existing conditions on the Properties and for any buildings developed on the Properties; and
- Vegetable gardens and farming on the Properties;

The advance notice will enable National Grid to observe and determine if the activities will pose any environmental risk to human health and the environment and provide oversight if necessary.

National Grid will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Properties are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the Site Management Plan. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.8 Excavation Work Plan

The site and off-site areas have been remediated for restricted commercial use. Any future intrusive work that will penetrate, encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan that is attached as Appendix C to this Site Management Plan. Any work conducted pursuant to the Excavation Work Plan must also be conducted in accordance with the procedures defined in a Health and Safety Plan and Community Air Monitoring Plan prepared for the site and off-site areas. A sample Health and Safety Plan is attached as Appendix D to this Site Management Plan that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and Federal health and safety requirements, and specific methods employed by future contractors, the Health and Safety Plan and Community Air Monitoring Plan will be updated and re-submitted with the notification provided in Section A-1 of the Excavation Work Plan. Any intrusive construction work will be performed in compliance with the Excavation Work Plan, Health and Safety Plan and Community Air Monitoring

Plan, and will be reported upon in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The owner(s) of the various properties located within the limits of this Site Management Plan and as discussed above, and associated parties preparing the remedial documents submitted to the NYSDEC, and parties performing this work, are responsible for the proper disposal of water generated during excavation, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The owner of each property located within the limits of this Site Management Plan will ensure that site development activities will not interfere with, or otherwise impair or compromise, the Engineering Controls described in this Site Management Plan.

2.9 Soil Vapor Intrusion Evaluation

Pursuant to Section 2.10.2, the property owner shall notify National Grid 15 days in advance of any modification to the existing enclosed structure or construction of any enclosed structures. Prior to the construction of any enclosed structures located over areas that contain remaining contamination and where the potential for soil vapor intrusion has been identified, a soil vapor intrusion evaluation will be performed by National Grid to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, a soil vapor intrusion mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system must include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting a soil vapor intrusion investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and the New York State Department of Health (NYSDOH) for approval. The investigation/installation work plan will be developed in accordance with the most recent NYSDOH “Guidance for Evaluating Vapor Intrusion in the State of New York”. Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the soil vapor intrusion evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Following collection of investigation samples, as required in the work plan, preliminary (unvalidated) soil vapor intrusion sampling data will be forwarded to the NYSDEC and New York State Department of Health for initial review and interpretation. Upon validation, the final data will be transmitted to the NYSDEC and the NYSDOH, along with a recommendation for follow-up action, such as mitigation. Validated soil vapor intrusion data will be transmitted to the property owner(s) by National Grid within 30 days of validation. If any indoor air test results exceed New York State Department of Health guidelines, relevant New York State Department of Health fact sheets will be provided to all tenants and occupants of the properties within 15 days of receipt of validated data by National Grid.

Soil vapor intrusion sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

2.10 Inspections and Notifications

2.10.1 Inspections

Inspections of all remedial components installed at the site and all Engineering Controls present on-site and on off-site areas will be conducted at the frequency specified in the Site Management Plan Monitoring Plan schedule (as summarized in Section3). A comprehensive inspection of the site and

off-site areas will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this Site Management Plan and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this Site Management Plan (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the Engineering Controls occurs, an inspection of the site and off-site areas will be conducted within five days of the event to verify the effectiveness of the Engineering and Institutional Controls implemented at the site and off-site areas by a qualified environmental professional as determined by NYSDEC.

2.10.2 Notifications from Property Owner(s)

Notifications will be submitted by the property owner(s) to National Grid and the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in property use that are required under the terms of the Order on Consent, 6 New York Codes Rules and Regulations Part 375, and/or Environmental Conservation Law.
- 7-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundation, structures or Engineering Control that reduces or has the potential to reduce the effectiveness of an Engineering Control and likewise any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site and off-site areas, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to National Grid and the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the Engineering Controls.

National Grid will review and provide comments on all planned ground-intrusive activities proposed on properties located within the limits of Site Management Plan (Figure 1-2). National Grid may have a representative on-site, as appropriate, during any ground-intrusive work activities to observe activities and document compliance with this Site Management Plan.

Following any change in the ownership of the site or an off-site property, the responsibility for implementing this Site Management Plan will include the following notifications:

- At least 60 days prior to the change, National Grid and the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Order on Consent, applicable access agreements, and all approved work plans and reports, including this Site Management Plan
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.11 Contingency Plan

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.11.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list is Table 2-1. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to AECOM Technical Services. These emergency contact lists must be maintained in an easily accessible location at the site and off-site areas.

2.11.2 Map and Directions to Nearest Health Care Facility

Site Location: 25 Willow Avenue, Staten Island, New York

Nearest Hospital Name: Staten Island University Hospital

Hospital Location: 475 Seaview Ave, Staten Island, New York

Hospital Telephone: 718-226-9000

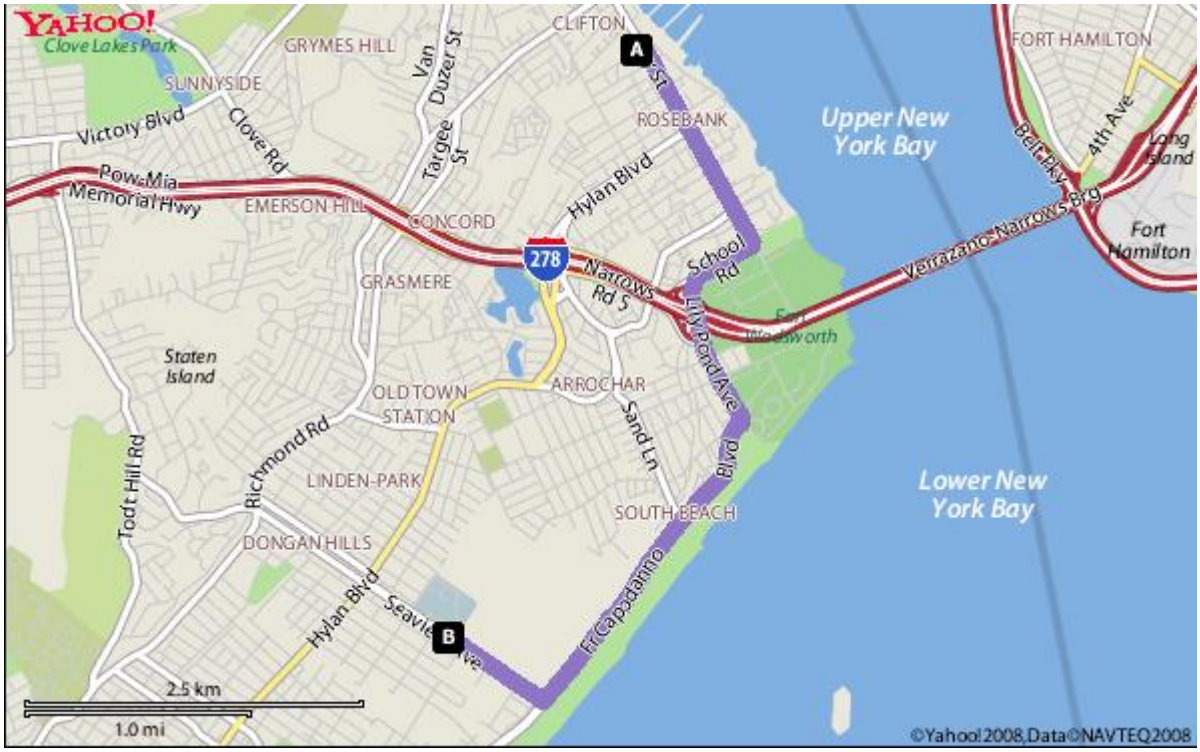
Directions to the Hospital:

1.	Start at **25 WILLOW AVE, STATEN ISLAND** going toward **BAY ST**	go **< 0.1** mi
2.	Turn R **RIGHT** on **BAY ST**	go **0.9** mi
3.	Turn R **RIGHT** on **SCHOOL RD**	go **0.3** mi
4.	Bear L **LEFT** on **LILY POND AVE**	go **0.7** mi
5.	Bear R **RIGHT** on **FR CAPODANNO BLVD**	go **1.5** mi
6.	Turn R **RIGHT** on **SEAVIEW AVE**	go **0.5** mi
7.	Arrive at **475 SEAVIEW AVE, STATEN ISLAND,** on the R **RIGHT**	go **< 0.1** mi

Map Showing Route From the Site To the Hospital:

START	A **25 Willow Ave, Staten Island, NY 10305-1814**
FINISH	B **475 Seaview Ave, Staten Island, NY 10305-3436**

Total Distance: 3.9 miles, Total Time: 13 mins (approx.)



2.11.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 2-1). The list will also be posted prominently at the site and made readily available to all personnel at all times.

2.11.3.1 Emergency Spill Response

Should a spill occur, immediately employ methods to control or stop the migration of the spilled material, if feasible. If the release is significant or has impacted soil or groundwater, immediately notify the appropriate response agency. The following information must be provided:

- Time and location of spill;
- Type and nature of material spilled;

- Amount of material spilled;
- Whether the spill has affected or has the potential to affect a waterway or sewer;
- A brief description of the affected areas/equipment; and
- The expected time of cleanup completion.

Cleanup procedures will be in accordance with applicable local, state and federal regulations. Spill cleanup kits, appropriate to the monitoring or redevelopment activities (i.e., absorbent pads, ground cover, speedy dry, etc.) must be made available on-site.

2.11.3.2 Fire

Fire extinguishers are to be made available on-site for trained personnel to use on minor, controllable fires without endangering the safety of the personnel or others. If the nature of the fire is beyond control with a fire extinguisher, the fire department shall be notified immediately. The fire department shall be notified of all fires (call 911 in an emergency, or report an extinguished fire via the non-emergency telephone number).

2.11.3.3 Personal Injury

General information regarding site operations and worker health and safety is included in the Health and Safety Plan found in Appendix D. Minor cuts or abrasions are to be washed and treated immediately. First aid may be given on-site as deemed necessary. If needed, the individual will be decontaminated and transported to Richmond County Hospital. The ambulance/rescue squad will be contacted (call 911) for transport as necessary in an emergency. In any life-threatening situation, the life-saving treatment of personnel is the immediate priority. The Emergency Coordinator, as defined in the Health and Safety Plan, or designee will be available to brief the rescue squad immediately upon their arrival to the location of the injured person(s), nature and extent of the injury(s), personnel involved, hazardous substances involved, and any other pertinent information. The Emergency Coordinator will supply chemical hazard information to appropriate medical personnel and complete an incident report on the accident or injury.

3.0 Monitoring Plan

3.1 Introduction

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site and off-site areas, including all Engineering Controls, and all affected site media identified below. Engineering Controls at the site include soil cover system and composite cover system, monitored natural attenuation of remaining contamination in groundwater, groundwater pump and treat system, vertical subsurface DNAPL containment cell, vertical subsurface DNAPL barrier wall and DNAPL collection system. Engineering Controls on off-site areas include soil cover system, composite cover system, DNAPL collection system, and monitored natural attenuation of remaining contamination in groundwater. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil;
- Assessing achievement of the remedial performance criteria;
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Annual monitoring of the performance of the remedy and overall reduction in contamination on-site and off-site areas will be conducted for the first 3 years. The frequency thereafter will be determined by the NYSDEC. Trends in contaminant levels in air, soil, and/or groundwater in the affected areas,

will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 3-1 and outlined in detail in Sections 3.2 and 3.3 below.

3.2 Cover System Monitoring

The soil cover system and composite cover system Engineering Controls will be inspected annually by a New York State licensed professional engineer or qualified environmental professional to confirm that the cover system is intact, remains unchanged, and continues to be protective of human health and the environment. The inspection will be completed by an individual who is familiar with the cover system and the site and off-site area. The annual inspections will be documented on the Annual Inspection and Certification Checklist provided in Appendix E. The form provides a checklist to document if there are any changes since the previous year's inspection and that the Engineering Controls continues to operate as intended. A survey of the soil/composite cover will be completed if changes in the cover occur during the year or if changes are noted in the annual inspection. The survey will be completed by the New York State licensed surveyor and referenced NAVD 88 vertical datum to an accuracy of 0.01 ±foot and referenced to North American Datum (NAD 83).

If an emergency, such as a natural disaster or unforeseen failure of the Engineering Controls occurs, an inspection of the affected property will be conducted by a qualified environmental professional within five business days of the event to verify the effectiveness of the composite cover. National Grid will perform an inspection of the affected property with five business days of notification of the event.

3.3 Passive Dense Non-aqueous Phase Liquid Collection System Monitoring

3.3.1 40 Willow Avenue

A passive DNAPL collection system was installed within the containment cell to remove DNAPL. The passive DNAPL collection system consists of two four inch (4") recovery wells with screens from 9 to 19 feet below ground surface and 34 to 44 feet below ground surface. A five foot sump was installed within the deeper recovery well. Well construction logs are included in Appendix F.

3.3.1.1 Monitoring Schedule

The passive DNAPL collection wells will be monitored until DNAPL can no longer be recovered via pumps from the collection wells over four consecutive inspections.

Inspection and monitoring frequency is subject to change only with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the DNAPL collection system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the DNAPL collection system are specified later in this Site Management Plan.

3.3.1.2 Monitoring Procedures

An inspection of the complete well system will be conducted during the monitoring event. The DNAPL collection system components to be monitored include, but are not limited to, the following:

- Integrity of the well including screens;
- Integrity and operation of the submersible pump if applicable; and

- Integrity of the DNAPL collection sump.

Standard Operating Procedures for the inspection, DNAPL sampling, and DNAPL collection are included in Appendix G.

3.3.2 25 Willow Avenue

Twenty-one DNAPL recovery wells were installed along the subsurface barrier wall (slurry wall) along Willow Avenue and Bay Street. The recovery wells are 4-inch or 6-inch steel wells with 0.020 slot well screen and Schedule 80 Poly Vinyl Chloride risers. Four-inch wells are constructed with a 3-foot sump at the bottom, while 6-inch wells are constructed with a 5-foot sump for DNAPL accumulation. Each well was finished at the surface with a flush-mounted 2-foot by 2-foot concrete vault.

Ten recovery wells were installed north of subsurface barrier wall along Willow Avenue to capture any DNAPL accumulating on the site. Three recovery walls were installed near the edges of the subsurface barrier wall to capture any DNAPL that may be diverted by the wall. Two recovery wells were also installed south of the subsurface barrier wall along Willow Avenue to capture downgradient DNAPL. Similarly, six recovery wells were installed west of the subsurface barrier wall along Bay Street.

Nine recovery wells were installed in the shallow zone with the bottom of the screen ranging from 20 to 26 feet below ground surface. Eight of these nine recovery wells are constructed with a 10-foot screen and one with a 20-foot screen. Eleven recovery wells were installed in the intermediate zone with the bottom of the screen ranging from 30 to 55 feet below ground surface and each constructed with a 10-foot screen. One deep well with the screen ending at 74 feet below ground surface was installed north of the subsurface barrier wall along Willow Avenue. Recovery well construction details are given in Table 3-2 and the installation logs are included in Appendix F. Each well was developed after installation and the well development logs are included in Appendix F.

3.3.2.1 Monitoring Schedule

The passive DNAPL collection well will be monitored until DNAPL can no longer be recovered via pumps from the collection wells over four consecutive inspections.

Inspection frequency is subject to change only with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the DNAPL collection system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the DNAPL collection system are specified later in this Site Management Plan.

3.3.2.2 Monitoring Procedures

An inspection of the complete system will be conducted during the monitoring event. The DNAPL collection system components to be monitored include, but are not limited to, the following:

- Integrity of the well including screens;
- Integrity and operation of the submersible pump if applicable; and
- Integrity of the DNAPL collection sump.

Standard Operating Procedures for the inspection, DNAPL sampling, and DNAPL collection are included in Appendix G.

3.4 Groundwater Monitoring

Groundwater monitoring will be performed annually for the first three years and biannually thereafter to assess the performance of the remedy. A network of monitoring wells (Figure 3-1) has been installed to monitor both up-gradient and down-gradient groundwater conditions at the site and off-site areas. The network of on-site and off-site area wells has been designed based on the following criteria:

- One monitoring well (RW-210S) was installed in the shallow-overburden aquifer underlying the site to determine the shallow upgradient groundwater conditions.
- One monitoring well (RW-210I) was installed in the intermediate-overburden aquifer underlying the site to determine the intermediate-zone upgradient groundwater conditions.
- One monitoring well (RW-202S) was installed in the shallow-overburden aquifer underlying the site to determine the shallow site groundwater conditions.
- One monitoring well (RW-202I) was installed in the intermediate-overburden aquifer underlying the site to determine the intermediate-zone site groundwater conditions.
- One monitoring well (RW-200S) was installed in the shallow-overburden aquifer underlying the site to determine the shallow side-gradient groundwater conditions.
- Two monitoring wells (RW-200I and RW-204I) were installed in the intermediate-overburden aquifer underlying the site to determine the intermediate-zone side-gradient groundwater conditions.
- Five monitoring wells (RW-22, RW-23, RW-25, RW-26, and RW-203S) were installed in the shallow-overburden aquifer underlying the site to determine the shallow downgradient groundwater conditions.
- One monitoring well (RW-203I) was installed in the intermediate-overburden aquifer underlying the site to determine the intermediate-zone downgradient groundwater conditions.

Monitoring well boring and construction logs are included in Appendix F.

3.4.1 Monitoring Schedule

The monitoring well network will be monitored annually for a period of three years and biannually thereafter. Groundwater samples will be collected for a minimum of three years. Groundwater monitoring may be discontinued in monitoring wells if concentrations decrease below New York State Ambient Water Quality Standards for two consecutive sampling events and as approved by the NYSDEC or discontinued as directed by the NYSDEC.

The sampling frequency may be modified with the approval of the NYSDEC. The Site Management Plan will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the groundwater monitoring program are specified in Table 3-3.

3.4.1.1 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log (an example is presented in Appendix G). Other observations (e.g., well integrity, etc.) will be noted on the groundwater-sampling log. The groundwater-sampling log will serve as the inspection form for the groundwater monitoring well network. Each sample will be collected utilizing low flow groundwater sampling collection methods provided in the Field Sampling Plan (Appendix G). Each groundwater sample will be analyzed for benzene, toluene, ethylbenzene, and xylene via United States Environmental Protection Agency Method 8260B, polycyclic aromatic hydrocarbons via United States Environmental Protection Agency Method 8270, and monitored natural attenuation parameters (Dissolved Oxygen, Nitrate, Ammonia, Total Iron, Ferrous Iron, Sulfate, Sulfide, Methane, Alkalinity, Oxidation Reduction Potential, and pH) by a New York State Department of Health environmental laboratory approval program - certified laboratory. The groundwater samples will also be collected, handled, and analyzed according to the example Quality Assurance Project Plan (Appendix H).

3.4.1.2 Monitoring Well Repairs, Replacement and Decommissioning

If bio-fouling or silt accumulation occurs in any site or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with the NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.5 Site and Off-Site Inspection

Site and off-site area inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix E). The form will compile sufficient information to assess the following:

- Compliance with all Institutional Controls, including site and off-site areas usage;
- An evaluation of the condition and continued effectiveness of Engineering Controls;
- General site and off-site area conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that site records are up to date.

3.6 Monitoring Quality Assurance/Quality Control

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan prepared for the site (Appendix H). Main Components of the QAPP include:

- Quality Assurance/Quality Control Objectives for data measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) by the analytical laboratory prior to their use. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC Analytical Services Protocol requirements.
  - Field quality control samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to use each day. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in United States Environmental Protection Agency SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Preparation of a Data Usability Summary Report, which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal quality control and Checks;
- Quality assurance Performance and System Audits;
- Preventative Maintenance Procedures and Schedules; and
- Corrective Action Measures.

3.7 Monitoring Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this Site Management Plan.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared subsequent to each sampling event. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (o be submitted electronically in the NYSDEC -identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in Table 3-3.

4.0 Operation and Maintenance Plan

An Operation and Maintenance Plan that describes the measures necessary to operate, monitor and maintain the mechanical components of the groundwater pump and treat system installed within the containment cell on the 40 Willow Avenue property is provided in Appendix I. The groundwater pump and treat system Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the groundwater pump and treat system;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in site conditions or the manner in which the groundwater pump and treat system are operated and maintained.

Information on non-mechanical Engineering Controls (i.e. soil cover system) is provided in Section 3 - Engineering and Institutional Control Plan. A copy of the groundwater pump and treat system Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. The groundwater pump and treat system Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

5.0 Inspections, Reporting, and Certifications

5.1 Site Inspections

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan of this Site Management Plan. At a minimum, a site and off-site area inspections will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe weather condition has taken place, such as an erosion or flooding event that may affect the Engineering Controls.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for their respective system which are contained in Appendix E and Appendix G. Additionally, a general site-wide inspection form will be completed during the site-wide inspection (see Appendix E). These forms are subject to NYSDEC-approval of revisions.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site and off-site area monitoring data will be evaluated as part of the Engineering/Institutional Controls certification to confirm that the:

- Engineering/Institutional Controls are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The site and off-site area conditions continue to be protective of public health and the environment and the remedy is performing as designed in the Record of Decisions.

5.2 Certification of Engineering and Institutional Controls

Information about Engineering/Institutional Controls can be found in the Engineering and Institutional Control Plan portion of the Site Management Plan. Inspection of the Engineering/Institutional Controls will occur at a frequency described in Section 3 Monitoring Plan.

5.2.1 Property Owner's Certification

For all properties included within the limits of the SMP, National Grid will attempt to execute an access agreement that allows National Grid and NYSDEC access to the property to perform annual inspections and monitoring. For properties where National Grid has not been able to execute an access agreement, National Grid shall request, by registered mail, telephone, and electronically,

access to the property for annual monitoring events and require the property owner to review and certify the Property Owner Annual Certification form (See Attachment E.) If access is not granted, National Grid shall include the receipt of the registered mail as well as any electronic communication with the Periodic Review Report.

The signed certification shall be submitted by each of the property owners to National Grid for inclusion into the Periodic Review Report.

5.2.2 National Grid's Certification

After the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State will prepare the following certification:

For each Engineering/Institutional Controls identified for the site and off-site areas, I certify that all of the following statements are true:

- The inspection of the site and off-site areas to confirm the effectiveness of the Engineering/Institutional Controls required by the remedial program was performed under my direction;
- The Engineering/Institutional Controls employed at this site and off-site areas are unchanged from the date the control was put in place, or last approved by the NYSDEC;
- Nothing has occurred that would impair the ability of the control to protect human health and the environment;
- Nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for the Engineering/Institutional Controls;
- Access is available to the site and off-site areas by the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of the Engineering/Institutional Controls;
- Use of the site and off-site areas is compliant with the environmental easement;
- The Engineering Controls systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices;
- The information presented in this report is accurate and complete; and
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

The signed certifications will be included in the Periodic Review Report described below.

5.3 Periodic Review Report

A Periodic Review Report will be submitted to the NYSDEC every year, beginning fifteen months after the Certificate of Completion is issued by the NYSDEC. In the event that the site and off-site areas are subdivided into separate properties with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix B (Metes and Bounds). The report will be

prepared in accordance with NYSDEC DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all Engineering/Institutional Controls required by the remedy for the site and off-site areas;
- Results of the required annual site and off-site areas inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site and off-site areas during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site and off-site areas evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific Record of Decision;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
  - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the site is located, and in electronic format to NYSDEC Central Office, Regional Office and the New York State Department of Health Bureau of Environmental Exposure Investigation.

5.4 Corrective Measures Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an Institutional or Engineering Control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

6.0 References

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Tables

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				LEX-SS-02 (a)	LEX-SS-03	LEX-SS-04	LEX-SS-05	LEX-SS-06	LEX-SS-07	LEX-SS-08	LEX-SS-09	LEX-SS-10	LEX-SS-11	RW-01		RW-02	RW-03	RW-06	RW-13		
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	SS-11	CF-RW1	CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50
Depth (ft):				-	-	-	-	-	-	-	-	-	-	(4-6)	(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)
Constituent Date:				09/14/1993	09/14/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	02/22/1999	02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																					
Benzene	ug/kg	60	44,000	NA	NA	10 T	94 T	4,400 T	2,900 T	1,400 T	2,700 T	2,600 T	1 U	5 J	16 U	NA	2 J	6 U	1,000 J	940 J	74 J
Toluene	ug/kg	700	500,000	NA	NA	50 T	5 T	440 T	21 T	79 T	260 T	470 T	24 T	10 J	16 U	NA	6 U	6 U	230 J	180 J	2 J
Ethylbenzene	ug/kg	1,000	390,000	NA	NA	61 T	10 T	800 T	130 T	300 T	530 T	3,500 T	4 T	30 U	16 U	NA	6 U	6 U	3,500	24,000	360 J
Xylene (total)	ug/kg	260	500,000	NA	NA	120 T	46 T	3,300 T	16 T	61 T	5,600 T	3,900 T	77 T	30 U	16 U	NA	6 U	6 U	3,800	5,500	310 J
Volatile Organic Compounds																					
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	100 T	33 T	2,800 T	140 T	1,400 T	2,000 T	5,700 T	2 T	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	87 T	24 T	1,300 T	15 T	120 T	5,300 T	3,400 T	65 T	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	7 U	1 U	160 U	6 U	8 U	7 U	580 T	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	140 U	45 U	1,900 U	180 T	98 T	960 T	2,200 T	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	7 U	1 U	160 U	6 U	8 U	18 T	210 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	7 U	8 T	220 T	6 U	18 T	730 T	1,000 T	1 U	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	160 T	72 T	1,700 T	100 T	150 T	10,000 T	9,800 T	83 T	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	63 T	16 T	3,200 T	6 U	1,300 T	2,200 T	3,000 T	4 T	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	53 T	23 T	2,200 T	50 T	800 T	870 T	2,500 T	3 T	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	7 U	65 T	160 U	6 U	8 U	1,700 T	210 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	24 T	5 T	230 T	150 T	140 T	330 T	4,200 T	1 U	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				LEX-SS-02 (a)	LEX-SS-03	LEX-SS-04	LEX-SS-05	LEX-SS-06	LEX-SS-07	LEX-SS-08	LEX-SS-09	LEX-SS-10	LEX-SS-11	RW-01		RW-02	RW-03	RW-06	RW-13		
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	SS-11	CF-RW1	CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50
Depth (ft):				-	-	-	-	-	-	-	-	-	-	(4-6)	(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)
Constituent Date:				09/14/1993	09/14/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	02/22/1999	02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	500,000	340 U	340 U	3,800 #T	7,600 #J	11,000 #T	54,700 #T	980 #T	23,000 #T	150,000 #T	1,800 #J	4,000 U	160 J	NA	7 J	9 J	NA	160,000 J	3,800 J
2-Methylnaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,000 U	940 U	NA	380 U	370 U	NA	81,000 J	610 J
Acenaphthene	ug/kg	20,000	500,000	340 U	340 U	1,900 T	25,000 T	7,500 J	15,000 T	11,000 T	31,000 T	110,000 T	510 J	3,600 J	48 J	NA	380 U	370 U	NA	49,000 J	360 J
Acenaphthylene	ug/kg	100,000	500,000	340 U	340 U	720 J	9,800 T	10,000 T	13,000 T	4,300 T	13,000 T	22,000 T	1,100 J	4,200 J	71 J	NA	380 U	370 U	NA	16,000 J	170 J
Anthracene	ug/kg	100,000	500,000	340 U	340 U	2,500 T	22,000 T	7,300 J	20,000 T	840 J	42,000 T	63,000 T	780 J	20,000 UJ	940 UJ	NA	380 U	370 U	NA	45,000 J	290 J
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	340 U	340 U	920 U	11,000 T	14,000 T	14,000 T	6,700 T	54,000 T	11,000 U	3,900 U	20,000 UJ	850 J	NA	380 U	370 U	NA	15,000 J	2,900 UJ
Fluoranthene	ug/kg	100,000	500,000	340 U	340 U	560 J	5,600 J	2,200 J	14,000 T	12,000 T	26,000 T	22,000 T	2,200 J	20,000 UJ	940 UJ	NA	380 U	370 U	NA	61,000 J	450 J
Fluorene	ug/kg	30,000	500,000	340 U	340 U	2,500 T	19,000 T	7,800 J	5,200 J	1,600 J	29,000 T	81,000 T	820 J	20,000 UJ	940 U	NA	380 U	370 U	NA	44,000 J	320 J
Phenanthrene	ug/kg	100,000	500,000	340 U	340 U	6,000 T	62,000 T	23,000 T	7,500 J	14,000 T	94,000 T	180,000 T	2,100 J	16,000 J	440 J	NA	24 J	8 J	NA	130,000 J	1,000 J
Pyrene	ug/kg	100,000	500,000	340 U	340 U	1,000 T	10,000 T	7,400 J	20,000 T	5,700 T	28,000 T	30,000 T	3,900 U	12,000 J	450 J	NA	12 J	8 J	NA	70,000 J	760 J
Benz(a)anthracene	ug/kg	1,000	5,600	340 U	340 U	640 J	14,000 T	7,700 J	23,000 T	16,000 T	74,000 T	43,000 T	1,600 J	5,400 J	230 J	NA	380 U	6 J	NA	37,000 J	290 J
Benzo(a)pyrene	ug/kg	1,000	1,000	340 U	340 U	920 U	15,000 T	18,000 T	24,000 T	13,000 T	92,000 T	31,000 T	3,900 U	6,300 J	340 J	NA	380 U	370 U	NA	22,000 J	160 J
Benzo(b)fluoranthene	ug/kg	1,000	5,600	340 U	340 U	420 J	8,800 T	10,000 T	14,000 T	7,900 T	61,000 T	16,000 T	3,900 U	3,000 J	200 J	NA	380 U	370 U	NA	20,000 J	160 J
Benzo(k)fluoranthene	ug/kg	800	56,000	340 U	340 U	500 J	11,000 T	8,000 J	22,000 T	11,000 T	70,000 T	20,000 T	3,900 U	2,200 J	250 J	NA	380 U	370 U	NA	20,000 J	150 J
Chrysene	ug/kg	1,000	56,000	340 U	340 U	1,200 T	23,000 T	16,000 T	28,000 T	17,000 T	90,000 T	46,000 T	1,800 J	12,000 J	370 J	NA	380 UJ	370 UJ	NA	38,000 J	310 J
Dibenz(a,h)anthracene	ug/kg	330	560	340 U	340 U	920 U	7,800 U	8,300 U	8,500 U	2,200 T	16,000 T	11,000 U	3,900 U	20,000 UJ	940 U	NA	380 U	370 U	NA	4,800 J	2,900 UJ
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	340 U	340 U	920 U	7,500 J	9,900 T	13,000 T	6,300 T	50,000 T	9,300 J	3,900 U	20,000 UJ	780 J	NA	380 U	370 U	NA	13,000 J	2,900 UJ
Total PAHs			500,000	0	0	21,740	251,300	152,200	287,400	130,520	793,000	823,300	12,710	64,700	4,189	--	43	31	--	825,800	8,830
Semivolatile Organic Compounds																					
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,000 U	940 U	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20,000 U	250 J	NA	1,800 U	1,800 U	NA	130,000 UJ	14,000 UJ
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,000 UJ	940 UJ	NA	380 U	370 U	NA	1,700 J	2,900 UJ
Di-n-butylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,000 UJ	940 UJ	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ
Di-n-octylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,000 UJ	940 U	NA	380 U	5 J	NA	27,000 UJ	2,900 UJ
Dibenzofuran	ug/kg	7,000	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,100 J	25 J	NA	380 U	370 U	NA	7,700 J	41 J
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,000 UJ	940 UJ	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ
Phenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,000 U	940 U	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,000 UJ	440 J	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectives for residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				LEX-SS-02 (a)	LEX-SS-03	LEX-SS-04	LEX-SS-05	LEX-SS-06	LEX-SS-07	LEX-SS-08	LEX-SS-09	LEX-SS-10	LEX-SS-11	RW-01		RW-02	RW-03	RW-06	RW-13		
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	SS-11	CF-RW1	CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50
Depth (ft):				-	-	-	-	-	-	-	-	-	-	(4-6)	(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)
Constituent Date:				09/14/1993	09/14/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	09/15/1993	02/22/1999	02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 J	24 J	NA	1 UJ	1 UJ	NA	27	2 UJ
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.60	5.20 J	NA	1.90	3.40	NA	2.00 UJ	10.60 UJ
Barium	mg/kg	350	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	112.00	180 J	NA	47	52.70	NA	98.80	168.00 UJ
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20 U	1.10 J	NA	0.17 U	0.38 U	NA	0.50 B	0.61 UJ
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.6	38.60 J	NA	37.4	79.20	NA	12.30	32.60 UJ
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	84	8.10 J	NA	4.2	22.80	NA	13.20	11.50 UJ
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.14	0.10 UJ	NA	0.03 U	0.03 U	NA	0.05 B	0.20 UJ
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.84 J	2.60 UJ	NA	0.69 UJ	1.40 J	NA	1.20 UJ	5.00 UJ
Silver	mg/kg	2	1,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.39 U	1.30 UJ	NA	0.34 U	0.33 U	NA	0.25 UJ	0.61 UJ
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	516	NA	NA	NA	NA	NA

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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				RW-13	RW-13 (dup)	RW-15	RW-16	RW-16 (dup)	RW-16		RW-16		SB-09			SB-10	SB-11		SB-12	SB-13	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB-56	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB9	CF-SB10	CF-SB11	CF-SB11	CF-SB12	CF-SB13	CF-SB13
Depth (ft):				(39-41)		(123-125)	(12.5-14)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(8-10)	(24-26)	(33-34)	(5-6.5)	(4-6)	(21-23)	(4-6)	(7-9)	(18-20)
Constituent Date:				08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/22/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																					
Benzene	ug/kg	60	44,000	6 U	6 U	6 U	7,300	6,300	660 J	84,000	5 U	6 U	43,000	4,500	6 U	12,000 U	42,000	6,600	22,000	5,900 J	16,000 J
Toluene	ug/kg	700	500,000	6 U	6 U	6 U	1,400 U	87 J	45	130,000	5 U	6 U	130,000	1,300 J	6 U	12,000 U	12,000 U	11,000	41,000	6,000 U	19,000 J
Ethylbenzene	ug/kg	1,000	390,000	6 U	6 U	6 U	2,500	2,300	370 J	380,000	5 UJ	6 U	510,000	33,000	6 U	13,000	140,000	10,000	71,000	12,000	92,000
Xylene (total)	ug/kg	260	500,000	6 U	6 U	6 U	1,400 U	460 J	320	540,000	5 UJ	6 U	830,000	26,000	6 U	1,100 J	48,000	14,000	70,000	3,000 J	81,000
Volatile Organic Compounds																					
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 UJ	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400 J	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is n
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				RW-13	RW-13 (dup)	RW-15	RW-16	RW-16 (dup)	RW-16		RW-16		SB-09			SB-10	SB-11		SB-12	SB-13	
Sample ID:				CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB-56	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB9	CF-SB10	CF-SB11	CF-SB11	CF-SB12	CF-SB13	CF-SB13
Depth (ft):				(39-41)		(123-125)	(12.5-14)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(8-10)	(24-26)	(33-34)	(5-6.5)	(4-6)	(21-23)	(4-6)	(7-9)	(18-20)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)																		
Date:				08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/22/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	500,000	370 U	360 U	380 U	280,000	120,000	1,900	3,700,000	14 J	350 U	560,000	630,000	370 U	300,000	310,000	190,000	4,600,000	16,000 J	110,000 J
2-Methylnaphthalene	ug/kg	NL	NL	370 U	360 U	380 U	25,000 J	12,000 J	1,400	2,000,000	370 U	350 U	180,000	350,000	370 U	300,000	320,000	160,000 J	3,000,000 J	4,600 U	56,000 J
Acenaphthene	ug/kg	20,000	500,000	370 U	360 U	380 U	190,000	92,000	320 J	650,000 J	370 U	350 U	55,000 J	90,000 J	370 U	140,000	48,000 J	38,000 U	900,000 U	36,000	28,000 J
Acenaphthylene	ug/kg	100,000	500,000	370 U	360 U	380 U	34,000 J	8,300 J	240 J	100,000 J	370 U	350 U	15,000 J	99,000	370 U	20,000 J	23,000 J	11,000 J	900,000 U	6,200 J	3,500 J
Anthracene	ug/kg	100,000	500,000	370 U	4 J	380 U	89,000	41,000 J	140 J	280,000 J	370 U	350 U	96,000 U	16,000 J	370 U	53,000 J	84,000 U	38,000 U	900,000 U	23,000 J	19,000 U
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	370 U	360 U	380 UJ	9,400 J	3,900 J	400 UJ	37,000 J	370 U	350 UJ	94,000 J	76,000 J	370 U	6,900	93,000	4,000 J	900,000 U	21,000 J	17,000 J
Fluoranthene	ug/kg	100,000	500,000	7 J	8 J	380 U	100,000	44,000	160 J	350,000 J	370 U	350 U	96,000 U	15,000 J	370 U	29,000 J	84,000 U	38,000 U	900,000 U	15,000 J	19,000 U
Fluorene	ug/kg	30,000	500,000	370 U	360 U	380 U	150,000	84,000	350 J	450,000 J	370 U	350 U	96,000 U	30,000 J	370 U	110,000	42,000 J	38,000 U	900,000 U	35,000	6,300 J
Phenanthrene	ug/kg	100,000	500,000	12 J	13 J	380 U	370,000	180,000	610	1,200,000	370 U	350 U	140,000	310,000	370 U	270,000 J	240,000	92,000 J	900,000 U	92,000 J	62,000 J
Pyrene	ug/kg	100,000	500,000	13 J	8 J	380 U	140,000	67,000	230 J	470,000 J	370 U	350 U	57,000 J	90,000 J	13 J	78,000	88,000	38,000	110,000 J	31,000	18,000 J
Benz(a)anthracene	ug/kg	1,000	5,600	370 U	5 J	380 U	52,000 J	24,000 J	86 J	170,000 J	370 U	350 U	27,000 J	43,000 J	6 J	25,000 J	36,000 J	14,000 J	42,000 J	12,000 J	7,900 J
Benzo(a)pyrene	ug/kg	1,000	1,000	370 U	360 U	380 U	33,000 J	15,000 J	64 J	120,000 J	370 U	350 U	33,000 J	33,000 J	370 U	21,000	32,000 J	10,000 J	32,000 J	8,500 J	6,600 J
Benzo(b)fluoranthene	ug/kg	1,000	5,600	370 U	360 U	380 U	14,000 J	6,300 J	27 J	50,000 J	370 U	350 U	17,000 J	13,000 J	370 U	8,100	17,000 J	4,700 J	900,000 U	3,600 J	2,700 J
Benzo(k)fluoranthene	ug/kg	800	56,000	370 U	360 U	380 U	21,000 J	11,000 J	50 J	88,000 J	370 UJ	350 U	24,000 J	24,000 J	370 U	14,000	27,000 J	38,000 U	900,000 U	8,900 J	3,800 J
Chrysene	ug/kg	1,000	56,000	370 U	4 J	380 U	52,000 J	23,000 J	90 J	160,000 J	370 UJ	350 U	32,000 J	45,000 J	370 U	36,000 J	52,000 J	14,000 J	42,000 J	18,000 J	8,200 J
Dibenz(a,h)anthracene	ug/kg	330	560	370 U	360 U	380 U	6,500 J	1,400 J	400 U	740,000 U	370 U	350 U	96,000 U	88,000 U	370 U	4,200 J	58,000 U	38,000 U	900,000 U	3,500 J	19,000 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	370 U	360 U	380 U	9,800 J	3,700 J	12 J	33,000 J	370 U	350 U	81,000 J	67,000 J	370 U	6,200	78,000 J	3,100 J	900,000 U	19,000 J	15,000 J
Total PAHs			500,000	32	42	0	1,575,700	736,600	5,679	9,858,000	14	0	1,315,000	1,931,000	19	1,421,400	1,464,000	540,800	7,826,000	348,700	345,000
Semivolatile Organic Compounds																					
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	370 U	360 U	380 U	77,000 U	43,000 U	400 U	740,000 U	370 U	350 U	96,000 U	88,000 U	370 U	4,600 U	84,000 U	38,000 U	900,000 U	4,600 U	19,000 U
Benzoic acid	ug/kg	NL	NL	1,800 U	1,800 U	1,900 U	370,000 U	210,000 U	2,000 U	3,600,000 U	1,800 U	1,700 U	460,000 U	430,000 U	1,800 U	22,000 UJ	400,000 U	190,000 U	4,400,000 U	22,000 U	91,000 U
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	370 U	360 U	380 U	6,200 J	43,000 J	77 J	16,000 J	370 U	350 U	96,000 U	88,000 U	370 U	4,600 UJ	84,000 U	38,000 U	900,000 U	4,600 UJ	19,000 U
Di-n-butylphthalate	ug/kg	NL	NL	370 U	360 U	380 U	77,000 U	43,000 U	400 U	740,000 U	370 U	350 U	96,000 U	88,000 U	370 U	4,600 UJ	84,000 U	38,000 U	900,000 U	4,600 UJ	19,000 U
Di-n-octylphthalate	ug/kg	NL	NL	370 U	360 U	380 U	77,000 U	43,000 U	400 U	740,000 U	370 U	350 U	96,000 U	88,000 U	370 U	4,600 U	84,000 U	38,000 U	900,000 U	4,600 U	19,000 U
Dibenzofuran	ug/kg	7,000	350,000	370 U	360 U	380 U	15,000 J	43,000 J	47 J	65,000 J	370 U	350 U	3,000 J	4,500 J	370 U	12,000 J	13,000 J	38,000 U	900,000 U	4,600 J	1,200 J
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	370 U	360 U	380 U	77,000 U	43,000 U	400 U	740,000 U	370 U	350 U	96,000 U	88,000 U	370 U	4,600 UJ	84,000 U	38,000 U	900,000 U	4,600 UJ	19,000 U
Phenol	ug/kg	330	500,000	370 U	360 U	380 U	77,000 U	43,000 U	82 J	740,000 U	370 U	350 U	96,000 U	88,000 U	370 U	4,600 U	84,000 U	38,000 U	900,000 U	4,600 U	19,000 U
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	370 U	360 U	380 U	77,000 U	43,000 U	400 U	740,000 U	370 U	350 U	96,000 UJ	88,000 UJ	370 U	4,600 UJ	84,000 UJ	38,000 U	900,000 U	4,600 UJ	19,000 UJ
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
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NA - not analyzed
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UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	RW-13	RW-13 (dup)	RW-15	RW-16	RW-16 (dup)	RW-16		RW-16		SB-09			SB-10	SB-11		SB-12	SB-13	
Sample ID:				CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB-56	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB9	CF-SB10	CF-SB11	CF-SB11	CF-SB12	CF-SB13	CF-SB13
Depth (ft):				(39-41)		(123-125)	(12.5-14)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(8-10)	(24-26)	(33-34)	(5-6.5)	(4-6)	(21-23)	(4-6)	(7-9)	(18-20)
Constituent Date:				08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/22/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9 J	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15 J	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99 U	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	51 U	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 J	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6 J	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2	1 J	1 UJ	1 U	12 J	40 J	1 U	48	1 J	1 UJ
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,990	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.40 U	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	3.2 J	1.20 UJ	1.50 UJ	4.70 J	6.30 J	5.40 J	3.60 J	2.10 J	1.20 UJ	2.50	8.60	1.20 J	6.40	5.20	3.00 J	5.30 J	6.20	2.10
Barium	mg/kg	350	400	82.4	26.80 B	15.20 B	40.20	44.20 B	45.60	74.90	41.60	43.90	23.40 B	39	66.70	206	43 B	61.80	57.20	146.00	46.40
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.18 B	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	0.16 UJ	0.23 B	0.19 U	1.30	0.22 U	0.17 U	0.12 U	0.15 U	<1.0 B	0.24 U	0.21 U	0.28 J	0.25 U	0.22 U	0.63 J	0.36 J	0.49 U	0.36 U
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,110	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	15.60 J	5.10 J	8.30 J	27.30 J	44.80 J	61 J	39.50 J	27.50 J	21.90 J	5.10	28.90	26.60	75.10	25.00	50.00	35.00	15.70	172.00 J
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.90	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.00	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21,500	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	10.10 J	3.60 J	11.10 J	10.00 J	12.90 J	10.90 J	10.30 J	5.30 J	6.80 J	34.30	4.80	6.40 J	137.00	33.70	7.10 J	174.00	33.50	8.40
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29,400	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	222	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.03 U	0.03 U	0.02 U	0.02 U	0.01 U	0.01 U	0.02 U	0.02 U	0.01 U	0.05 B	0.02 U	0.02 U	0.36	0.28	0.02 U	1.60	0.03 U	0.03 U
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	383	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	671.00 J	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	1.40 U	0.76 UJ	2.30 UJ	1.50 UJ	1.10 UJ	0.85 UJ	1.30 UJ	0.76 UJ	5 UJ	1.50 J	1.60 J	0.64 B	3.20 J	2.40 J	0.90	3.10	2.00 J	1.10 J
Silver	mg/kg	2	1,500	0.16 UJ	0.15 UJ	0.19 UJ	0.16 UJ	0.22 UJ	0.17 UJ	0.12 UJ	0.15 UJ	0.15 UJ	0.48 U	0.28 U	0.28 U	0.50 U	0.44 U	0.35 U	0.45 U	0.50 U	0.40 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	142.00 U	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.00 UJ	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.50 J	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31.00	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	56,200	4,380

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
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UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-13 (dup)	SB-14	SB-14 (dup)		SB-14	SB-15	SB-16	SB-19		SB-19 (dup)	SB-37		SB-39		SB-51	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-DUP-1	CF-SB14	CF-DUP-2	CF-SB14	CF-SB14	CF-SB15	CF-SB16	CF-SB19	CF-SB19	CF-SB19	CF-SB-37	CF-SB-37	CF-SB-39	CF-SB-39	CF-SB-51	CF-SB-51
Depth (ft):					(6-8)		(6-8)	(24-28)	(5-8)	(5-7)	(5-7)	(34-36)	(34-36)	(4-8)	(14.5-15)	(0-4)	(5.5)	(5-7)	(39-41)
Constituent Date:				02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/21/1999	02/22/1999	02/24/1999	02/25/1999	02/25/1999	08/05/1999	08/05/1999	08/05/1999	08/05/1999	08/04/1999	08/04/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																			
Benzene	ug/kg	60	44,000	11,000	180,000 J	58,000 J	NA	150	3 J	6 U	3 J	1 J	NA	2,900 J	490,000	15,000 J	34,000	150 J	11 J
Toluene	ug/kg	700	500,000	24,000	62,000 U	33,000 U	NA	5 U	2 J	6 U	6 U	5 U	NA	190 J	780,000	40,000	66,000	120 J	6 J
Ethylbenzene	ug/kg	1,000	390,000	79,000	820,000 J	420,000 J	NA	200	1 J	2 J	6 U	5 U	NA	13,000	680,000	32,000	20,000 J	210 J	2 J
Xylene (total)	ug/kg	260	500,000	61,000	260,000 J	130,000 J	NA	100	2 J	2 J	6 U	2 J	NA	3,800 J	840,000	62,000	89,000	470 J	1 J
Volatile Organic Compounds																			
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-13 (dup)	SB-14	SB-14 (dup)		SB-14	SB-15	SB-16	SB-19		SB-19 (dup)	SB-37		SB-39		SB-51	
Sample ID:				CF-DUP-1	CF-SB14	CF-DUP-2	CF-SB14	CF-SB14	CF-SB15	CF-SB16	CF-SB19	CF-SB19	CF-SB19	CF-SB-37	CF-SB-37	CF-SB-39	CF-SB-39	CF-SB-51	CF-SB-51
Depth (ft):					(6-8)		(6-8)	(24-28)	(5-8)	(5-7)	(5-7)	(34-36)	(34-36)	(4-8)	(14.5-15)	(0-4)	(5.5)	(5-7)	(39-41)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)																
Date:				02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/21/1999	02/22/1999	02/24/1999	02/25/1999	02/25/1999	08/05/1999	08/05/1999	08/05/1999	08/05/1999	08/04/1999	08/04/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
PAHs (ug/kg)																			
Naphthalene	ug/kg	12,000	500,000	30,000 J	1,400,000	1,500,000	NA	1,100	130 J	100 J	51 J	230 J	NA	10,000 B	3,800,000 B	1,900,000 B	14,000,000 B	9,000 B	170 JB
2-Methylnaphthalene	ug/kg	NL	NL	18,000 J	1,200,000	1,900,000 J	NA	510	440 U	380 U	400 U	380 U	NA	12,000	2,700,000	1,700,000 J	11,000,000 B	7,700 J	99 J
Acenaphthene	ug/kg	20,000	500,000	8,000 J	230,000 J	400,000 U	NA	200 J	170 J	30 J	400 U	380 U	NA	3,400 J	140,000 J	88,000 J	600,000 J	13,000	370 U
Acenaphthylene	ug/kg	100,000	500,000	7,300 U	49,000 J	400,000 U	NA	21 J	26 J	37 J	400 U	380 U	NA	1,400 J	500,000 J	420,000	3,000,000	5,500 J	6 J
Anthracene	ug/kg	100,000	500,000	7,300 U	330,000 U	400,000 U	NA	370 U	440 U	380 U	400 U	380 U	NA	3,700 J	400,000 J	230,000 J	1,700,000 J	14,000	3 J
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	1,100 J	300,000 J	79,000 J	NA	290 J	630	290 J	400 U	380 U	NA	3,000 J	110,000 J	110,000 J	640,000 J	11,000	370 U
Fluoranthene	ug/kg	100,000	500,000	7,300 U	330,000 U	400,000 U	NA	370 U	710 J	380 U	400 U	380 U	NA	8,100	440,000 J	270,000 J	1,800,000 J	22,000	9 J
Fluorene	ug/kg	30,000	500,000	7,300 U	62,000 J	86,000 J	NA	370 U	440 U	380 U	400 U	380 U	NA	3,800 J	640,000 J	370,000 J	2,900,000	13,000	370 U
Phenanthrene	ug/kg	100,000	500,000	24,000 J	940,000	1,400,000 J	NA	380	600	230 J	45 J	380 U	NA	18,000	1,400,000	810,000 J	6,600,000	41,000	19 J
Pyrene	ug/kg	100,000	500,000	8,600	290,000 J	580,000	NA	94 J	880 J	82 J	15 J	9 J	NA	13,000	650,000	540,000 J	4,200,000	30,000	11 J
Benz(a)anthracene	ug/kg	1,000	5,600	3,000 J	110,000 J	180,000 J	NA	40 J	420 J	41 J	400 U	380 U	NA	5,400 J	240,000 J	180,000 J	1,400,000 J	11,000	370 U
Benzo(a)pyrene	ug/kg	1,000	1,000	2,500 J	91,000 J	140,000 J	NA	36 J	490	32 J	400 U	380 U	NA	4,100 J	210,000 J	170,000 J	1,100,000 J	13,000	370 U
Benzo(b)fluoranthene	ug/kg	1,000	5,600	1,100 J	40,000 J	56,000 J	NA	13 J	290 J	15 J	400 U	380 U	NA	2,600 J	91,000 J	78,000 J	400,000 J	8,500	370 U
Benzo(k)fluoranthene	ug/kg	800	56,000	7,300 U	63,000 J	400,000 U	NA	22 J	420 J	25 J	400 U	380 U	NA	2,600 J	140,000 J	98,000 J	810,000 J	8,500	370 U
Chrysene	ug/kg	1,000	56,000	3,200 J	140,000 J	200,000 J	NA	49 J	500 J	40 J	400 UJ	380 U	NA	6,400 J	230,000 J	200,000 J	1,400,000 J	14,000	370 U
Dibenz(a,h)anthracene	ug/kg	330	560	7,300 U	330,000 U	400,000 U	NA	370 U	400 J	380 U	400 U	380 U	NA	1,000 J	34,000 J	39,000 J	240,000 J	4,300 J	370 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	940 J	260,000 J	60,000	NA	260 J	620	270 J	400 U	380 U	NA	2,000 J	79,000 J	74,000 J	420,000 J	9,000	370 U
Total PAHs			500,000	100,440	5,175,000	6,181,000	--	3,015	6,286	1,192	111	239	--	100,500	11,804,000	7,277,000	52,210,000	234,500	317
Semivolatile Organic Compounds																			
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	7,300 U	330,000 U	400,000 U	NA	370 U	440 U	380 U	400 U	380 U	NA	7,300 U	650,000 U	360,000 U	2,500,000 U	8,000 U	370 U
Benzoic acid	ug/kg	NL	NL	36,000 U	1,600,000 U	2,000,000 U	NA	1,800 U	53 J	1,800 U	2,000 U	1,900 U	NA	36,000 U	3,200,000 U	1,700,000 U	12,000,000 U	39,000 U	1,800 U
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	7,300 U	330,000 U	400,000 U	NA	370 U	440 U	380 U	400 U	380 U	NA	160 J	25,000 J	13,000 J	86,000 J	2,900 J	370 U
Di-n-butylphthalate	ug/kg	NL	NL	7,300 U	330,000 U	400,000 U	NA	370 U	440 U	380 U	400 U	380 U	NA	7,300 U	650,000 U	360,000 U	2,500,000 U	8,000 U	370 U
Di-n-octylphthalate	ug/kg	NL	NL	7,300 U	330,000 U	400,000 U	NA	370 U	440 U	380 U	400 U	380 U	NA	7,300 U	650,000 U	360,000 U	2,500,000 U	8,000 U	0 U
Dibenzofuran	ug/kg	7,000	350,000	7,300 U	34,000 J	400,000 U	NA	67 J	31 J	380 U	400 U	380 U	NA	690 J	120,000 J	65,000 J	490,000 J	4,400 J	370 U
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	7,300 U	330,000 U	400,000 U	NA	370 U	440 U	380 U	400 U	380 U	NA	7,300 U	650,000 U	360,000 U	2,500,000 U	8,000 U	370 U
Phenol	ug/kg	330	500,000	7,300 U	330,000 U	400,000 U	NA	46 J	8 J	380 U	400 U	380 U	NA	7,300 U	650,000 U	360,000 U	2,500,000 U	8,000 U	370 U
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	7,300 U	330,000 UJ	400,000 U	NA	370 U	440 U	380 U	400 U	380 U	NA	7,300 U	650,000 U	360,000 U	2,500,000 U	8,000 U	0 U
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Yellow highlight indicates exceedance is above the Commercial Use Standards.
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Pink highlight indicates that the material was detected at the standard
NE - not established
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J - estimated value
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UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
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T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-13 (dup)	SB-14	SB-14 (dup)		SB-14	SB-15	SB-16	SB-19		SB-19 (dup)	SB-37		SB-39		SB-51	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-DUP-1	CF-SB14	CF-DUP-2	CF-SB14	CF-SB14	CF-SB15	CF-SB16	CF-SB19	CF-SB19	CF-SB19	CF-SB-37	CF-SB-37	CF-SB-39	CF-SB-39	CF-SB-51	CF-SB-51
Depth (ft):					(6-8)		(6-8)	(24-28)	(5-8)	(5-7)	(5-7)	(34-36)	(34-36)	(4-8)	(14.5-15)	(0-4)	(5.5)	(5-7)	(39-41)
Constituent Date:				02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/21/1999	02/22/1999	02/24/1999	02/25/1999	02/25/1999	08/05/1999	08/05/1999	08/05/1999	08/05/1999	08/04/1999	08/04/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																			
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																			
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	1 U	1 UJ	1	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 U	NA	2	19	1 U	1 U	34 J	1 UJ
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																			
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	1.00 UJ	6.70	1.40 J	NA	2.20	5.70	1.90 B	4.40	2.80 J	NA	3.40 J	9.80	4.50 J	3.90 J	7.10 J	61.30
Barium	mg/kg	350	400	39.10	24.20 B	16.80 U	NA	44.00	75.80	51.30	44.60 B	54.50	NA	51.40	149.00	40.60	34 B	105	282
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	0.60 J	0.21 U	0.19 U	NA	0.41 U	0.29 U	0.20 U	0.23 U	0.21 J	NA	0.22 B	1.50	0.66 B	0.50 B	0.65 J	63.70
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	52.40 J	23.80	28.80	NA	35.70	37.50	15.20	70.00	18.60	NA	19.20	16.20	17.30	4.90	31.80	44.10
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	5.30 U	76.40 J	20.70 J	NA	4.80	101.00	7.90	13.80	8.10	NA	38.30	606.00	92.40	55.90	103.00	92.20
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.03 U	0.14	0.07 B	0.10	0.03 U	0.21	0.02 U	0.03 U	0.02 U	NA	0.20	3.60	0.04 B	NA	0.79	0.04 U
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	0.85 B	4.00	2.30	NA	0.70 J	1.80 J	0.80 UJ	2.30 J	0.63 U	NA	0.81 UJ	1.00 UJ	1.20 UJ	1.10 UJ	0.88 UJ	59.60 J
Silver	mg/kg	2	1,500	0.34 U	0.41 U	0.39 U	NA	0.25 U	0.58 U	0.40 U	0.47 U	0.31 U	NA	0.16 UJ	0.20 UJ	0.20 J	0.21 UJ	0.18 UJ	58.10 J
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																			
TOC	mg/kg	NL	NL	NA	NA	NA	NA	3,000	NA	402	NA	2,230	2,460	NA	NA	NA	NA	NA	NA

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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-52			SB-53		SB-54			SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CFSB-52	CFSB-52	CFSB-52	CF-SB-53	CF-SB-53	CF-SB-54	CF-SB-54	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69
Depth (ft):				(5-7)	(11-13)	(39-41)	(7-9)	(13.5)	(4-6)	(9-11)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)
Constituent Date:				07/29/1999	07/29/1999	07/29/1999	08/03/1999	08/03/1999	08/03/1999	08/03/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																					
Benzene	ug/kg	60	44,000	260 J	7 U	6 U	15,000	230,000	54,000	230,000	80,000	41,000 J	1 J	5 U	1 J	140	4 J	12 J	6 U	52,000 U	6 U
Toluene	ug/kg	700	500,000	250 J	0 J	6 U	32,000	390,000	1,900 J	390,000	120,000	120,000 J	6 U	5 U	6 U	110	3 J	23 U	6 U	52,000 U	6 U
Ethylbenzene	ug/kg	1,000	390,000	2,900	5 J	6 U	6,400	51,000 J	520,000	340,000	100,000	23,000 J	6 U	5 U	6 U	780	2 J	5 J	6 U	95,000	3 J
Xylene (total)	ug/kg	260	500,000	4,600	7	6 U	38,000	440,000	300,000	570,000	160,000	170,000 J	6 U	5 U	6 U	570	4 J	18 J	6 U	97,000	2 J
Volatile Organic Compounds																					
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-52			SB-53		SB-54			SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17	
Sample ID:				CFSB-52	CFSB-52	CFSB-52	CF-SB-53	CF-SB-53	CF-SB-54	CF-SB-54	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69
Depth (ft):				(5-7)	(11-13)	(39-41)	(7-9)	(13.5)	(4-6)	(9-11)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)																		
Date:				07/29/1999	07/29/1999	07/29/1999	08/03/1999	08/03/1999	08/03/1999	08/03/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	500,000	6,200	890 U	370 U	3,300,000 B	12,000,000 B	1,800,000 B	1,000,000 B	3,000,000 B	700,000 B	400 U	360 U	370 U	18,000	240 J	870	370 U	290,000	330 J
2-Methylnaphthalene	ug/kg	NL	NL	560 J	890 U	370 U	3,200,000	10,000,000	1,000,000	630,000	2,300,000	360,000	400 U	360 U	6 J	1,000 J	68 J	310 J	370 U	240,000	200 J
Acenaphthene	ug/kg	20,000	500,000	650 J	890 U	370 U	120,000 J	480,000 J	97,000 J	190,000	480,000	23,000 J	400 U	360 U	370 U	1,900 J	370 U	370 U	370 U	97,000	51 J
Acenaphthylene	ug/kg	100,000	500,000	540 J	890 U	370 U	220,000 J	390,000 J	43,000 J	54,000 J	520,000	140,000	400 U	2 J	370 U	1,800 J	16 J	60 J	370 U	9,000 J	370 U
Anthracene	ug/kg	100,000	500,000	1,000 J	890 U	370 U	290,000 J	460,000 J	180,000 J	110,000 J	360,000 J	64,000 J	2 J	3 J	370 U	5,000 J	370 U	370 U	370 U	39,000 J	370 U
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	11,000	890 U	370 U	130,000 J	310,000 J	31,000 J	13,000 J	28,000 J	14,000 J	400 U	360 U	370 U	18,000 J	370 U	370 U	370 U	71,000 U	370 U
Fluoranthene	ug/kg	100,000	500,000	4,900	890 U	370 U	570,000 J	1,600,000 J	200,000 J	88,000 J	320,000 J	64,000 J	400 U	5 J	370 U	39,000	370 U	370 U	370 U	33,000 J	370 U
Fluorene	ug/kg	30,000	500,000	590 J	890 U	370 U	790,000 J	2,500,000 J	260,000 J	190,000	520,000	98,000 J	400 U	360 U	370 U	1,800 J	370 U	370 U	370 U	49,000 J	370 U
Phenanthrene	ug/kg	100,000	500,000	3,000	890 U	370 U	1,800,000	5,000,000	530,000	340,000	1,200,000	240,000	4 J	10 J	370 U	10,000	370 U	370 U	370 U	140,000	370 U
Pyrene	ug/kg	100,000	500,000	6,700	890 U	370 U	780,000 J	2,000,000 J	200,000 J	150,000 J	360,000 J	130,000	3 J	6 J	370 U	41,000	370 U	370 U	370 U	52,000 J	370 U
Benz(a)anthracene	ug/kg	1,000	5,600	4,100	890 U	370 U	300,000 J	790,000 J	98,000 J	48,000 J	150,000 J	36,000 J	400 U	4 J	370 U	20,000	370 U	370 U	370 U	18,000 J	370 U
Benzo(a)pyrene	ug/kg	1,000	1,000	8,400	890 U	370 U	270,000 J	710,000 J	62,000 J	37,000 J	100,000 J	27,000 J	400 U	360 U	370 U	26,000	370 U	370 U	370 U	71,000 U	370 U
Benzo(b)fluoranthene	ug/kg	1,000	5,600	6,200	890 U	370 U	130,000 J	320,000 J	43,000 J	14,000 J	50,000 J	11,000 J	400 U	360 U	370 U	17,000	370 U	370 U	370 U	71,000 U	370 U
Benzo(k)fluoranthene	ug/kg	800	56,000	7,700	890 U	370 U	160,000 J	540,000 J	51,000 J	35,000 J	77,000 J	19,000 J	400 U	360 U	370 U	29,000	370 U	370 U	370 U	71,000 U	370 U
Chrysene	ug/kg	1,000	56,000	4,400	890 U	370 U	320,000 J	940,000 J	100,000 J	53,000 J	170,000 J	36,000 J	400 U	3 J	370 U	21,000	370 U	370 U	370 U	18,000 J	370 U
Dibenz(a,h)anthracene	ug/kg	330	560	3,200	890 U	370 U	42,000 J	130,000 J	13,000 J	8,000 J	12,000 J	130,000 U	400 U	360 U	370 U	6,300 J	370 U	370 U	370 U	71,000 U	370 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	8,400	890 U	370 U	85,000 J	250,000 J	27,000 J	11,000 J	26,000 J	9,400 J	400 U	360 U	370 U	16,000 J	370 U	370 U	370 U	71,000 U	370 U
Total PAHs			500,000	77,540	0	0	12,507,000	38,420,000	4,735,000	2,971,000	9,673,000	1,971,400	9	33	6	272,800	324	1,240	0	985,000	581
Semivolatile Organic Compounds																					
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	42 J	890 U	370 U	820,000 U	100,000 J	330,000 U	160,000 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U
Benzoic acid	ug/kg	NL	NL	9,300 U	4,300 U	1,800 U	4,000,000 U	13,000,000 U	1,600,000 U	780,000 U	1,900,000 U	640,000 U	2,000 U	1,800 U	1,800 U	41,000 U	1,800 U	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	910 J	890 U	370 UJ	31,000 J	160,000 J	10,000 J	7,400 J	16,000 J	130,000 U	400 U	360 U	370 U	2,000 J	370 U	370 U	370 U	71,000 U	370 U
Di-n-butylphthalate	ug/kg	NL	NL	1,900 U	890 U	370 U	820,000 U	2,700,000 U	330,000 U	160,000 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U
Di-n-octylphthalate	ug/kg	NL	NL	1,900 U	890 U	370 U	820,000 U	2,700,000 U	330,000 U	160,000 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U
Dibenzofuran	ug/kg	7,000	350,000	310 J	890 U	370 U	140,000 J	360,000 J	30,000 J	20,000 J	58,000 J	12,000 J	400 U	360 UJ	370 U	650 J	370 U	370 U	370 U	6,000 J	370 U
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	1,900 U	890 U	370 U	820,000 U	2,700,000 U	330,000 U	160,000 U	400,000 U	130,000 U	400 U	360 U	370 U	470 J	370 U	370 U	370 U	71,000 U	370 U
Phenol	ug/kg	330	500,000	94 JB	890 U	370 U	820,000 U	80,000 J	330,000 U	160,000 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	1,900 U	890 U	370 U	820,000 U	2,700,000 U	330,000 U	160,000 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
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NE - not established
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J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
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-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-52			SB-53		SB-54			SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CFSB-52	CFSB-52	CFSB-52	CF-SB-53	CF-SB-53	CF-SB-54	CF-SB-54	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69
Depth (ft):				(5-7)	(11-13)	(39-41)	(7-9)	(13.5)	(4-6)	(9-11)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)
Constituent Date:				07/29/1999	07/29/1999	07/29/1999	08/03/1999	08/03/1999	08/03/1999	08/03/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	1 J	1 UJ	1 UJ	4	60	139	6	1 U	1 U	1 U	1 U	1 U	31	1 U	0 UJ	0 U	0 U	0 UJ
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	3.50 J	7.30 J	3.80 J	4.30 J	15.20	10.40	3.00 J	2.20 J	2.00 J	1.30 UJ	1.30 UJ	1.40 UJ	5.70 J	4.00 J	1.10 J	2.50	2.30	2.00
Barium	mg/kg	350	400	112	96.90	88.10	26.30 B	161.00	48.30	86.30	25.40 B	61.20	51.20	69.20	49.80	67.00	66.60	36.60	72.50	33.80	75.50
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	5.50 J	3.10 J	3.50 J	0.37 B	0.83 J	0.58 J	0.59 J	0.22 B	0.46 J	0.29 B	0.16 B	0.17 U	3.50 J	2.50 UJ	0.30 U	0.33 J	0.30 J	0.30 J
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	89.00 J	57.70 J	35.50 J	4.90	4.20	41.40	64.70	31.00	192.00	8.80	12	8.60	41.70 J	21.00 J	20.50	15.30	39.70	16.20
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	62.50	15.40	14.10	71.50	86.10	100.00	23.00	3.50	6.20	5.20	7.00	5.40	79.30	9.10	3.80 J	7.40 J	3.80 J	7.30 J
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.04	0.01 B	0.00 U	0.03 U	0.84	1.60	0.17	0.04 U	0.03 U	0.03 U	0.03 U	0.05 U	0.38	0.01 U	0.00 J	0.00 J	0.00 J	0.00 J
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	3.20 UJ	1.60 UJ	0.84 UJ	1.00 UJ	1.10 UJ	4.90 UJ	7.00 J	1.40 UJ	0.86 UJ	1.10 UJ	0.97 UJ	0.86 UJ	1.60 U	0.92 UJ	1.70 U	1.20 U	1.50 U	1.30 U
Silver	mg/kg	2	1,500	0.33 U	0.20 U	0.17 U	0.20 UJ	0.21 UJ	0.18 UJ	0.20 UJ	0.19 UJ	0.17 UJ	0.17 UJ	0.16 UJ	0.17 UJ	0.19 U	0.18 U	0.27 U	0.20 U	0.24 U	0.21 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				RW-18		SB-71		SB-72		SB-73		SB-74		SB-75		SB-76		TP-01	TP-03	TP-04	TP-08
Sample ID:				SB-70A	SB-70A	SB-71	SB-71	SB-72	SB-72	SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	CF-TP1	CF-TP3	CF-TP4	CF-TP8
Depth (ft):				(31.5-32)	(54.5-55)	(30-30.5)	(44-45)	(24.5-25)	(48-49)	(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(3)	(1)	(3)	(2)
Constituent	Date:			12/07/2001	12/07/2001	12/11/2001	12/11/2001	12/12/2001	12/12/2001	12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	02/22/1999	02/23/1999	02/23/1999	02/24/1999
	Location:			25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																					
Benzene	ug/kg	60	44,000	140,000	6 U	2 J	6 U	2 J	2 J	2 J	3 J	3,800 J	13	8,800 J	4 J	870,000	6 U	14 J	47	12,000	1,000,000
Toluene	ug/kg	700	500,000	120,000	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6,400	13	33,000	6 U	2,100,000	6 U	32 U	30	1,200 J	1,800,000
Ethylbenzene	ug/kg	1,000	390,000	390,000	2 J	6 U	1 J	1 J	1 J	6 U	6 U	30,000	35	26,000	1 J	1,300,000	1 J	17 J	130	49,000	1,500,000
Xylene (total)	ug/kg	260	500,000	490,000	2 J	1 J	2 J	2 J	2 J	6 U	6 U	36,000	27	56,000	3 J	1,700,000	6 U	49	96	16,000	1,800,000
Volatile Organic Compounds																					
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47 J	25 U	NA	130,000 UJ
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	65 U	25 U	NA	130,000 UJ
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	160 U	30 U	NA	130,000 U
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	32 U	12 U	NA	130,000 U
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	32 U	12 U	NA	130,000 U
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	32 U	21	NA	130,000 U
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is n
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				RW-18		SB-71		SB-72		SB-73		SB-74		SB-75		SB-76		TP-01	TP-03	TP-04	TP-08
Sample ID:				SB-70A	SB-70A	SB-71	SB-71	SB-72	SB-72	SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	CF-TP1	CF-TP3	CF-TP4	CF-TP8
Depth (ft):				(31.5-32)	(54.5-55)	(30-30.5)	(44-45)	(24.5-25)	(48-49)	(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(3)	(1)	(3)	(2)
Constituent	Date:			12/07/2001	12/07/2001	12/11/2001	12/11/2001	12/12/2001	12/12/2001	12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	02/22/1999	02/23/1999	02/23/1999	02/24/1999
	Location:			25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	500,000	7,100,000	530	380 U	360 U	370 U	1,600	360 U	390 U	180,000	530	950,000	360 J	13,000,000	3,900	2,500 J	19,000	26,000	27,000,000
2-Methylnaphthalene	ug/kg	NL	NL	5,300,000	360 U	380 U	360 U	370 U	1,200	360 U	390 U	190,000	360 U	690,000	320 J	3,400,000	2,700	16,000	43,000	8,600 U	26,000,000
Acenaphthene	ug/kg	20,000	500,000	1,700,000	360 U	380 U	360 U	370 U	20 J	360 U	390 U	27,000 J	360 U	31,000 J	390 U	330,000 J	360 J	6,100 J	4,300 J	3,800 J	1,500,000
Acenaphthylene	ug/kg	100,000	500,000	250,000 J	360 U	380 U	360 U	370 U	120 J	360 U	390 U	8,100 J	360 U	240,000	80 J	1,300,000 J	920	2,900 J	5,400 J	3,100 J	3,300,000
Anthracene	ug/kg	100,000	500,000	690,000 J	360 U	380 U	360 U	370 U	390 U	360 U	390 U	21,000 J	360 U	92,000 J	50 J	780,000 J	670 J	1,400 J	1,700 J	34,000 J	130,000 U
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	1,100,000 U	360 U	380 UJ	360 UJ	370 UJ	390 UJ	360 UJ	390 UJ	41,000 U	360 UJ	150,000 U	390 UJ	1,800,000 U	140 J	4,700	13,000	22,000	3,600,000
Fluoranthene	ug/kg	100,000	500,000	670,000 J	360 U	380 U	360 U	370 U	390 U	360 U	390 U	27,000 J	360 U	95,000 J	390 U	1,600,000 J	1,100	3,400 J	11,000 J	42,000 J	130,000 J
Fluorene	ug/kg	30,000	500,000	1,000,000 J	360 U	380 U	360 U	370 U	390 U	360 U	390 U	41,000 J	360 U	150,000	57 J	1,200,000 J	1,100	4,400 J	15,000	22,000	3,200,000
Phenanthrene	ug/kg	100,000	500,000	2,400,000	360 U	380 U	360 U	370 U	390 U	360 U	390 U	100,000	360 U	350,000	230 J	4,100,000	3,000	23,000 J	58,000	78,000 J	14,000,000
Pyrene	ug/kg	100,000	500,000	920,000 J	360 U	380 U	360 U	370 U	390 U	360 U	390 U	47,000	360 U	120,000 J	390 U	2,000,000	1,400	7,700 J	28,000	110,000 J	4,700,000 J
Benz(a)anthracene	ug/kg	1,000	5,600	360,000 J	360 U	380 U	360 U	370 U	390 U	360 U	390 U	17,000 J	360 U	45,000 J	390 U	690,000 J	550 J	3,600 J	10,000	29,000 J	1,700,000 J
Benzo(a)pyrene	ug/kg	1,000	1,000	210,000 J	360 U	380 U	360 U	370 U	390 U	360 U	390 U	13,000 J	360 UJ	27,000 J	390 U	550,000 J	420 J	4,600	8,200 J	25,000	1,500,000
Benzo(b)fluoranthene	ug/kg	1,000	5,600	1,100,000 U	360 U	380 U	360 U	370 U	390 U	360 U	390 U	6,100 J	360 U	150,000 U	390 U	250,000 J	190 J	2,500 J	3,400 J	13,000	590,000
Benzo(k)fluoranthene	ug/kg	800	56,000	150,000 J	360 U	380 U	360 U	370 U	390 U	360 U	390 U	7,000 J	360 U	150,000 U	390 U	400,000 J	300 J	2,800 J	5,400 J	17,000 J	870,000
Chrysene	ug/kg	1,000	56,000	390,000 J	360 U	380 U	360 U	370 U	390 U	360 U	390 U	18,000 J	360 U	48,000 J	390 U	650,000 J	570 J	6,900 J	14,000	33,000 J	2,200,000
Dibenz(a,h)anthracene	ug/kg	330	560	1,100,000 U	360 U	380 U	360 U	370 U	390 U	360 U	390 U	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	3,200 J	8,000 J	6,000 J	2,600,000 J
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	1,100,000 U	360 U	380 UJ	360 UJ	370 UJ	390 UJ	360 UJ	390 UJ	3,100 J	360 U	150,000 U	390 UJ	1,800,000 U	120 J	4,200	11,000	19,000	3,200,000 J
Total PAHs			500,000	21,140,000	530	0	0	0	2,940	0	0	705,300	530	2,838,000	1,097	30,250,000	17,440	99,900	258,400	482,900	9,609,000
Semivolatile Organic Compounds																					
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	1,100,000 U	360 U	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	4,200 U	9,900 U	8,600 U	130,000 U
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20,000 U	48,000 U	42,000 U	640,000 U
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	1,100,000 U	360 U	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	4,200 UJ	9,900 U	8,600 U	130,000 U
Di-n-butylphthalate	ug/kg	NL	NL	1,100,000 U	360 U	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	4,200 UJ	9,900 U	8,600 U	130,000 U
Di-n-octylphthalate	ug/kg	NL	NL	1,100,000 U	360 U	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	4,200 U	9,900 U	8,600 U	130,000 U
Dibenzofuran	ug/kg	7,000	350,000	120,000 J	360 U	380 U	360 U	NA	NA	NA	NA	6,500 J	360 U	18,000 J	390 U	160,000 J	130 J	1,400 J	2,800 J	8,600 U	890,000
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	1,100,000 U	360 U	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	4,200 UJ	9,900 U	8,600 U	130,000 U
Phenol	ug/kg	330	500,000	1,100,000 U	360 U	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	160 J	1,800,000 U	95 J	4,200 U	9,900 U	8,600 U	130,000 U
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	1,100,000 U	360 U	380 U	260 J	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	4,200 UJ	9,900 UJ	8,600 UJ	130,000 UJ
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				RW-18		SB-71		SB-72		SB-73		SB-74		SB-75		SB-76		TP-01	TP-03	TP-04	TP-08
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	SB-70A	SB-70A	SB-71	SB-71	SB-72	SB-72	SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	CF-TP1	CF-TP3	CF-TP4	CF-TP8
Depth (ft):				(31.5-32)	(54.5-55)	(30-30.5)	(44-45)	(24.5-25)	(48-49)	(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(3)	(1)	(3)	(2)
Constituent Date:				12/07/2001	12/07/2001	12/11/2001	12/11/2001	12/12/2001	12/12/2001	12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	02/22/1999	02/23/1999	02/23/1999	02/24/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	680 J
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,000 U
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,000 U
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,100 J
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	640 J
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,000 U
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	160 J
Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	0 U	0 UJ	0 UJ	0 UJ	0 U	0 U	0 U	0 U	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	1 UJ	2 J	NA	1 U
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	297.00
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.50 UJ
Arsenic	mg/kg	13	16	4.10	2.60	3.10	4.40	6.80	2.00	3.00	3.20	2.60	3.00	2.10	1.60 J	6.10	2.40	8.10	4.60	NA	11.90
Barium	mg/kg	350	400	83.60	69.90	66.00	65.00	52.70	56.20	61.30	33.00	36.00	82.70	57.70	62.70	36.70	89.40	109.00	38.10	NA	21.80 U
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.25 U
Cadmium	mg/kg	2.5	9.3	0.58 J	0.28 J	0.34 J	0.30 J	0.35 J	0.25 UJ	0.34 J	0.29 UJ	0.39 J	0.29 J	0.22 U	0.30 U	0.42	0.35 J	0.78 U	0.34 U	NA	1.40
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	816.00 B
Chromium	mg/kg	1	400	72.00	17.80	41.60	20.30	75.80	11.10	82.20	9.90	46.10	15.70	12.20	10.40	46.70	40.60	35.80	16.10	NA	2.10 U
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.72 B
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28.30
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,560.00
Lead	mg/kg	63	1,000	9.50 J	6.90 J	8.40 J	8.30 J	6.80 J	6.40 J	6.60 J	5.40 J	5.20 J	8.20 J	6.70 J	5.50 J	3.70 J	6.70 J	227.00	46.80	NA	429.00
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	176.00 B
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18.60 J
Mercury	mg/kg	0.18	2.80	0.00 U	0.00 J	0.01 U	0.01 U	0.06 U	0.07 U	0.06 U	0.07 U	0.01 U	0.01 U	0.01 U	0.01 U	0.00 J	0.00 J	0.49	0.81	NA	0.12
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.70
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	57.80 J
Selenium	mg/kg	3.9	1,500	1.70 U	1.30 U	1.30 U	1.50 U	1.60 U	1.40 U	1.50 U	1.60 U	1.30 U	1.30 U	1.20 U	1.70 U	1.10 U	1.60 U	2.20 J	2.80 J	NA	4.60
Silver	mg/kg	2	1,500	0.27 U	0.21 U	0.20 U	0.24 U	0.26 U	0.23 U	0.24 U	0.27 U	0.20 U	0.21 U	0.20 U	0.28 U	0.18 U	0.26 U	0.36 U	0.28 U	NA	0.51 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	202.00 B
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.80 UJ
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.20 J
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	208
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is n
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12		SB-30		SB-31		SB-32		SB-33		SB-34		SB-35	
Sample ID:				SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12	CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32	CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35
Depth (ft):				(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)	(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)	(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)																				
Date:				01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999
Location:				Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave
BTEX (ug/kg)																							
Benzene	ug/kg	60	44,000	18,125 U	8,500	1,700	2,975 U	2 U	2 U	110 J	600 U	6 U	7 U	6 U	3 J	31 U	6 U	3,900 J	1,000 J	4 J	6 U	6 U	6 U
Toluene	ug/kg	700	500,000	43,000	5,875 U	600 U	2,975 U	2 U	2 U	76 J	230 J	1 J	1 J	6 U	1 J	31 U	6 U	11,000 U	730 J	6 U	6 U	6 U	6 U
Ethylbenzene	ug/kg	1,000	390,000	640,000	66,000	2,900	2,975 U	2 U	2 U	510	1,000	1 J	1 J	6 U	6 U	150	1 J	43,000	4,900 J	6 U	1 J	6 U	6 U
Xylene (total)	ug/kg	260	500,000	1,000,000	45,000	690	2,975 U	2 U	2 U	530 J	1,630	3 J	3 J	6 U	6 U	340	2 J	47,000	6,600 B	62	3 J	6 U	6 U
Volatile Organic Compounds																							
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	470,000	40,000	2,600	8,000	1 U	1 U	2,000	1,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	180,000	13,000	810	3,000	1 U	1 U	170	670	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62 UJ	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62 UJ	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62 UJ	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31 UJ	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	87,000	7,700	530	1,500	1 U	1 U	440	190 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47 U	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31 U	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	8,700 U	2,820 U	290 U	1,428 U	1 U	1 U	1,100	300 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	24,000	2,500 J	290 U	1,428 U	1 U	1 U	350	300 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	10,000	4,700	240 J	2,000	1 U	1 U	250	300 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	8,700 U	2,820 U	290 U	1,428 U	1 U	1 U	130 J	300 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12		SB-30		SB-31		SB-32		SB-33		SB-34		SB-35	
Sample ID:				SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12	CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32	CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35
Depth (ft):				(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)	(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)	(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)																				
Date:				01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999
Location:				Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave
PAHs (ug/kg)																							
Naphthalene	ug/kg	12,000	500,000	1,400,000 #	420,000 #	37,000 #	560,000 #	180 #J	35 #J	2,900 #J	48,000 #	380 U	490 U	380 U	400 U	880	37 J	150,000 B	210,000 B	590 JB	63 J	400 U	380 U
2-Methylnaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	380 U	49 J	380 U	400 U	200 J	380 U	120,000 J	260,000 J	740 U	420 U	400 U	380 U
Acenaphthene	ug/kg	20,000	500,000	84 J	100 J	4,350 U	140,000	110 J	390 U	5,000	390 J	380 U	490 U	380 UJ	29 J	25 J	67 J	26,000 J	41,000	320 J	420 U	400 U	380 U
Acenaphthylene	ug/kg	100,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	380 U	58 J	380 U	400 U	16 J	25 J	3,200 J	46,000	160 J	420 U	400 U	380 U
Anthracene	ug/kg	100,000	500,000	320 J	290 J	2,900 J	44,000 J	170 J	14 J	5,300	840	380 U	19 J	380 U	400 U	14 J	380 U	39,000 U	7,400 J	210 J	420 U	400 U	380 U
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	4,400	1,400 U	9,300	81,500 U	460	79 J	720 J	110 J	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	26,000 J	1,500	420 U	400 U	180 J
Fluoranthene	ug/kg	100,000	500,000	1,700	1,700	16,000	32,000 J	1,400	46 J	3,700 J	700 J	18 J	490 U	380 U	400 U	19 J	380 U	39,000 U	36,000 U	1,700	420 U	400 U	380 U
Fluorene	ug/kg	30,000	500,000	67 J	110 J	4,350 U	56,000 J	42 J	390 U	6,500	1,100	380 U	490 U	380 U	400 U	18 J	380 U	39,000 U	36,000	740 U	420 U	400 U	380 U
Phenanthrene	ug/kg	100,000	500,000	880	1,300	7,600	130,000	150 J	41 J	16,000	2,700	16 J	70 J	380 U	400 U	66 J	380 U	17,000 J	110,000	1,300	420 U	400 U	8 J
Pyrene	ug/kg	100,000	500,000	2,700	2,200	23,000	46,000 J	2,100	85 J	6,500	1,100	22 J	29 J	380 U	400 U	31 J	380 U	9,200 J	35,000 J	2,100	420 U	400 U	6 J
Benz(a)anthracene	ug/kg	1,000	5,600	1,500	1,100	14,000	19,000 J	870	37 J	2,400 J	500 J	16 J	490 U	380 U	400 UJ	11 J	380 U	3,900 J	13,000 J	1,800	420 U	400 U	8 J
Benzo(a)pyrene	ug/kg	1,000	1,000	2,900	1,100	11,000	12,000 J	1,000	75 J	1,600 J	300 J	24 J	490 U	380 U	400 U	380 U	380 U	2,800 J	8,600 J	2,000	420 U	400 U	14 J
Benzo(b)fluoranthene	ug/kg	1,000	5,600	1,700	870	6,300	7,100 J	540	58 J	680 J	120 J	180 J	490 U	380 U	400 U	380 U	380 U	1,200 J	3,400 J	1,500	420 U	400 U	380 U
Benzo(k)fluoranthene	ug/kg	800	56,000	1,800	820	7,300	7,900 J	680	57 J	1,200 J	190 J	26 J	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	1,400 J	420 U	400 U	380 U
Chrysene	ug/kg	1,000	56,000	1,900	1,200	14,000	18,000 J	870	52 J	2,500 J	510 J	17 J	490 U	380 U	400 U	380 U	380 U	3,300 J	11,000 J	1,700	420 U	400 U	8 J
Dibenz(a,h)anthracene	ug/kg	330	560	1,200	385 U	2,900 J	81,500 U	370 U	390 U	3,795 U	815 U	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	840	420 U	400 U	380 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	3,400	1,000	7,100	81,500 U	380	57 J	570 J	92 J	17 J	490 U	380 U	400 U	380 U	380 U	39,000 U	22,000 J	1,600	420 U	400 U	380 U
Total PAHs			500,000	1,424,551	433,190	158,400	1,072,000	8,952	636	55,570	56,652	336	225	0	29	1,280	129	336,600	829,400	18,720	63	0	224
Semivolatile Organic Compounds																							
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	740 U	420 U	400 U	380 U
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	1,800 U	2,400 U	1,900 U	2,000 U	1,900 U	1,800 U	190,000 U	180,000 U	3,600 U	2,000 U	2,000 U	1,800 U
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	740 U	420 U	400 U	380 U
Di-n-butylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	18 JB	39,000 U	36,000 U	740 U	420 U	400 U	380 U
Di-n-octylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	740 U	420 U	400 U	380 U
Dibenzofuran	ug/kg	7,000	350,000	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U	1,800 J	6,000 J	220 J	420 U	400 U	380 U
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	740 U	420 U	400 U	380 U
Phenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	740 U	420 U	400 U	380 U
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	11 JB	39,000 U	36,000 U	740 U	420 U	400 U	380 U
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12		SB-30		SB-31		SB-32		SB-33		SB-34		SB-35	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12	CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32	CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35
Depth (ft):				(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)	(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)	(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)
Constituent Date:				01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999
Location:				Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																							
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4 U	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0 J	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4 U	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4 U	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																							
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	NA	NA	NA	NA	NA	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																							
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,420	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.80 UJ	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	NA	NA	NA	NA	NA	NA	NA	NA	2.50 J	5.20 J	1.40 J	1.20 J	1.50 J	2.70 J	6.30 J	1.40 J	2.80 J	1.20 J	1.30 U	3.50
Barium	mg/kg	350	400	NA	NA	NA	NA	NA	NA	NA	NA	50.30	95.30	44.70	23.10	42.10	31.20	72.80	35.80	43.10	319	74	54.20
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.25	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	NA	NA	NA	NA	NA	NA	NA	NA	0.22 U	0.34 U	0.51 U	0.32 U	0.50 U	0.64 U	0.19 U	0.41 U	0.20 U	0.20 U	0.21N N	0.17 U
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,850.00	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	NA	NA	NA	NA	NA	NA	NA	NA	49.70 J	33.50 J	50.00 J	50.80 J	44.20 J	36.60 J	69.80 J	41.50 J	52.80 J	22.90 J	64.50 J	47.00
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28.10	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.80	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	22,400	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	NA	NA	NA	NA	NA	NA	NA	NA	11.90 J	11.50 J	7.80 J	4.00 J	6.10 J	5.50 J	9.30 J	6.30 J	18.80 J	9.80 J	10.60 J	6.00 J
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	44,200	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	396	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U	0.03 U	0.03 U	0.03 U	0.03 U	0.02 U	0.04 U	0.02 U	0.06 B	0.04 U	0.03 U	0.03 U
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	541	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	997.00	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	NA	NA	NA	NA	NA	NA	NA	NA	1.10 J	1.50 J	1.80 J	1.60 J	2 J	1.20 J	2.40 J	0.85 J	0.96 J	1.20	2.30 J	0.67 UJ
Silver	mg/kg	2	1,500	NA	NA	NA	NA	NA	NA	NA	NA	0.35	0.50	0.29	0.38	0.36	0.36	0.33	0.29	0.40	0.40	0.43 U	0.33 UJ
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	154 U	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.20	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.80	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.40	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																							
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,410	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)	RW-10		RW-11		RW-12		SB-81		SB-82		SB-88		
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB	CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82	CF-SB-88	CF-SB-88	CF-SB-88
Depth (ft):				(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99	(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)	(28-32)	(44-48)	(44-48 DUP)
Constituent Date:				09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999	09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002	06/11/2002	06/11/2002	06/11/2002
Location:				89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	Block 2822	Block 2822	Bay Street	Bay Street	25 Willow Ave	25 Willow Ave	26 Willow Ave
BTEX (ug/kg)																							
Benzene	ug/kg	60	44,000	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U	6 U	6 U	47 J	6 U	6 U	6 U	2,700	6 U	6 U	6 U	1 J	6 U	6 U
Toluene	ug/kg	700	500,000	5 U	12 UJ	NA	7 U	6 UJ	1 J	1 J	6 U	6 U	78 J	2 J	6 U	6 U	27,000	6 U	6 U	6 U	6 U	6 U	6 U
Ethylbenzene	ug/kg	1,000	390,000	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U	6 U	6 U	160 J	6 U	6 U	6 U	40,000	6	6 U	6 U	2 J	6 U	6 U
Xylene (total)	ug/kg	260	500,000	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U	6 U	6 U	1,500 U	6 U	6 U	6 U	72,000	3 J	6 U	6 U	1 J	6 U	6 U
Volatile Organic Compounds																							
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)	RW-10		RW-11		RW-12		SB-81		SB-82		SB-88		
Sample ID:				CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB	CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82	CF-SB-88	CF-SB-88	CF-SB-88
Depth (ft):				(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99	(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)	(28-32)	(44-48)	(44-48 DUP)
Constituent	Date:			09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999	09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002	06/11/2002	06/11/2002	06/11/2002
	Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	Block 2822	Block 2822	Bay Street	Bay Street	25 Willow Ave	25 Willow Ave	26 Willow Ave
PAHs (ug/kg)																							
Naphthalene	ug/kg	12,000	500,000	110 J	1,800 UJ	NA	450 U	18 J	1,200 U	1,300 U	250 J	380 U	14,000 J	380 U	400 U	370 U	1,400,000	160 J	400 U	360 U	240 J	340 U	360 U
2-Methylnaphthalene	ug/kg	NL	NL	72 J	1,800 UJ	NA	450 U	22 J	1,200 U	1,300 U	300 J	380 U	130,000	380 U	400 U	370 U	800,000	360 U	400 U	360 U	360 U	340 U	360 U
Acenaphthene	ug/kg	20,000	500,000	44 J	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	110 J	380 U	27,000 J	380 U	400 U	370 U	58,000 J	360 U	35 J	360 U	360 UJ	340 U	360 U
Acenaphthylene	ug/kg	100,000	500,000	150 J	64 J	NA	450 U	27 J	1,200 U	1,300 U	1,700	380 U	95,000	380 U	400 U	370 U	240,000	360 U	400 U	360 U	360 U	340 U	360 U
Anthracene	ug/kg	100,000	500,000	200 J	1,800 UJ	NA	450 U	26 J	1,200 U	1,300 U	660 J	380 U	89,000	380 U	400 U	370 U	130,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	340 J	1,800 UJ	NA	450 U	98 J	1,200 U	1,300 U	1,600 J	380 U	120,000	380 U	400 U	370 U	16,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Fluoranthene	ug/kg	100,000	500,000	710	27 J	NA	450 U	200 J	1,200 U	1,300 U	4,200	380 U	260,000	380 U	400 U	370 U	150,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Fluorene	ug/kg	30,000	500,000	120 J	42 J	NA	450 U	390 U	1,200 U	1,300 U	160 J	380 U	83,000	380 U	400 U	370 U	160,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Phenanthrene	ug/kg	100,000	500,000	650	1,800 UJ	NA	450 U	130 J	1,200 U	1,300 U	1,500 J	380 U	330,000	380 U	400 U	370 U	440,000	360 U	400 U	360 U	360 U	340 U	360 U
Pyrene	ug/kg	100,000	500,000	760	34 J	NA	450 U	230 J	1,200 U	1,300 U	7,600	380 U	240,000	380 U	4 J	370 U	170,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Benz(a)anthracene	ug/kg	1,000	5,600	480	1,800 UJ	NA	450 U	140 J	1,200 U	1,300 U	4,300	380 U	190,000	380 U	400 U	370 U	68,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Benzo(a)pyrene	ug/kg	1,000	1,000	460	1,800 UJ	NA	450 U	120 J	1,200 U	1,300 U	2,700	380 U	130,000	380 U	400 U	370 U	46,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Benzo(b)fluoranthene	ug/kg	1,000	5,600	300 J	1,800 UJ	NA	450 U	110 J	1,200 U	1,300 U	1,600 J	380 U	130,000	380 U	400 U	370 U	24,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Benzo(k)fluoranthene	ug/kg	800	56,000	500 J	1,800 UJ	NA	450 U	150 J	1,200 U	1,300 U	2,700 J	380 U	130,000 J	380 U	400 U	370 U	39,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Chrysene	ug/kg	1,000	56,000	490	1,800 UJ	NA	450 U	160 J	1,200 U	1,300 U	3,600	380 U	180,000	380 U	400 U	370 U	66,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Dibenz(a,h)anthracene	ug/kg	330	560	120 J	1,800 UJ	NA	450 U	33 J	1,200 U	1,300 U	730 J	380 U	51,000 J	380 U	400 U	370 U	180,000 U	360 U	400 U	360 U	360 U	340 U	360 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	360 J	1,800 UJ	NA	450 U	83 J	1,200 U	1,300 U	1,600 J	380 U	120,000	380 U	400 U	370 U	16,000 J	360 U	400 U	360 U	360 U	340 U	360 U
Total PAHs			500,000	5,866	167	--	0	1,547	0	0	35,310	0	2,319,000	0	4	0	3,823,000	160	35	0	240	0	0
Semivolatile Organic Compounds																							
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	78 J	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	NL	140 J	560 J	NA	71 J	76 J	160 J	6,200 J	8,100 UJ	91 J	270,000 UJ	1,800 UJ	1,900 U	1,800 U	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	62 J	1,800 UJ	NA	450 U	9 J	1,200 U	1,300 U	160 J	380 U	11,000 J	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	NL	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	NL	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	350,000	76 J	1,800 UJ	NA	14 J	12 J	1,200 U	1,300 U	130 J	380 U	33,000 J	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	500,000	17 J	1,800 UJ	NA	34 J	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)	RW-10		RW-11		RW-12		SB-81		SB-82		SB-88		
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB	CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82	CF-SB-88	CF-SB-88	CF-SB-88
Depth (ft):				(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99	(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)	(28-32)	(44-48)	(44-48 DUP)
Constituent Date:				09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999	09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002	06/11/2002	06/11/2002	06/11/2002
Location:				89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	Block 2822	Block 2822	Bay Street	Bay Street	25 Willow Ave	25 Willow Ave	26 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																							
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																							
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	1 UR	1 UR	1 U	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																							
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	5.00	2.90 J	2.60 B	4.50	7.40	10.30	11.40	8.80	2.00	5.60	3.50	4.00	1.70	3.20	4.00	3.50	3.70	6.00 J	1.90 J	2.50 J
Barium	mg/kg	350	400	95.90	611 J	535	138.00	50.20	143.00	149.00	105.00	43.80	45.30	63.60	112.00	65.70	48.50	53.50	43.60	65.20	71.20	72.30	71.30
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	0.22 J	0.41 J	0.37 U	0.19N N	0.19N N	0.32N N	0.32N N	0.19N N	0.18N N	0.19N N	0.19N N	0.20N N	0.13N N	1.00 U	0.76 U	0.97 U	0.93 U	0.86 U	0.89 U	0.83 U
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	42.10	88.90 J	78.30	79.90	13.10	33.30	35.90	27.00	113.00	8.60	97.70	62.60	13.50	37.50	73.60	56.90	99.50	99.90 J	17.90 J	20.50 J
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	93.70	12.10 J	9.60	12.70 J	203.00 J	13.60 J	11.20 J	1,380 J	5.80 J	21.40 J	6.90 J	10.40 J	5.80 J	13.00	5.10	24.20	5.00	6.70 J	6.70 J	10.20 J
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.69 J	0.20 J	0.21	0.02 J	0.34 J	0.03 J	0.02 J	0.09 J	0.00 UR	0.07 J	0.01 J	0.01 UR	0.00 UR	0.09 U	0.09 U	0.10 U	0.10 U	0.09 U	0.08 U	0.09 U
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	0.92 UJ	4.20 J	3.40	0.97 UJ	0.97 UJ	1.60 UJ	1.60 UJ	1.40 J	0.90 UJ	1.40 J	0.94 UJ	0.98 UJ	0.66 UJ	1.60 U	1.20 U	1.50 U	1.50 U	1.40 UJ	1.40 UJ	1.30 UJ
Silver	mg/kg	2	1,500	0.18 U	0.35 UJ	0.37 U	0.19 U	0.19 U	0.32 U	0.32 U	0.19 U	0.18 U	0.19 U	0.19 U	0.20 U	0.13 U	0.30 U	0.23 U	0.29 U	0.28 U	0.26 U	0.27 U	0.25 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																							
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92		SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03
Sample ID:				CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92	CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3
Depth (ft):				(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)	(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(0-2)
Constituent	Date:			06/19/2002	06/21/2002	11/14/2002	11/14/2002	11/15/2002	11/15/2002	11/12/2002	11/12/2002	11/12/2002	11/13/2002	11/13/2002	11/14/2002	11/14/2002	04/01/1993	04/01/1993	04/01/1993	04/01/1993	04/05/1993
	Location:			25 Willow Ave		Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																					
Benzene	ug/kg	60	44,000	410 J	1 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U	6,200 U	6 U	5,800 U	6 U	11 U	11 U	11 U	11 U	8,000 DJ
Toluene	ug/kg	700	500,000	3,100 U	1 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U	6,200 U	6 U	4,900 J	6 U	11 U	11 U	11 U	11 U	26,000 D
Ethylbenzene	ug/kg	1,000	390,000	30,000	7	6 U	6 U	6 U	6 U	29 U	6 U	6 U	28,000	4 J	9,400	3 J	11 U	11 U	11 U	11 U	9,200 D
Xylene (total)	ug/kg	260	500,000	30,000	4 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U	16,000	6 U	16,000	1 J	11 U	11 U	11 U	11 U	88,000 D
Volatile Organic Compounds																					
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	31
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	80,000 D
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is n
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92		SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03
Sample ID:				CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92	CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3
Depth (ft):				(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)	(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(0-2)
Constituent	Date:			06/19/2002	06/21/2002	11/14/2002	11/14/2002	11/15/2002	11/15/2002	11/12/2002	11/12/2002	11/12/2002	11/13/2002	11/13/2002	11/14/2002	11/14/2002	04/01/1993	04/01/1993	04/01/1993	04/01/1993	04/05/1993
	Location:			25 Willow Ave		Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	500,000	24,000	390	380 U	370 U	370 U	370 U	380 U	360 U	360 U	1,600,000	320 J	62,000	390	370 U	370 U	390 U	370 U	1,100,000
2-Methylnaphthalene	ug/kg	NL	NL	2,600 J	270 J	380 U	370 U	370 U	370 U	380 U	360 U	360 U	80,000 J	360 U	30,000	140 J	370 U	370 U	390 U	370 U	860,000
Acenaphthene	ug/kg	20,000	500,000	4,100 U	360 U	380 U	370 U	370 U	370 U	58 J	360 U	360 U	1,200,000	56 J	2,800 J	21 J	370 U	370 U	390 U	370 U	37,000
Acenaphthylene	ug/kg	100,000	500,000	4,100 U	360 U	380 U	370 UJ	100 J	370 U	260 J	360 U	360 U	190,000 J	18 J	14,000 J	25 J	370 U	370 U	390 U	370 U	210,000
Anthracene	ug/kg	100,000	500,000	4,100 U	360 U	380 U	370 U	53 J	370 U	87 J	360 U	360 U	810,000	360 U	7,400 J	370 U	370 U	370 U	390 U	370 U	94,000
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	4,100 U	360 U	380 U	370 U	140 J	370 U	170 J	360 U	360 U	260,000 J	360 U	1,200 J	370 U	370 U	370 U	390 U	370 U	8,200
Fluoranthene	ug/kg	100,000	500,000	4,100 U	360 U	380 U	370 U	270 J	370 U	140 J	360 U	360 U	1,900,000	360 U	9,500 J	370 U	370 U	370 U	390 U	370 U	140,000
Fluorene	ug/kg	30,000	500,000	4,100 U	360 U	380 U	370 U	370 U	370 U	34 J	360 U	360 U	890,000	360 U	9,500 J	370 U	370 U	370 U	390 U	370 U	160,000
Phenanthrene	ug/kg	100,000	500,000	4,100 U	360 U	380 U	370 U	52 J	370 U	61 J	360 U	360 U	3,800,000	28 J	25,000	370 U	370 U	370 U	390 U	370 U	420,000
Pyrene	ug/kg	100,000	500,000	4,100 U	360 U	380 U	370 U	320 J	370 U	170 J	360 U	360 U	1,500,000	360 U	10,000 J	370 U	370 U	370 U	390 U	370 U	200,000
Benz(a)anthracene	ug/kg	1,000	5,600	4,100 U	360 U	380 U	370 U	170 J	370 U	120 J	360 U	360 U	640,000 J	360 U	3,700 J	370 U	370 U	370 U	390 U	370 U	96,000
Benzo(a)pyrene	ug/kg	1,000	1,000	4,100 U	360 U	380 U	370 U	250 J	370 U	170 J	360 U	360 U	540,000 J	360 U	2,900 J	370 U	370 U	370 U	390 U	370 U	53,000
Benzo(b)fluoranthene	ug/kg	1,000	5,600	4,100 U	360 U	380 U	370 U	160 J	370 U	120 J	360 U	360 U	460,000 J	360 U	15,000 U	370 U	370 U	370 U	390 U	370 U	39,000
Benzo(k)fluoranthene	ug/kg	800	56,000	4,100 U	360 U	380 U	370 U	370 J	370 U	130 J	360 U	360 U	390,000 J	360 U	3,200 J	370 U	370 U	370 U	390 U	370 U	32,000
Chrysene	ug/kg	1,000	56,000	4,100 U	360 U	380 U	370 U	180 J	370 U	140 J	360 U	360 U	450,000 J	360 U	3,500 J	370 U	370 U	370 U	390 U	370 U	61,000
Dibenz(a,h)anthracene	ug/kg	330	560	4,100 U	360 U	380 U	370 U	53 J	370 U	49 J	360 U	360 U	800,000 U	360 U	15,000 U	370 U	370 U	370 U	390 U	370 U	4,000 J
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	4,100 U	360 U	380 U	370 U	140 J	370 U	110 J	360 U	360 U	240,000 J	360 U	1,000 J	370 U	370 U	370 U	390 U	370 U	9,300
Total PAHs			500,000	26,600	660	0	0	2,258	0	1,819	0	0	14,950,000	422	185,700	576	0	0	0	0	3,523,500
Semivolatile Organic Compounds																					
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
4-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
Carbazole	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	16,000
Di-n-butylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
Di-n-octylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
Dibenzofuran	ug/kg	7,000	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	19,000
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
Phenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	4,300 U
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	180 JB	4,300 U
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
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UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92		SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92	CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3
Depth (ft):				(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)	(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(0-2)
Constituent Date:				06/19/2002	06/21/2002	11/14/2002	11/14/2002	11/15/2002	11/15/2002	11/12/2002	11/12/2002	11/12/2002	11/13/2002	11/13/2002	11/14/2002	11/14/2002	04/01/1993	04/01/1993	04/01/1993	04/01/1993	04/05/1993
Location:				25 Willow Ave		Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	0 U	0 U	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	NA	NA	NA	NA	NA
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N N	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N N	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	19.40	2.20	2.60 J	7.00 J	2.00 J	2.80 J	2.70 J	7.20 J	6.80 J	2.60 J	6.60 J	2.50 J	7.70 J	NA	NA	NA	NA	NA
Barium	mg/kg	350	400	1430	69.00	43.60	66.50	11.00	48.00	22.50	62.70	47.80	8.70	71.30	48.90	81.60	NA	NA	NA	NA	NA
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	2.6 U	0.83 U	1.00 U	0.96 U	0.90 U	1.00 U	0.83 U	0.99 U	0.94 U	1.00 U	0.90 U	0.82 U	1.10 U	NA	NA	NA	NA	NA
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	65.90	20.00	33.60	94.80	10.60	84.60	20.20	82.20	72.00	14.00	83.80	27.30	91.30	NA	NA	NA	NA	NA
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	11.60	6.60	4.00	7.00	12.80	4.70	35.20	6.20	5.30	3.80	7.60	4.60	7.30	NA	NA	NA	NA	NA
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.27 U	0.09 U	0.04 U	0.06 U	0.05 U	0.05 U	0.04 U	0.05 U	0.05 U	0.06 U	0.04 U	0.05 U	0.05 U	NA	NA	NA	NA	NA
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	4.20 U	1.30 U	1.60 U	1.50 U	1.40 U	1.60 U	1.30 U	1.60 U	1.50 U	1.60 U	1.40 U	1.30 U	1.70 U	NA	NA	NA	NA	NA
Silver	mg/kg	2	1,500	0.79 U	0.25 U	0.30 U	0.29 U	0.27 U	0.30 U	0.25 U	0.30 U	0.28 U	0.31 U	0.27 U	0.25 U	0.32 U	NA	NA	NA	NA	NA
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

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Site ID:				FPM-MW-03	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07	RW-14	RW-14	RW-14	RW-14	RW-14	SB-18	SB-18	SB-18 (dup)	SB-21	SB-22	SB-22
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	MW-3	MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB18	CF-SB18	CF-DUP3	CF-SB2I	CF-SB22	CF-SB22
Depth (ft):				(6-8)	(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)	(24-25)	(58-61)	(78-78.5)	(119-119.5)	(126-126.5)	(4-7.5)	(73-76)	(73-76)	(5-7)	(2-3)	(20-21)
Constituent Date:				04/05/1993	04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999	08/23/1999	08/24/1999	08/24/1999	08/26/1999	08/26/1999	03/02/1999	03/09/1999	03/09/1999	02/25/1999	02/25/1999	02/26/1999
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																								
Benzene	ug/kg	60	44,000	13 U	44	3 U	2 U	2 U	3 U	6 U	6 U	3,500 J	80,000	62,000	570 J	90,000	72	6 U	4 J	1,100 U	100 J	1,500	2,600 J	2,000 J
Toluene	ug/kg	700	500,000	13 U	200	3 U	2 U	2 U	3 U	6 U	6 U	9,200 J	170,000	110,000	340 J	190,000	320	6 U	2 J	720 J	560 J	110 J	32,000	860 J
Ethylbenzene	ug/kg	1,000	390,000	13 U	45	3 U	4	2 U	2 J	6 U	6 U	22,000	21,000 J	68,000	32	28,000	120	6 U	6 U	590 J	470 J	5,800	150,000	390 J
Xylene (total)	ug/kg	260	500,000	13	380	3 U	27	6	8	6 U	6 U	25,000	210,000	110,000	210	200,000	870	6 U	6 U	7,200	5,500	1,900	150,000	580 J
Volatile Organic Compounds																								
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	2 U	31	3	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	2	23	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	13 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	13 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	24	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	13 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	2 U	3	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	13 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	13 U	960 D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	2 U	1	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				FPM-MW-03	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07	RW-14	RW-14	RW-14	RW-14	RW-14	SB-18	SB-18	SB-18 (dup)	SB-21	SB-22	SB-22
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	MW-3	MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB18	CF-SB18	CF-DUP3	CF-SB2I	CF-SB22	CF-SB22
Depth (ft):				(6-8)	(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)	(24-25)	(58-61)	(78-78.5)	(119-119.5)	(126-126.5)	(4-7.5)	(73-76)	(73-76)	(5-7)	(2-3)	(20-21)
Constituent Date:				04/05/1993	04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999	08/23/1999	08/24/1999	08/24/1999	08/26/1999	08/26/1999	03/02/1999	03/09/1999	03/09/1999	02/25/1999	02/25/1999	02/26/1999
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
PAHs (ug/kg)																								
Naphthalene	ug/kg	12,000	500,000	6,900 D	2,000	33 #	2,400 #	500 #	1,400 #	29 JB	29 JB	420,000 B	3,500,000	290,000	8,800	880,000	8,900	100 J	170 J	58,000 J	120,000 J	430,000 B	NA	16,000 B
2-Methylnaphthalene	ug/kg	NL	NL	4,800 D	1,600	NA	NA	NA	NA	330 U	370 U	440,000 J	2,600,000	200,000	6,700	600,000	9,300	130 J	380 U	69,000 J	140,000 J	420,000 J	NA	19,000 J
Acenaphthene	ug/kg	20,000	500,000	460	130 J	2,900	470 U	410 U	420 U	330 U	370 U	11,000 J	96,000 J	5,400 J	310 J	29,000 J	550 J	26 J	230 J	4,000 J	7,500 J	73,000 J	NA	500 J
Acenaphthylene	ug/kg	100,000	500,000	2,000	820	NA	NA	NA	NA	8 JB	8 J	64,000 J	780,000	49,000	2,400	220,000	3,800	430 U	190 J	29,000	54,000	9,600 J	NA	4,000
Anthracene	ug/kg	100,000	500,000	660	390 U	500 U	810	770	610	330 U	370 U	78,000 U	580,000 U	19,000 J	770 J	58,000 J	1,300 J	41 J	330 J	7,500 J	15,000 J	76,000 U	NA	3,700 U
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	430 U	390 U	500 U	740	1,000	970	330 U	370 U	54,000 J	22,000 J	4,800 J	100 J	8,400 J	200 J	430 U	1,000	1,100 JB	2,400 JB	57,000 J	NA	2,600 J
Fluoranthene	ug/kg	100,000	500,000	600	390 U	500 U	2,400	3,300 D	2,400	330 U	370 U	78,000 U	580,000 U	20,000 J	850 J	63,000 J	1,300 J	74 J	2,900 J	12,000 B	23,000 B	76,000 U	NA	3,700 U
Fluorene	ug/kg	30,000	500,000	1,300	510	2,100	1,000	410 U	420 U	7 JB	7 J	3,600 J	230,000 J	30,000 J	1,500	180,000	2,600	72 J	220 J	19,000	32,000	13,000 J	NA	140 J
Phenanthrene	ug/kg	100,000	500,000	2,500	390 U	500 U	2,800	2,500	2,000	27 JB	27 JB	69,000 J	960,000	65,000	3,000	230,000	4,700	240 J	500	33,000 B	66,000 B	120,000	NA	3,800
Pyrene	ug/kg	100,000	500,000	1,500	390 U	500 U	2,900	3,400 D	3,100	330 U	370 U	37,000 J	400,000 J	42,000	1,300 J	110,000 J	2,500	110 J	2,400	15,000 B	30,000 B	61,000 J	NA	1,800 J
Benz(a)anthracene	ug/kg	1,000	5,600	430	390 U	500 U	1,400	2,500	1,400	330 U	370 U	16,000 J	580,000 U	14,000 J	450 J	38,000 J	780 J	40 J	1,900	6,900 JB	14,000 JB	24,000 J	NA	670 J
Benzo(a)pyrene	ug/kg	1,000	1,000	350 J	390 U	500 U	1,500	2,700	2,000	330 U	370 U	14,000 J	130,000 J	10,000 J	350 J	25,000 J	600 J	26 J	1,800	4,500 JB	9,400 JB	24,000 J	NA	570 J
Benzo(b)fluoranthene	ug/kg	1,000	5,600	190 J	390 U	500 U	1,300	1,900	1,900	330 U	370 U	4,700 J	580,000 U	4,100 J	150 J	22,000 J	220 J	12 J	1,000 J	2,000 JB	3,600 JB	10,000 J	NA	270 J
Benzo(k)fluoranthene	ug/kg	800	56,000	290 J	390 U	500 U	1,500	2,800	1,800	330 U	370 U	78,000 U	580,000 U	6,300 J	240 J	20,000 J	470 J	26 J	1,600 J	3,200 JB	7,000 JB	76,000 U	NA	3,700 U
Chrysene	ug/kg	1,000	56,000	420 J	390 U	500 U	1,600	2,600	1,800	330 U	370 U	15,000 J	580,000 U	14,000 J	440 J	37,000 J	830 J	430 U	1,700	6,100 JB	12,000 JB	25,000 J	NA	640 J
Dibenz(a,h)anthracene	ug/kg	330	560	430 U	390 U	500 U	470 U	410 U	420 U	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	400	480 JB	900 JB	34,000 J	NA	3,700 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	430 U	390 U	500 U	770	1,100	1,100	330 U	370 U	47,000 J	27,000 J	3,000 J	100 J	7,800 J	190 J	430 U	1,200	1,200 JB	2,400 JB	49,000 J	NA	2,200 J
Total PAHs			500,000	23,690	9,740	11,033	22,060	26,300	21,740	71	56	1,618,900	12,805,000	814,600	28,960	2,678,200	39,840	3,047	17,920	271,980	539,200	1,577,600		66,990
Semivolatile Organic Compounds																								
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 UR	9,100 U	18,000 U	76,000 U	NA	240 J
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	220 J
4-Chloroaniline	ug/kg	NL	NL	430 U	530	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
4-Methylphenol	ug/kg	330	500,000	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	78 J	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	1,600 UJ	1,800 U	380,000 U	2,800,000 U	180,000 U	7,100 U	710,000 U	7,700 U	2,100 U	1,900 U	44,000 UJ	89,000 UJ	370,000 U	NA	18,000 U
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	330 U	370 UJ	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Butylbenzylphthalate	ug/kg	NL	NL	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Carbazole	ug/kg	NL	NL	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	1,000 J	56 J	5,000 J	95 J	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Di-n-butylphthalate	ug/kg	NL	NL	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Di-n-octylphthalate	ug/kg	NL	NL	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Dibenzofuran	ug/kg	7,000	350,000	430 U	60 J	NA	NA	NA	NA	330 U	1,800 U	7,000 J	580,000 U	6,000 J	200 J	17,000 J	340 J	430 U	380 U	2,800 J	5,500 J	8,500 J	NA	460 J
Diethylphthalate	ug/kg	NL	NL	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Phenol	ug/kg	330	500,000	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	120 J	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	510 J
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	230 JB	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	29 J	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				FPM-MW-03	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07	RW-14	RW-14	RW-14	RW-14	RW-14	SB-18	SB-18	SB-18 (dup)	SB-21	SB-22	SB-22
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	MW-3	MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB18	CF-SB18	CF-DUP3	CF-SB2I	CF-SB22	CF-SB22
Depth (ft):				(6-8)	(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)	(24-25)	(58-61)	(78-78.5)	(119-119.5)	(126-126.5)	(4-7.5)	(73-76)	(73-76)	(5-7)	(2-3)	(20-21)
Constituent Date:				04/05/1993	04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999	08/23/1999	08/24/1999	08/24/1999	08/26/1999	08/26/1999	03/02/1999	03/09/1999	03/09/1999	02/25/1999	02/25/1999	02/26/1999
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																								
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																								
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	NA	NA	NA	NA	NA	NA	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	NA	1 UJ
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																								
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	NA	NA	NA	NA	NA	NA	2.50	2.50	2.80 J	2.00	3.60 J	2.50 J	2.10 J	2.20 J	2.70 J	6.10	3.60	6.40	3.00 J	NA	4.20 J
Barium	mg/kg	350	400	NA	NA	NA	NA	NA	NA	43.60 J	43.60 J	105.00	42.00	61.40	61.70	50.40	23.80 B	37.00	50.50	57.60 J	51.90 J	43.70	NA	70.10
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	NA	NA	NA	NA	NA	NA	0.29 U	0.17 U	0.34 U	0.15 U	0.14 UJ	0.18 UJ	0.14 UJ	0.23 UJ	0.15 UJ	0.21 U	0.17 J	0.18 U	0.16 U	NA	0.69 U
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	NA	NA	NA	NA	NA	NA	14.70	14.70	28.90 J	11.50	37.40 J	14.40 J	16.80 J	7.40 J	60.20 J	38.20	18.80	16.70	13.40 J	NA	26.90 J
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	NA	NA	NA	NA	NA	NA	7.8 J	7.8J	9.2 J	5.1	10.6	9.2	8.3	4.9	6.9	56.6	8.8 J	12.5 J	34.5 J	NA	5.8 J
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	NA	NA	NA	NA	NA	NA	0.06 U	0.02 U	0.03 U	0.02 U	0.01 U	0.01 U	0.00 U	0.11	0.01 U	0.05 B	0.02 U	0.03 U	0.03 U	NA	0.02 U
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	NA	NA	NA	NA	NA	NA	1.20 UJ	0.69 UJ	1.50 J	0.61 UJ	1.10 UJ	0.93 UJ	0.71 UJ	1.10 UJ	0.78 UJ	0.83 UJ	0.69 UJ	0.72 UJ	0.68 J	NA	0.77 J
Silver	mg/kg	2	1,500	NA	NA	NA	NA	NA	NA	0.58 UJ	0.34 UJ	0.42 U	0.31 UJ	1.70 J	0.18 UJ	0.14 UJ	0.23 UJ	0.15 UJ	0.41 UJ	0.34 UJ	0.36 UJ	0.26 U	NA	0.26 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																								
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	581	581	NA	NA	NA	NA	NA	NA	NA	NA	4,980	3,450	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-23	SB-23	SB-23	SB-23	SB-36	SB-36	SB-40	SB-40	SB-40	SB-41	SB-41	SB-41	SB-43	SB-43	SB-44	SB-44	TP-10
Sample ID:				CF-SB23	CF-SB23	CF-23	CF-SB23	CF-RW4	CF-RW4	CF-SB-40	CF-SB-40	CF-SB-40	CF-SB-41	CF-SB-41	CF-SB-41	CF-SB-43	CF-SB-43	CF-SB-44	CF-SB-44	CF-TP10
Depth (ft):				(4-8)	(29-31)	(92-94)	(109-111)	(4-8)	(16-20)	(4-6)	(16-18)	(18-20)	(10-12)	(18-20)	(28-30)	(6-8)	(28-30)	(3-5)	(29-31)	(3)
Constituent	Date:			03/02/1999	03/04/1999	03/10/1999	03/11/1999	03/02/1999	03/02/1999	07/27/1999	07/27/1999	07/27/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/26/1999	07/27/1999	02/24/1999
	Location:			40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																				
Benzene	ug/kg	60	44,000	6 J	NA	23 J	18	2 J	10	10,000	63,000	5,400,000	6 U	1 J	88 J	90	7,300 J	6 U	1 J	6 U
Toluene	ug/kg	700	500,000	1 J	NA	16 JB	11 U	1 J	3 J	18,000	26,000	3,700,000	6 U	6 U	260 J	31	12,000	6 U	6 U	6 U
Ethylbenzene	ug/kg	1,000	390,000	4 J	NA	6 J	2 J	3 J	2 J	22,000	42,000	170,000 J	6 U	0 J	400 J	210	7,000 J	6 U	6 U	6 U
Xylene (total)	ug/kg	260	500,000	16	NA	41	6 J	12	4 J	24,000	26,000	1,400,000	6 U	1 J	2,100	210	13,000	6 U	6 U	6 U
Volatile Organic Compounds																				
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
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- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
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Table 1-1
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Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-23	SB-23	SB-23	SB-23	SB-36	SB-36	SB-40	SB-40	SB-40	SB-41	SB-41	SB-41	SB-43	SB-43	SB-44	SB-44	TP-10
Sample ID:				CF-SB23	CF-SB23	CF-23	CF-SB23	CF-RW4	CF-RW4	CF-SB-40	CF-SB-40	CF-SB-40	CF-SB-41	CF-SB-41	CF-SB-41	CF-SB-43	CF-SB-43	CF-SB-44	CF-SB-44	CF-TP10
Depth (ft):				(4-8)	(29-31)	(92-94)	(109-111)	(4-8)	(16-20)	(4-6)	(16-18)	(16-20)	(10-12)	(18-20)	(28-30)	(6-8)	(28-30)	(3-5)	(29-31)	(3)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	03/02/1999	03/04/1999	03/10/1999	03/11/1999	03/02/1999	03/02/1999	07/27/1999	07/27/1999	07/27/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/26/1999	07/27/1999	02/24/1999
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
PAHs (ug/kg)																				
Naphthalene	ug/kg	12,000	500,000	410 U	NA	19,000 B	190 JB	65 J	370 U	240,000 B	120,000 B	NA	370 U	520 JB	130,000 B	91,000 B	430,000 B	190 JB	330 U	740
2-Methylnaphthalene	ug/kg	NL	NL	410 U	NA	25,000	380 U	380 U	370 U	120,000	65,000	NA	7 J	26 J	92,000	21,000	250,000	130 J	330 U	1,300
Acenaphthene	ug/kg	20,000	500,000	410 U	NA	2,000 J	8 J	380 U	370 U	3,600 J	12,000 J	NA	370 U	110 J	3,000 J	12,000 J	8,400 J	32 J	330 U	5 J
Acenaphthylene	ug/kg	100,000	500,000	46 J	NA	12,000	49 J	58 J	8 J	30,000 J	6,500 J	NA	6 J	1,300	24,000	10,000 J	46,000 J	870	330 U	400 U
Anthracene	ug/kg	100,000	500,000	410 U	NA	3,800	380 U	380 U	370 U	13,000 J	8,100 J	NA	370 U	1,300	6,200 J	5,600 J	17,000 J	440 J	330 U	220 J
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	30 J	NA	1,000 JB	380 U	200 J	370 U	6,200 J	4,300 J	NA	370 U	340 J	1,500 J	19,000 U	5,900 J	3,700	330 U	580
Fluoranthene	ug/kg	100,000	500,000	410 U	NA	5,200 B	380 U	380 U	370 U	18,000 J	9,400 J	NA	8 J	2,500	9,200 J	4,500 J	26,000 J	2,500	330 U	840 J
Fluorene	ug/kg	30,000	500,000	410 U	NA	7,800	20 J	380 U	370 U	15,000 J	14,000 J	NA	370 U	120 J	13,000 J	7,700 J	35,000 J	88 J	330 U	35 J
Phenanthrene	ug/kg	100,000	500,000	410 U	NA	15,000 B	380 U	120 J	18 J	56,000	32,000	NA	20 J	4,200	37,000	23,000	100,000	1,200	330 U	2,000
Pyrene	ug/kg	100,000	500,000	250 J	NA	7,800 B	380 U	63 J	7 J	38,000	19,000 J	NA	15 J	4,100	15,000 J	7,700 J	54,000 J	3,700	330 U	1,700 J
Benz(a)anthracene	ug/kg	1,000	5,600	410 U	NA	3,400 JB	380 U	33 J	370 U	13,000 J	5,200 J	NA	6 J	1,400	4,400 J	2,800 J	16,000 J	1,900	330	860 J
Benzo(a)pyrene	ug/kg	1,000	1,000	130 J	NA	2,400 JB	380 U	43 J	370 U	10,000 J	5,400 J	NA	370 U	1,200	3,300 J	1,400 J	13,000 J	2,800	330 U	1,100
Benzo(b)fluoranthene	ug/kg	1,000	5,600	410 U	NA	880 JB	380 U	380 U	370 U	4,400 J	2,600 J	NA	370 U	530 J	880 J	560 J	3,800 J	2,100	330 U	860
Benzo(k)fluoranthene	ug/kg	800	56,000	410 U	NA	1,400 JB	380 U	380 U	370 U	4,200 J	2,900 J	NA	370 UJ	890	2,200 J	820 J	8,400 J	1,800	330 UJ	580
Chrysene	ug/kg	1,000	56,000	410 U	NA	2,900 JB	380 U	46 J	370 U	12,000 J	5,300 J	NA	370 U	1,700	4,800 J	3,200 J	18,000 J	2,300	330 U	1,200 J
Dibenz(a,h)anthracene	ug/kg	330	560	14 J	NA	3,800 U	380 U	380 U	370 U	38,000 U	1,000 J	NA	370 U	190 J	18,000 U	19,000 U	73,000 U	1,000	330 U	300 J
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	33 J	NA	1,000 JB	380 U	24 J	370 U	4,000 J	3,000 J	NA	370 U	320 J	1,300 J	19,000 U	4,500 J	3,200	330 U	670
Total PAHs			500,000	5,013	0	114,380	5,207	3,692	5,213	625,400	315,700		4,132	20,746	365,780	248,280	1,109,000	27,950	5,610	13,390
Semivolatile Organic Compounds																				
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	22 J	330 U	400 U
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U
4-Chloroaniline	ug/kg	NL	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U
4-Methylphenol	ug/kg	330	500,000	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	860 J	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	63 J	330 U	400 U
Benzoic acid	ug/kg	NL	NL	2,000 U	NA	18,000 U	1,900 U	1,800 U	1,800 U	180,000 U	100,000 U	NA	1,800 U	3,500 U	89,000 U	92,000 U	360,000 U	3,500 U	1,600 U	37 J
Benzyl alcohol	ug/kg	NL	NL	410 U	NA	3,800 UJ	380 UJ	380 U	370 U	38,000 UJ	21,000 U	NA	370 U	720 U	18,000 UJ	19,000 UJ	73,000 U	720 U	330 U	400 U
Butylbenzylphthalate	ug/kg	NL	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 UJ
Carbazole	ug/kg	NL	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	590 J	NA	370 UJ	720 U	440 J	19,000 U	1,200 J	230 J	330 UJ	400 U
Di-n-butylphthalate	ug/kg	NL	NL	24 J	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U
Di-n-octylphthalate	ug/kg	NL	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U
Dibenzofuran	ug/kg	7,000	350,000	410 U	NA	1,200 J	380 U	380 U	370 U	2,700 J	1,700 J	NA	370 U	46 J	1,400 J	1,100 J	6,200 J	56 J	330 U	400 U
Diethylphthalate	ug/kg	NL	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U
Phenol	ug/kg	330	500,000	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	710 J	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	24 J	330 U	400 U
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 UJ
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Pink highlight indicates that the material was detected at the standard
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UJ - estimated detection limit
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Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
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B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
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was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-23	SB-23	SB-23	SB-23	SB-36	SB-36	SB-40	SB-40	SB-40	SB-41	SB-41	SB-41	SB-43	SB-43	SB-44	SB-44	TP-10
Sample ID:				CF-SB23	CF-SB23	CF-23	CF-SB23	CF-RW4	CF-RW4	CF-SB-40	CF-SB-40	CF-SB-40	CF-SB-41	CF-SB-41	CF-SB-41	CF-SB-43	CF-SB-43	CF-SB-44	CF-SB-44	CF-TP10
Depth (ft):				(4-8)	(29-31)	(92-94)	(109-111)	(4-8)	(16-20)	(4-6)	(16-18)	(16-20)	(10-12)	(18-20)	(28-30)	(6-8)	(28-30)	(3-5)	(29-31)	(3)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)																	
Date:				03/02/1999	03/04/1999	03/10/1999	03/11/1999	03/02/1999	03/02/1999	07/27/1999	07/27/1999	07/27/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/26/1999	07/27/1999	02/24/1999
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																				
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																				
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	1 UJ	NA	1 U	1 U	1 UJ	1 UJ	1 U	2 J	NA	1 U	2 J	1 UJ	1 UJ	1 UJ	2 J	1 UJ	1 U
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																				
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	3.20	NA	1.30	1.20	3.30	3.10	5.00 J	5.10 J	NA	3.50 J	1.80 J	2.50 J	2.30 J	5.50 J	8.00	3.90 J	16.80
Barium	mg/kg	350	400	89.00	NA	35.80 J	26.80 J	61.40	56.30	41.30	128.00	NA	39.40	60.60	81.40	77.30	95.30	158.00	67.80	208.00
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	0.18 U	NA	0.12 U	0.13 J	0.20 U	0.16 U	2.80 UJ	4.40 J	NA	3.70 J	2.60 U	2.90 J	3.70 J	3.60 J	7.70	3.40 J	1.30 J
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	25.70	NA	19.00	9.70	53.70	67.50	18.80 J	33.70 J	NA	58.00 J	41.10 J	15.60 J	33.50 J	29.80 J	36.70 J	46.20 J	28.00
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	162.0	NA	3.6 J	2.4 U	27.9	6.0 J	23.2	370.0	NA	8.3	10.0	10.8	11.7	13.7	558.0	12.8	669.0
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.24	NA	0.02 U	0.02 U	0.04 B	0.02 U	0.01 B	0.45	NA	0.01 B	0.01 B	0.01 U	0.01 U	0.01 U	0.10	0.01 U	0.32
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	1.60 J	NA	0.48 UJ	0.53 UJ	0.82 UJ	1.00 J	2.20 UJ	0.73 UJ	NA	3.10 UJ	2.50 U	1.00 U	0.93 UJ	0.95 UJ	2.50 U	1.70 U	2.50
Silver	mg/kg	2	1,500	0.36 UJ	NA	0.24 UJ	0.26 UJ	0.41 UJ	0.33 UJ	0.20 U	0.15 U	NA	0.17 U	0.20 U	0.15 U	0.19 U	0.19 U	0.16 U	0.14 U	0.38 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																				
TOC	mg/kg	NL	NL	NA	1,730	279	100 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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ug/kg - micrograms/kilogram or parts per billion (ppb)
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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				TP-10A	GP-01B	GP-01B	GP-02	GP-02	GP-03A	GP-3A (dup)	GP-03A	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08
Sample ID:				CF-TP10A	GP-01	GP-01	GP-02	GP-02	GP-03	GP-033	GP-03	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08
Depth (ft):				(3)	(34-38)	(42-45)	(24-28)	(43-45)	(16-20)	(16-20)	(28-32)	(12-16)	(16-20')	(16-20)	(32-35)	(28-32)	(40-44)	(12-16)	(16-20)	(12-16)	(16-20)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	02/25/1999	11/13/2001	11/13/2001	11/12/2001	11/12/2001	11/12/2001	11/12/2001	11/13/2001	11/13/2001	11/13/2001	11/14/2001	11/14/2001	11/16/2001	11/16/2001	11/19/2001	11/20/2001	11/16/2001	11/16/2001
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																					
Benzene	ug/kg	60	44,000	5 U	9,700	650 J	240 U	100 J	9,000	8,400	4,300 J	2,200,000	3,700,000	23,000	8,900	1,100,000	1,700	5,100	87,000	130,000	700,000
Toluene	ug/kg	700	500,000	5 U	170,000	3,400	3,500	270 J	34,000	38,000	18,000	1,700,000	3,000,000	31,000	49,000	1,100,000	3,300	100 U	77,000	170,000	670,000
Ethylbenzene	ug/kg	1,000	390,000	2 J	13,000	300 J	7,500	550 UJ	49,000	51,000	18,000	780,000	1,000,000	150,000	38,000	380,000	540 J	370 J	97,000	230,000	430,000
Xylene (total)	ug/kg	260	500,000	3 J	170,000	4,100	12,000	430 J	81,000	88,000	60,000	940,000	1,600,000	190,000	78,000	1,000,000	4,100	310 U	110,000	140,000	460,000
Volatile Organic Compounds																					
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is n
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				TP-10A	GP-01B	GP-01B	GP-02	GP-02	GP-03A	GP-3A (dup)	GP-03A	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-TP10A	GP-01	GP-01	GP-02	GP-02	GP-03	GP-033	GP-03	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08
Depth (ft):				(3)	(34-38)	(42-45)	(24-28)	(43-45)	(16-20)	(16-20)	(28-32)	(12-16)	(16-20')	(16-20)	(32-35)	(28-32)	(40-44)	(12-16)	(16-20)	(12-16)	(16-20)
Constituent Date:				02/25/1999	11/13/2001	11/13/2001	11/12/2001	11/12/2001	11/12/2001	11/12/2001	11/13/2001	11/13/2001	11/13/2001	11/14/2001	11/14/2001	11/16/2001	11/16/2001	11/19/2001	11/20/2001	11/16/2001	11/16/2001
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	500,000	750 U	480,000	39,000	97,000	2,600	870,000	1,100,000	45,000	16,000,000	NA	1,200,000	880,000	8,200,000	50,000	1,800	17,000	15,000	7,000,000
2-Methylnaphthalene	ug/kg	NL	NL	750 U	370,000	34,000	75,000	2,000	600,000	730,000	42,000	10,000,000	NA	780,000	600,000	5,000,000	38,000	190 J	11,000	4,600	3,800,000
Acenaphthene	ug/kg	20,000	500,000	750 U	13,000 J	1,400 J	3,700 J	59 J	15,000 J	18,000 J	1,800 J	670,000 J	NA	79,000 J	13,000 J	130,000 J	1,200 J	53 J	390 J	900 J	230,000 J
Acenaphthylene	ug/kg	100,000	500,000	75 J	120,000	14,000	16,000	570	100,000 J	120,000 J	11,000	2,000,000	NA	72,000 J	120,000 J	970,000 J	9,700	380 U	1,900 J	1,300 J	730,000 J
Anthracene	ug/kg	100,000	500,000	750 U	32,000 J	4,200 J	6,600 J	110 J	31,000 J	36,000 J	4,700 J	1,100,000 J	NA	41,000 J	32,000 J	380,000 J	4,100 J	380 U	770 J	1,000 J	380,000 J
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	680 J	72,000 U	7,400 U	15,000 U	360 U	15,000 U	16,000 U	7,300 U	320,000 J	NA	150,000 U	150,000 U	1,500,000 U	840 J	380 U	2,900 U	2,000 J	1,300,000 U
Fluoranthene	ug/kg	100,000	500,000	750 U	36,000 J	4,100 J	6,600 J	87 J	34,000 J	44,000 J	4,600 J	1,400,000 J	NA	45,000 J	36,000 J	500,000 J	5,100 J	34 J	1,100 J	3,400 J	510,000 J
Fluorene	ug/kg	30,000	500,000	750 U	61,000 J	6,700 J	10,000 J	190 J	55,000 J	70,000 J	6,700 J	1,400,000 J	NA	66,000 J	54,000 J	570,000 J	6,200 J	380 U	1,300 J	880 J	480,000 J
Phenanthrene	ug/kg	100,000	500,000	750 U	140,000	16,000	25,000	420	140,000 J	160,000	17,000	4,300,000	NA	160,000	140,000 J	1,600,000	18,000	380 U	3,700	4,600	1,500,000
Pyrene	ug/kg	100,000	500,000	490 J	51,000 J	6,000 J	9,400 J	120 J	56,000 J	70,000 J	6,400 J	2,400,000	NA	79,000 J	59,000 J	830,000 J	9,300	29 J	1,800 J	6,600	870,000 J
Benz(a)anthracene	ug/kg	1,000	5,600	250 J	19,000 J	2,100 J	3,500 J	37 J	20,000 J	25,000 J	2,400 J	900,000 J	NA	27,000 J	21,000 J	310,000 J	3,100 J	20 J	660 J	2,500 J	300,000 J
Benzo(a)pyrene	ug/kg	1,000	1,000	300 J	11,000 J	1,300 J	2,200 J	22 J	12,000 J	16,000 J	1,600 J	740,000 J	NA	19,000 J	13,000 J	240,000 J	2,400 J	380 U	500 J	2,200 J	240,000 J
Benzo(b)fluoranthene	ug/kg	1,000	5,600	250 J	72,000 U	7,400 U	15,000 U	360 U	15,000 U	16,000 U	7,300 U	310,000 J	NA	150,000 U	150,000 U	1,500,000 U	1,000 J	380 U	2,900 U	1,500 J	1,300,000 U
Benzo(k)fluoranthene	ug/kg	800	56,000	750 U	72,000 U	920 J	1,800 U	360 U	15,000 U	16,000 U	1,100 J	470,000 J	NA	150,000 U	150,000 U	1,500,000 U	1,400 J	380 U	2,900 U	1,900 J	1,300,000 U
Chrysene	ug/kg	1,000	56,000	320 J	20,000 J	2,200 J	3,800 J	360 J	21,000 J	28,000 J	2,600 J	1,000,000 J	NA	30,000 J	23,000 J	320,000 J	3,100 J	380 U	710 J	3,300 J	310,000 J
Dibenz(a,h)anthracene	ug/kg	330	560	390 J	72,000 U	7,400 U	15,000 U	360 U	15,000 U	16,000 U	7,300 U	2,000,000 U	NA	150,000 U	150,000 U	1,500,000 U	7,100 UJ	380 U	2,900 U	3,900 UJ	1,300,000 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	640 J	72,000 U	7,400 U	15,000 U	360 U	15,000 U	16,000 U	7,300 U	200,000 J	NA	150,000 U	150,000 U	1,500,000 U	600 J	380 U	2,900 U	1,400 J	1,300,000 U
Total PAHs			500,000	9,395	1,713,000	161,520	320,600	8,375	2,029,000	2,497,000	176,100	45,210,000		3,348,000	2,741,000	26,550,000	161,140	6,306	55,330	56,980	22,850,000
Semivolatile Organic Compounds																					
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	NL	2,500 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NL	430 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	NL	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	NL	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	350,000	22 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	NL	31 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	500,000	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	750 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
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-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				TP-10A	GP-01B	GP-01B	GP-02	GP-02	GP-03A	GP-3A (dup)	GP-03A	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-TP10A	GP-01	GP-01	GP-02	GP-02	GP-03	GP-033	GP-03	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08
Depth (ft):				(3)	(34-38)	(42-45)	(24-28)	(43-45)	(16-20)	(16-20)	(28-32)	(12-16)	(16-20')	(16-20)	(32-35)	(28-32)	(40-44)	(12-16)	(16-20)	(12-16)	(16-20)
Constituent Date:				02/25/1999	11/13/2001	11/13/2001	11/12/2001	11/12/2001	11/12/2001	11/12/2001	11/13/2001	11/13/2001	11/13/2001	11/14/2001	11/14/2001	11/16/2001	11/16/2001	11/19/2001	11/20/2001	11/16/2001	11/16/2001
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	1 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	1.60 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	350	400	42.20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	0.26 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	14.80 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	6.5 J	7.5	7.1	8.2	11.8	8.6	11.6	7.6	216.0	NA	4.1	8.1	4.9 J	7.7 J	6.6	8.0	342.0 J	1,990 J
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	0.63 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	2	1,500	0.26 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66	SB-67	SB-67	SB-58	SB-58	SB-59	SB-59
Sample ID:				GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-111	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-58	CF-SB-59	CF-SB-59
Depth (ft):				(4-8)	(12-16)	(16-20)	(40-45)	(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)	(0-4)	(4-6)	(0-4)	(4-6)	(0-4)	(8-10)
Constituent	Date:			11/16/2001	11/16/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/14/2001	11/14/2001	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/29/1999	11/29/1999
	Location:			40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	49 Lynhurst Ave	49 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave
BTEX (ug/kg)																						
Benzene	ug/kg	60	44,000	16,000	73,000	1,400	89	2,100	57 J	190 J	6	73,000	6 U	6 U	6 U	100	6 U	6 U	1 J	1 J	6 U	6 U
Toluene	ug/kg	700	500,000	24,000	13,000	1,100	33	830	35 J	87 J	1 U	150,000	6 U	6 U	0.30 J	0.30 J	6 U	6 U	1 J	1 J	1 J	6 U
Ethylbenzene	ug/kg	1,000	390,000	3,100 J	73,000	5,100	67	4,200	5 J	8	1 J	9,100	6 U	6 U	6 U	20	6 U	6 U	6 U	6 U	6 U	6 U
Xylene (total)	ug/kg	260	500,000	26,000	48,000	6,800	38	4,900	27	38	1 U	140,000	6 U	6 U	6 U	7 B	6 U	6 U	6 U	6 U	6 U	6 U
Volatile Organic Compounds																						
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
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NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
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-- unable to calculate because it was non-detected or not analyzed
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D - identifies all compounds in the analysis completed at secondary dilution factor
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B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is re
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66	SB-67	SB-67	SB-58	SB-58	SB-59	SB-59
Sample ID:				GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-111	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-58	CF-SB-59	CF-SB-59
Depth (ft):				(4-8)	(12-16)	(16-20)	(40-45)	(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)	(0-4)	(4-6)	(0-4)	(4-6)	(0-4)	(8-10)
Constituent	Date:			11/16/2001	11/16/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/14/2001	11/14/2001	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/29/1999	11/29/1999
	Location:			40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	49 Lynhurst Ave	49 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave
PAHs (ug/kg)																						
Naphthalene	ug/kg	12,000	500,000	22,000,000	1,600,000	1,400,000	110 J	510,000	790	1,200	49 J	2,000,000	370 U	380 U	170 J	79 J	18 J	390 U	40 J	370 U	59 J	11 J
2-Methylnaphthalene	ug/kg	NL	NL	21,000,000	830,000	750,000	58 J	320,000	490	890	31 U	1,500,000	370 U	380 U	180 J	380 U	400 U	390 U	31 J	370 U	44 J	390 U
Acenaphthene	ug/kg	20,000	500,000	980,000 J	180,000 J	24,000 J	360 U	37,000 J	18 J	33 J	21 J	54,000 J	13 J	380 U	170 J	13 J	400 U	390 U	70 J	370 U	110 J	390 U
Acenaphthylene	ug/kg	100,000	500,000	1,100,000 J	28,000 J	57,000 J	360 U	10,000 J	68 J	160 J	23 J	230,000 J	370 U	380 U	940 J	10 J	84 J	390 U	120 J	15 J	240 J	22 J
Anthracene	ug/kg	100,000	500,000	2,000,000 J	85,000 J	16,000 J	360 U	18,000 J	18 J	54 J	13 U	63,000 J	22 J	380 U	1,800	9 J	89 J	390 U	210 J	12 J	350 J	27 J
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	720,000 J	320,000 U	290,000 U	360 U	5,500 J	360 U	360 U	370 U	290,000 U	370 UJ	380 UJ	440 J	380 UJ	180 J	390 U	100 J	39 J	100 J	140 J
Fluoranthene	ug/kg	100,000	500,000	3,700,000	120,000 J	32,000 J	360 U	38,000 J	360 U	94 J	370 U	150,000 J	140 J	380 U	4,000	14 J	460	20 J	1,400	76 J	1,300	270 J
Fluorene	ug/kg	30,000	500,000	4,400,000	110,000 J	51,000 J	360 U	41,000 J	84 J	180 J	370 U	250,000 J	370 U	380 U	690 J	380 U	18 J	390 U	73 J	370 U	91 J	390 U
Phenanthrene	ug/kg	100,000	500,000	13,000,000	360,000	130,000 J	38 J	130,000	190 J	460 J	59 J	590,000	140 J	380 U	6,300	16 J	260 J	11 J	1,200	50 J	1,400	92 J
Pyrene	ug/kg	100,000	500,000	7,200,000	210,000 J	57,000 J	22 J	67,000 J	29 J	130 J	370 U	230,000 J	180 J	380 U	6,300 J	22 J	470	16 J	1,900 J	110 J	1,800	320 J
Benz(a)anthracene	ug/kg	1,000	5,600	2,300,000 J	70,000 J	21,000 J	360 U	23,000 J	360 U	36 J	370 U	74,000 J	70 J	380 U	2,400 J	380 U	280 J	390 U	750 J	41 J	900	200 J
Benzo(a)pyrene	ug/kg	1,000	1,000	1,900,000 J	58,000 J	290,000 U	360 U	21,000 J	360 U	25 J	370 U	49,000 J	69 J	380 U	2,000	380 U	260 J	390 U	700	39 J	920 J	210 J
Benzo(b)fluoranthene	ug/kg	1,000	5,600	790,000 J	320,000 U	290,000 U	360 U	74,000 U	360 U	360 U	370 U	290,000 U	43 J	380 U	920 J	380 U	200 J	390 U	470	41 J	1,000 J	160 J
Benzo(k)fluoranthene	ug/kg	800	56,000	1,100,000 J	320,000 U	34,000 J	360 U	12,000 J	360 U	360 U	370 U	290,000 U	49 J	380 U	1,400 J	380 U	370 J	390 UJ	540	44 J	1,800 J	160 J
Chrysene	ug/kg	1,000	56,000	2,500,000 J	76,000 J	23,000 J	360 U	26,000 J	360 U	41 J	370 U	83,000 J	110 J	380 U	3,000 J	380 U	300 J	390 U	1,100 J	64 J	1,100	230 J
Dibenz(a,h)anthracene	ug/kg	330	560	3,200,000 U	320,000 U	290,000 U	360 U	74,000 U	360 U	360 U	370 U	290,000 U	370 UJ	380 UJ	170 J	380 UJ	65 J	390 U	46 J	370 UJ	390 UR	42 J
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	480,000 J	320,000 U	290,000 U	360 U	4,300 J	360 U	360 U	370 U	290,000 U	370 UJ	380 UJ	520 J	380 UJ	200 J	390 U	130 J	29 J	120 J	120 J
Total PAHs			500,000	88,370,000	5,327,000	4,045,000	4,908	1,410,800	4,927	5,103	4,266	6,723,000	3,426	6,460	31,400	3,963	4,054	5,507	8,880	2,410	11,724	3,174
Semivolatile Organic Compounds																						
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	400 U	370 U	390 U	390 U
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	400 U	370 U	390 U	390 U
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	400 U	370 U	390 U	390 U
4-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	400 U	370 U	390 U	390 U
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,800 U	1,900 U	7,200 U	1,900 U	46 J	1,900 U	30 J	1,800 U	85 J	1,900 U
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	400 U	370 U	390 U	390 U
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 UJ	380 U	1,500 UJ	380 U	400 U	390 U	400 UJ	370 U	89 J	390 U
Carbazole	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	19 J	380 U	120 J	380 U	31 J	390 U	69 J	370 U	96 J	390 U
Di-n-butylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	400 U	370 U	390 U	390 U
Di-n-octylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	400 U	370 U	390 UR	390 U
Dibenzofuran	ug/kg	7,000	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	110 J	380 U	400 U	390 U	30 J	370 U	37 J	390 U
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	7 J	1,500 U	380 U	400 U	390 U	400 U	370 U	390 U	390 U
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	400 U	370 U	390 U	390 U
Phenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	16 J	400 U	390 U	400 U	370 U	390 U	390 U
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 UJ	380 U	1,500 UJ	380 U	400 U	390 U	230 J	370 U	650 B	180 JB
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
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Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
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T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

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Site ID:				GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66	SB-67	SB-67	SB-58	SB-58	SB-59	SB-59
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-111	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-58	CF-SB-59	CF-SB-59
Depth (ft):				(4-8)	(12-16)	(16-20)	(40-45)	(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)	(0-4)	(4-6)	(0-4)	(4-6)	(0-4)	(8-10)
Constituent Date:				11/16/2001	11/16/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/14/2001	11/14/2001	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/29/1999	11/29/1999
Location:				40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	49 Lynhurst Ave	49 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																						
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																						
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 UJ	1 UJ	7 J	1 UJ	1 J	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																						
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.50	2.50 U	7.20	3.1U	7.80	4.20	11.00	3.80 U	9.80	2.60 U
Barium	mg/kg	350	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	41.20 B	43.40	89.40	29.20 B	103.00	38.50 B	340.00	90.00	174.00	143.00
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.21 UR	0.20 UR	0.21 UR	0.17 UR	0.23 U	0.22 U	0.59 J	0.19 UR	0.68 B	0.22 UR
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	50.60	22.00	37.00	47.10	29.10	31.10	29.30	31.40	21.80	21.70
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	88.3 J	193.0 J	4.5	6.9	4.2	6.8	6.0	6.8	8.8	4.6 J	5.1 J	198.0	5.9 J	406.0 J	6.8 J	775.0	42.2	555.0 J	12.1
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U	0.01 U	0.20 J	0.00 U	1.20 J	0.02 J	1.30 J	0.31 J	0.56 J	0.09 J
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.50	1.30	1.60	1.10	1.90	1.10 U	2.10	0.95 U	1.00 U	1.20
Silver	mg/kg	2	1,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.21 UJ	0.20 UJ	0.21 UJ	0.17 UJ	0.23 U	0.22 U	0.21 J	0.19 UJ	0.20 U	0.22 UJ
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																						
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,080 J	1,260 J	23,600 J	1,210 J	7,390 J	630 J	45,800 J	3,810 J	65,600 J	3,280 J

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Clifton, New York

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Site ID:				SB-80	SB-80	SB-60	SB-60 (dup)	SB-60	SB-87	SB-87	SB-61	SB-61	SB-62	SB-62	SB-77	SB-77	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)	SB-84
Sample ID:				CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-11/30/99	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-61	CF-SB-62	CF-SB-62	SB-77	SB-77	CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-78	CF-SB-84
Depth (ft):				(0-4)	(52-56)	(0-4)	(0-4)	(4-8)	(48-52)	(60-64)	(0-4)	(4-8)	(0-4)	(4-6)	(24-28)	(37-39)	(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)	(40-44)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)																				
Date:				06/03/2002	06/04/2002	11/30/1999	11/30/1999	11/30/1999	06/13/2002	06/13/2002	11/29/1999	11/29/1999	11/29/1999	11/29/1999	11/20/2001	11/20/2001	06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001	06/21/2002
Location:				51 Lynhurst Ave	51 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	55 Lynhurst Ave	55 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave
BTEX (ug/kg)																							
Benzene	ug/kg	60	44,000	6 U	6 U	0.40 J	2 J	0.40 J	1,200	6	6 U	0.40 J	6 U	0.20 J	5,600 U	2,800 U	6 U	5 U	4,800 J	11,000 U	6 J	3 J	6 U
Toluene	ug/kg	700	500,000	6 U	6 U	0.40 J	2 J	6 U	5,000	1 J	6 U	1 J	6 U	1 J	5,600 U	2,800 U	1 J	1 J	60,000	15,000	6 U	6 U	6 U
Ethylbenzene	ug/kg	1,000	390,000	6 U	6 U	6 U	6 U	6 U	1,900	6 U	6 U	6 U	6 U	1 J	5,600 U	1,400 J	6 U	5 U	6,600 J	10,000 J	3 J	1 J	6 U
Xylene (total)	ug/kg	260	500,000	6 U	6 U	6 U	6 U	6 U	14,000	6 U	6 U	6 U	6 U	6 UJ	14,000	17,000	6 U	2 J	84,000	130,000	2 J	1 J	6 U
Volatile Organic Compounds																							
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is n
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-80	SB-80	SB-60	SB-60 (dup)	SB-60	SB-87	SB-87	SB-61	SB-61	SB-62	SB-62	SB-77	SB-77	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)	SB-84
Sample ID:				CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-11/30/99	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-61	CF-SB-62	CF-SB-62	SB-77	SB-77	CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-78	CF-SB-84
Depth (ft):				(0-4)	(52-56)	(0-4)	(0-4)	(4-8)	(48-52)	(60-64)	(0-4)	(4-8)	(0-4)	(4-6)	(24-28)	(37-39)	(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)	(40-44)
Constituent	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	06/03/2002	06/04/2002	11/30/1999	11/30/1999	11/30/1999	06/13/2002	06/13/2002	11/29/1999	11/29/1999	11/29/1999	11/29/1999	11/20/2001	11/20/2001	06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001	06/21/2002
Location:				51 Lynhurst Ave	51 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	55 Lynhurst Ave	55 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave
PAHs (ug/kg)																							
Naphthalene	ug/kg	12,000	500,000	380 U	360 U	11 J	360 U	390 U	380,000	65 J	26 J	400 U	380 U	380 U	9,900	670,000	150 J	100 J	800,000 J	2,100,000	95 J	110 J	360 U
2-Methylnaphthalene	ug/kg	NL	NL	380 U	360 U	780 U	360 U	390 U	310,000	370 U	27 J	400 U	380 U	380 U	12,000	450,000	360 U	360 U	520,000	1,400,000	360 U	59 J	360 U
Acenaphthene	ug/kg	20,000	500,000	46 J	360 UJ	72 J	360 U	390 U	10,000 J	370 U	460 U	400 U	380 U	380 U	570 J	17,000 J	28 J	360 U	15,000 J	42,000 J	360 U	18 J	37 J
Acenaphthylene	ug/kg	100,000	500,000	110 J	360 U	24 J	7 J	390 U	95,000	370 U	240 J	400 U	17 J	380 U	3,700	160,000	360 U	360 U	170,000 J	420,000	360 U	83 J	180 J
Anthracene	ug/kg	100,000	500,000	140 J	360 U	270 J	20 J	390 U	30,000 J	370 U	130 J	400 U	27 J	380 U	1,600	46,000 J	360 U	360 U	46,000 J	120,000 J	360 U	48 J	320 J
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	540	360 U	1,100 J	75 J	390 UJ	75,000 U	370 U	260 J	13 J	32 J	18 J	1,500 U	150,000 U	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U
Fluoranthene	ug/kg	100,000	500,000	1,200	360 U	1,800 J	180 J	27 J	29,000 J	370 U	540	28 J	160 J	37 J	1,500 J	52,000 J	360 U	360 U	43,000 J	110,000 J	360 U	50 J	350 J
Fluorene	ug/kg	30,000	500,000	40 J	360 U	43 J	360 U	390 U	47,000 J	370 U	22 J	400 U	380 U	380 U	2,000	79,000 J	360 U	360 U	70,000 J	180,000 J	360 U	390 U	260 J
Phenanthrene	ug/kg	100,000	500,000	780	360 U	1,200 J	79 J	11 J	120,000	370 U	280 J	14 J	58 J	18 J	5,400	190,000	360 U	360 U	180,000 J	420,000	360 U	170 J	1,200
Pyrene	ug/kg	100,000	500,000	1,300	360 U	3,400 J	280 J	40 J	43,000 J	370 U	590	27 J	130 J	35 J	2,300	74,000 J	360 U	360 U	65,000 J	150,000 J	360 U	57 J	540
Benz(a)anthracene	ug/kg	1,000	5,600	580	360 U	1,200 J	100 J	15 J	16,000 J	370 U	360 J	18 J	80 J	24 J	880 J	27,000 J	360 U	360 U	26,000 J	54,000 J	360 U	390 U	180 J
Benzo(a)pyrene	ug/kg	1,000	1,000	560	360 U	1,100 J	88 J	390 U	75,000 U	370 U	350 J	18 J	63 J	26 J	580 J	18,000 J	360 U	360 U	16,000 J	360,000 U	360 U	390 U	120 J
Benzo(b)fluoranthene	ug/kg	1,000	5,600	510	360 U	770 J	62 J	390 U	75,000 U	370 U	290 J	16 J	47 J	18 J	230 J	150,000 U	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U
Benzo(k)fluoranthene	ug/kg	800	56,000	550	360 U	790 J	66 J	390 U	75,000 U	370 U	490 J	28 J	98 J	34 J	370 J	150,000 U	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U
Chrysene	ug/kg	1,000	56,000	730	360 U	1,500 J	120 J	17 J	16,000 J	370 U	430 J	20 J	70 J	27 J	840 J	27,000 J	360 U	360 U	26,000 J	57,000 J	360 U	390 U	190 J
Dibenz(a,h)anthracene	ug/kg	330	560	160 J	360 U	290 J	360 UJ	390 UJ	75,000 U	370 U	98 J	400 U	13 J	380 U	1,500 U	150,000 U	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	440	360 U	860 J	50 J	390 UJ	75,000 U	370 U	280 J	13 J	37 J	17 J	1,500 U	150,000 U	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U
Total PAHs			500,000	8,446	6,120	15,210	2,927	4,790	1,546,000	5,985	4,873	2,995	2,352	2,914	46,370	2,560,000	5,578	5,860	2,927,000	7,213,000	5,855	4,105	5,897
Semivolatile Organic Compounds																							
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	780 U	360 U	390 U	NA	NA	460 UJ	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	NL	NA	NA	3,800 U	1,800 U	1,900 U	NA	NA	55 J	140 J	1,800 U	50 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NL	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	NA	NA	37 J	360 U	390 U	NA	NA	34 J	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	NL	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	NL	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	350,000	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	NL	NA	NA	780 U	360 U	7 J	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	500,000	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	NA	NA	780 U	360 U	390 U	NA	NA	460 U	400 U	380 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-80	SB-80	SB-60	SB-60 (dup)	SB-60	SB-87	SB-87	SB-61	SB-61	SB-62	SB-62	SB-77	SB-77	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)	SB-84
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-11/30/99	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-61	CF-SB-62	CF-SB-62	SB-77	SB-77	CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-78	CF-SB-84
Depth (ft):				(0-4)	(52-56)	(0-4)	(0-4)	(4-8)	(48-52)	(60-64)	(0-4)	(4-8)	(0-4)	(4-6)	(24-28)	(37-39)	(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)	(40-44)
Date:				06/03/2002	06/04/2002	11/30/1999	11/30/1999	11/30/1999	06/13/2002	06/13/2002	11/29/1999	11/29/1999	11/29/1999	11/29/1999	11/20/2001	11/20/2001	06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001	06/21/2002
Constituent / Location:				51 Lynhurst Ave	51 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	55 Lynhurst Ave	55 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																							
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																							
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	0 J	0 UJ	1 UJ	1 UJ	1 UJ	0 U	0 U	1 UJ	1 UJ	1 UJ	1 UJ	0 U	0 U	0 UJ	0 UJ	0 UJ	0 U	0 U	0 U	0 R
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																							
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	5.50	1.90	5.80	4.40 U	3.50 U	3.70	2.30	10.70	5.50	8.00	4.30	3.60	2.50	3.10	3.30	1.80 J	2.80	1.10 J	1.30 J	2.80
Barium	mg/kg	350	400	186.00	47.70	73.90	66.90	135.00	47.90 J	50.50 J	110.00	147.00	138.00	104.00	51.10	112.00	51.20	64.70	44.50	136.00	87.10 J	33.10 J	67.40
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	0.99 U	0.85 U	0.23 UR	0.23 UR	0.18 UR	1.00 U	0.99 U	0.21 U	0.26 U	0.23 U	0.21 U	0.21 U	0.25 U	1.00 U	0.89 U	0.98 U	0.31 J	0.72 J	2.80 U	0.98 U
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	26.60	13.20	22.90	20.90	32.20	12.20	12.00	52.20	54.80	38.30	29.50	33.70 J	14.00 J	17.80	27.20	11.40 J	13.30	40.60	12.30 J	14.90
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	436.0	7.3	85.7	79.0	9.2 J	8.8 J	7.5 J	264.0 J	26.2 J	235.0 J	32.9 J	8.3 J	7.6 J	7.2	6.9	6.8 J	7.6 J	91.4 J	2.4 B	7.2
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	1.30	0.09 U	0.47 J	0.43 J	0.03 J	0.07 U	0.10 U	0.43 J	0.19 J	0.05 J	0.03 J	0.00 J	0.00 J	0.09 U	0.09 U	0.08 U	0.07 U	0.07 U	0.08 J	0.10 UJ
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	1.60 UJ	1.40 UJ	1.20 U	1.40	1.20	1.60 U	1.60 U	2.30	2.30	1.40	1.00 U	1.20 U	1.40 U	1.60 UJ	1.40 UJ	1.60 UJ	16.40 U	15.10 U	15.20 U	1.60 U
Silver	mg/kg	2	1,500	0.33 J	0.25 U	0.23 UJ	0.23 UJ	0.18 UJ	0.30 UJ	0.30 UJ	0.21 U	0.26 U	0.23 U	0.21 U	0.19 U	0.23 U	0.30 U	0.27 U	0.30 U	3.10 U	0.51	2.80 U	0.29 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																							
TOC	mg/kg	NL	NL	NA	NA	11,700 J	18,800 J	3,660 J	NA	NA	33,200 J	3,180 J	1,570 J	2,720 J	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42
Sample ID:				CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42
Depth (ft):				(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)
Constituent	Date:			06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999
	Location:			Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Sidewalk	25 Willow Ave	25 Willow Ave	Bay Street	Block 2822	North of SIRR	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Langere Place	Langere Place
BTEX (ug/kg)																					
Benzene	ug/kg	60	44,000	6 U	6 U	6 U	6 U	6 U	6 U	0.2 J	6 U	6 U	6 U	6 U	6 U	0.5 J	6 U	NA	0.5 J	6 U	6 U
Toluene	ug/kg	700	500,000	6 U	6 U	6 U	6 U	6 U	6 U	0.4 J	0.8 J	6 U	0.2 J	6 UJ	6 U	6 U	0.4 J	NA	0.5 J	6 UJ	0.3 J
Ethylbenzene	ug/kg	1,000	390,000	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 U	6 U	6 U	NA	6 U	6 UJ	6 U
Xylene (total)	ug/kg	260	500,000	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 U	6 U	6 U	NA	6 U	6 UJ	6 U
Volatile Organic Compounds																					
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42
Sample ID:				CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42
Depth (ft):				(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)
Constituent	Date:			06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999
	Location:			Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Sidewalk	25 Willow Ave	25 Willow Ave	Bay Street	Block 2822	North of SIRR	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Langere Place	Langere Place
		Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)																		
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	210 J	65 J	94 J	17 J	94 J	78 J	8,100 U	51 J	8,100 U	220 J	60 J	60 J
2-Methylnaphthalene	ug/kg	NL	NL	370 U	410 U	370 U	360 U	380 U	410 U	160 J	53 J	64 J	19 J	93 J	83 J	8,200 U	42 J	8,100 U	190 J	90 J	47 J
Acenaphthene	ug/kg	20,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	250 J	110 J	60 J	46 J	120 J	43 J	8,100 U	810 UJ	8,100 U	280 J	23 J	62 J
Acenaphthylene	ug/kg	100,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	1,800 J	470	540	61 J	1,000	640 J	730 J	360 J	300 J	3,900	240 J	340 J
Anthracene	ug/kg	100,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	1,900 J	590	440	160 J	1,200	460 J	610 J	440 J	320 J	2,800	230 J	420
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	3,100 J	240 J	160 J	110 J	320 J	200 J	1,200 J	71 J	8,100 UJ	840 J	61 J	89 J
Fluoranthene	ug/kg	100,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	12,000	1,900	1,400	640	3,800	1,100	2,500 J	1,800 J	1,200 J	6,300	540	1,100
Fluorene	ug/kg	30,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	320 J	130 J	74 J	60 J	170 J	42 J	8,200 U	56 J	8,100 U	380 J	28 J	70 J
Phenanthrene	ug/kg	100,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	5,200	1,200	900	520	1,700	460 J	1,400 J	1,100 J	930 J	5,000	390	680
Pyrene	ug/kg	100,000	500,000	370 U	410 U	370 U	360 U	380 U	410 U	13,000	2,100	1,400	870	4,300	1,300	2,600 J	1,100 J	2,000 J	6,700	600	1,100
Benz(a)anthracene	ug/kg	1,000	5,600	370 U	410 U	370 U	360 U	380 U	410 U	9,400	1,600	1,000	540	3,000	780 J	1,100 J	1,000 J	780 J	5,400	380 J	800
Benzo(a)pyrene	ug/kg	1,000	1,000	370 U	410 U	370 U	360 U	380 U	410 U	8,800	1,300	1,000	530	2,800	740 J	1,400 J	1,200	770 J	5,200	450 J	840 J
Benzo(b)fluoranthene	ug/kg	1,000	5,600	370 U	410 U	370 U	360 U	380 U	410 U	8,200	1,200	1,000	520	2,500	710 J	1,300 J	1,600	730 J	4,800	680 J	1,100 J
Benzo(k)fluoranthene	ug/kg	800	56,000	370 U	410 U	370 U	360 U	380 U	410 U	10,000 J	1,700 J	1,400 J	850 J	4,000 J	1,300 J	2,100 J	1,500	740 J	6,600 J	940 J	1,800 J
Chrysene	ug/kg	1,000	56,000	370 U	410 U	370 U	360 U	380 U	410 U	12,000	1,700	1,200	590	3,200	990	1,700 J	1,800 J	1,400 J	6,000	550	1,100
Dibenz(a,h)anthracene	ug/kg	330	560	370 U	410 U	370 U	360 U	380 U	410 U	1,600 J	140 J	80 J	46 J	170 J	95 J	490 J	810 UJ	8,100 UJ	500 J	390 UJ	56 J
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	370 U	410 U	370 U	360 U	380 U	410 U	4,000	360 J	240 J	140 J	490 J	260 J	1,200 J	92 J	8,100 UJ	1,200 J	72 J	130 J
Total PAHs			500,000	6,290	6,970	6,290	6,120	6,460	6,970	91,940	14,858	11,052	5,719	28,957	9,281	18,330	12,202	9170	56,310	5,334	9,794
Semivolatile Organic Compounds																					
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	16,000 U	260 J	2,000 U	1,800 U	3,900 U	4,000 U	40,000 U	4,000 UJ	40,000 U	7,300 U	1,900 U	2,000 U
2-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 UJ	800 U	840 U	8,100 U	810 U	8,100 U	1,500 U	39 J	410 U
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	16,000 U	120 J	310 J	37 J	310 J	1,400 J	40,000 U	150 J	40,000 U	180 J	170 J	160 J
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	130 J	4,200	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	210 J	61 J	65 J	1,300	150 J	62 J	510 J	610 J	8,100 UJ	1,500 U	1,000	100 J
Carbazole	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	710 J	160 J	120 J	69 J	170 J	87 J	220 J	150 J	8,100 U	660 J	71 J	140 J
Di-n-butylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	820 U	8,100 U	1,500 U	390 U	410 U
Di-n-octylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	350,000	NA	NA	NA	NA	NA	NA	140 J	56 J	37 J	29 J	68 J	52 J	8,100 U	40 J	8,100 U	280 J	26 J	40 J
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	810 UJ	8,100 U	1,500 U	390 U	410 U
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	33 J	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	29,000 J	4,000 JB	4,400 JB	1,500 U	470 B	410 U
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
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Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
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UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objectiv
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample co
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42
Depth (ft):				(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)
Constituent Date:				06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999
Location:				Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Sidewalk	25 Willow Ave	25 Willow Ave	Bay Street	Block 2822	North of SIRR	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Langere Place	Langere Place
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	0 R	0 U	0 U	0 U	0 U	0 U	0.6 UJ	0.61 UJ	0.64 UJ	0.57 UJ	0.61 UJ	0.63 UJ	1.18 J	0.64 UJ	NA	0.59 UJ	0.6 UJ	2.74 J
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	1.90	2.00 J	3.70	2.60	3.50	5.20	7.9	9.3	8.4	6.7	10.3	10.1	5.6	7.1	NA	26.4	11.6	8.5
Barium	mg/kg	350	400	42.20	53.10	38.00	59.10	67.00	52.40	94.8	110	124	106	140	160	76	83.8	NA	59.9	131	126
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	0.85 U	1.10 U	0.81 U	0.90 U	0.88 U	1.00 U	0.63 B	0.32 B	0.53 B	0.21 UN	1.7	1.4	1.4	1.3 NJ	NA	0.23 B	1.1	0.35 B
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	12.80	10.60	20.50	12.70	18.90	13.10	31.3	19.3	19.9	36	31.8	31.9	45.4	36.7	NA	19.6	18.8	66.1
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	6.3	5.6	3.7	6.0	8.4	6.6	225 J	251 J	382 J	169 J	744 J	350 J	283 J	337	NA	352 J	400 J	226 J
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.09 UJ	0.10 U	0.07 U	0.08 U	0.10 U	0.10 U	0.29 J	0.64 J	0.62 J	0.23	0.63 J	0.22 J	0.2 J	0.27 NJ	NA	0.82 NJ	0.18 NJ	0.2 NJ
Nickel	mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	1.40 U	1.80 U	1.30 U	1.40 U	1.40 U	1.60 U	2	2.2	1.5	1.6 J	1.3	2.2	1.6	1.2	NA	1.1	2.4	1.8
Silver	mg/kg	2	1,500	0.25 U	0.33 U	0.24 U	0.27 U	0.26 U	0.30 U	0.22 U	0.21 U	0.2 J	0.21 U	0.31 J	0.24 J	0.47 J	0.26 JB	NA	0.2 U	0.16 U	0.19 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	37,800 J	37,700 J	48,400 J	15,000 J	65,500 J	105,000 J	60,000 J	53,400 J	NA	36,700 J	73,800 J	32,500 J

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
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Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Constituent / Site ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	PRASB-1	PRASB-1	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-4A	PRASB-4B	PRASB-5	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5A
Sample ID:				PRASB-1 (3-4)	PRASB-1 (13-14)	PRASB-1 (24-25)	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24)	PRASB-3A (3-4)	PRASB-4A(2-4)	PRASB-4A(4.5-7.5)	PRASB-4B(1-3)	PRASB-5(2-4)	PRASB-5(6-8)	PRASB-5(16-17)	PRASB-5A(4-6)	PRASB-5A(12-16)	PRASB-5A(24-25)
Depth (ft):				3-4	13-14	24-25	3-4	6-7	23-24	3-4	2-4	4.5-7.5	1-3	2-4	6-8	16-17	4-6	12-16	24-25
Date:				4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/23/2009	4/22/2009	4/22/2009	4/22/2009
Location:				89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
BTEX (ug/kg)																			
Benzene	ug/kg	60	44,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	700	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	1,000	390,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (total)	ug/kg	260	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds																			
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ug/kg	120	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	500,000	ND	23	35	29	17	86	ND	ND	ND	ND	ND	ND	4	ND	ND	21
Carbon Tetrachloride	ug/kg	760	22,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/kg	3,900	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	ug/kg	5,900	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	680	500000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	240,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	20	30,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene(trans)	ug/kg	190	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	1,800	130,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	ug/kg	100	130,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	350,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	ug/kg	NL	NL	NA	0	0	0	0	0	0.000	0.00	0.00	0.00	0.000	0.000	0.000	0.00	0.00	0.00
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	150,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	470	200,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	20	13,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
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Yellow highlight indicates exceedance is above the Commercial Use Standards.
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UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
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warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
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- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is n
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Constituent / Site ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	PRASB-1	PRASB-1	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-4A	PRASB-4B	PRASB-5	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5A
Sample ID:				PRASB-1 (3-4)	PRASB-1 (13-14)	PRASB-1 (24-25)	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24)	PRASB-3A (3-4)	PRASB-4A(2-4)	PRASB-4A(4.5-7.5)	PRASB-4B(1-3)	PRASB-5(2-4)	PRASB-5(6-8)	PRASB-5(16-17)	PRASB-5A(4-6)	PRASB-5A(12-16)	PRASB-5A(24-25)
Depth (ft):				3-4	13-14	24-25	3-4	6-7	23-24	3-4	2-4	4.5-7.5	1-3	2-4	6-8	16-17	4-6	12-16	24-25
Date:				4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/23/2009	4/22/2009	4/22/2009	4/22/2009
Location:				89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
PAHs (ug/kg)																			
Naphthalene	ug/kg	12,000	500,000	130	350	ND	ND	250	ND	150	ND	ND	ND	710	890	7800	ND	ND	ND
2-Methylnaphthalene	ug/kg	NL	NL	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	20,000	500,000	96	ND	ND	ND	160	ND	ND	ND	ND	ND	850	680	440.00	ND	ND	ND
Acenaphthylene	ug/kg	100,000	500,000	270	150	ND	ND	200	ND	ND	ND	ND	ND	1000	240	ND	ND	ND	ND
Anthracene	ug/kg	100,000	500,000	620	560	ND	ND	1200	ND	ND	ND	ND	97	5,200	1,700	100	ND	ND	ND
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	240	970	ND	120	910	ND	210	ND	ND	310	4300	820	200	110	ND	ND
Fluoranthene	ug/kg	100,000	500,000	1700	5400	ND	410	6300	ND	460	300	ND	1,100	36000	5,700	450	520	300	ND
Fluorene	ug/kg	30,000	500,000	770	210	ND	ND	530	ND	ND	ND	ND	ND	1,300	790	140	ND	ND	ND
Phenanthrene	ug/kg	100,000	500,000	3300	550	ND	210	2700	ND	130	180	ND	530	18,000	6,100	290	310	210	ND
Pyrene	ug/kg	100,000	500,000	2300	4600	ND	370	5200	ND	450	260	ND	980	28,000	5,100	480	440	280	ND
Benz(a)anthracene	ug/kg	1,000	5,600	920	2800	ND	230	2400	ND	280	150	ND	510	14,000	2,300	280	220	140	ND
Benzo(a)pyrene	ug/kg	1,000	1,000	560	3400	250	200	2300	275	350	120	ND	500	12,000	1,900	310	190	120	ND
Benzo(b)fluoranthene	ug/kg	1,000	5,600	660	4800	ND	230	3000	ND	390	160	ND	460	12,000	1,700	260	210	ND	ND
Benzo(k)fluoranthene	ug/kg	800	56,000	390	1300	ND	130	820	ND	210	ND	ND	520	8,300	1,500	310	100	130	ND
Chrysene	ug/kg	1,000	56,000	960	2900	ND	270	2100	ND	230	160	ND	580	13,000	2,200	300	240	160	ND
Dibenz(a,h)anthracene	ug/kg	330	560	ND	300	ND	ND	210	ND	ND	ND	ND	130	990	360	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	250	1200	ND	100	910	ND	200	ND	ND	290	4,400	830	180	88	ND	ND
Total PAHs			500,000	13,166	29,490	250	2,270	29,250	275	3,060	1,330	0	6,007	160,050	32,810	11,540	2,428	1,340	0
Semivolatile Organic Compounds																			
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	500,000	ND	170	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NL	ND	130	ND	ND	190	ND	ND	ND	ND	ND	710	590	220	ND	ND	ND
Di-n-butylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	350,000	81	120	ND	ND	350	ND	ND	ND	ND	ND	640	630	ND	ND	ND	ND
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	120	ND	ND	ND	ND	ND
Hexachlorobenzene	ug/kg	330	6,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	0	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	6700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-1	PRASB-1	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-4A	PRASB-4B	PRASB-5	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5A
Sample ID:				PRASB-1 (3-4)	PRASB-1 (13-14)	PRASB-1 (24-25)	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24)	PRASB-3A (3-4)	PRASB-4A(2-4)	PRASB-4A(4.5-7.5)	PRASB-4B(1-3)	PRASB-5(2-4)	PRASB-5(6-8)	PRASB-5(16-17)	PRASB-5A(4-6)	PRASB-5A(12-16)	PRASB-5A(24-25)
Depth (ft):				3-4	13-14	24-25	3-4	6-7	23-24	3-4	2-4	4.5-7.5	1-3	2-4	6-8	16-17	4-6	12-16	24-25
Constituent	Date:			4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/23/2009	4/22/2009	4/22/2009	4/22/2009
	Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																			
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																			
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	ND	2.30	ND	ND	8.40	1.20	10.1	ND	ND	ND	0.960	ND	11.0	ND	ND	ND
Cyanide, Free	mg/kg	NL	NL	ND	0.80	ND	ND	ND	ND	0.9	ND	ND	ND	1.0	ND	ND	ND	ND	ND
Available Cyanide	mg/kg	NL	NL	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																			
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	16	3.2	6.1	5.8	5.90	4.00	10.10	3.5	3.0	2.6	6.5	3.2	2.2	7.6	4.5	2.9	2.5
Barium	mg/kg	350	400	77.0	106.0	144.0	123.00	43.10	170.00	62.7	32.2	102.0	64.8	70.2	33.1	61.8	53.8	38.9	534.0
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	9.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.00
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	400	33.5	54.3	27.3	25.30	20.00	39.60	30.1	19.3	24.8	47.0	38.3	44.0	29.3	56.6	22.8	30.7
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	1,000	52.5	1,080	14.7	261	145	11.50	74.9	8.6	18.2	108.0	42.7	13.0	126.0	55.5	29.6	5.6
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	2.80	0.13	1.10	ND	0.45	1.70	ND	0.320	ND	0.049	0.18	2.3	ND	0.19	0.24	0.22	0.23
Nickel	mg/kg	30	310	335.0	125.0	60.20	61.20	87.80	282.0	146.0	149.0	221.0	547	213.0	272.0	153.0	450.0	137.0	201.0
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1,500	ND	0.52	ND	0.78	0.63	ND	ND	ND	0.430	ND	ND	ND	0.770	ND	ND	3.00
Silver	mg/kg	2	1,500	0.18	0.86	0.30	0.49	0.19	0.14	0.092	0.130	0.160	0.180	0.150	0.070	0.140	0.09	ND	0.22
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																			
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
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ug/kg - micrograms/kilogram or parts per billion (ppb)
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Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A	PRASB-7B	PRASB-7C	PRASB-7D	PRASB-8	PRASB-9	PRASB-10	PRASB-15		PRASB-15	
Sample ID:				PRASB-5B(7-8)	PRASB-5B(13-15)	PRASB-5B(19-20)	PRASB-5C(7-8)	PRASB-5C(12-13)	PRASB-7A(4-5)	PRASB-7B(5-7)	PRASB-7C(4-5)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5)	PRASB-10(2-3)	PRASB-15(4-5)		PRASB-15(30-35)	
Depth (ft):				7-8	13-15	19-20	7-8	12-13	4-5	5-7	4-5	5-7	5-6	3.5-4.5	2-3	4-5		30-35	
Constituent	Date:			4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009	4/23/2009	11/9/2011		11/10/2011	
	Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	Block 2822		Block 2822	
BTEX (ug/kg)																			
Benzene	ug/kg	60	44,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
Toluene	ug/kg	700	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6	J	0.97	U
Ethylbenzene	ug/kg	1,000	390,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
Xylene (total)	ug/kg	260	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds																			
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
2-Butanone	ug/kg	120	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	R	R	R	R
4-Methyl-2-Pentanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	UJ	9.7	UJ
Acetone	ug/kg	50	500,000	ND	21	20	6	22	ND	ND	17	ND	ND	ND	6	30	J	15	
Carbon Tetrachloride	ug/kg	760	22,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
Isopropylbenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Methylene Chloride	ug/kg	50	500,000	ND	14	42	14	10	ND	13	11	10	ND	ND	6	73		33	
Styrene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
n-Butylbenzene	ug/kg	12,000	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
n-Propylbenzene	ug/kg	3,900	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
sec-Butylbenzene	ug/kg	11,000	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
tert-Butylbenzene	ug/kg	5,900	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
1,1,1-Trichloroethane	ug/kg	680	500000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
1,1,2-Trichloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
1,1-Dichloroethane	ug/kg	270	240,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
1,1-Dichloroethene	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
1,2,3-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
1,2,4-Trichlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
1,2-Dibromoethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
1,2-Dichlorobenzene	ug/kg	1,100	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
1,2-Dichloroethane	ug/kg	20	30,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
1,2-Dichloroethene(trans)	ug/kg	190	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
1,2-Dichloropropane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
1,3-Dichlorobenzene	ug/kg	2,400	280,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
1,4-Dichlorobenzene	ug/kg	1,800	130,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
1,4-Dioxane	ug/kg	100	130,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	56	UJ	49	UJ
2-Hexanone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	U	9.7	UJ
Bromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Bromodichloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Bromoform	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Bromomethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Carbon disulfide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Chlorobenzene	ug/kg	1,100	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
Chloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Chloroform	ug/kg	370	350,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
Chloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
cis-1,2-Dichloroethene	ug/kg	250	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
cis-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Cyclohexane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Dibromochloromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Dichlorodifluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Methyl acetate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Methyl tert-butyl ether	ug/kg	930	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U
Methylcyclohexane	ug/kg	NL	NL	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0	0.00	0.00	1.1	U	0.97	U
Tetrachloroethene	ug/kg	1300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.46	J	0.97	U
trans-1,2-Dichloroethene	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
trans-1,3-Dichloropropene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Trichlorofluoromethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	U	0.97	U
Tetrachloroethene	ug/kg	1,300	150,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
Trichloroethene	ug/kg	470	200,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
Vinyl chloride	ug/kg	20	13,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	U	0.97	U

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Constituent / Site ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A	PRASB-7B	PRASB-7C	PRASB-7D	PRASB-8	PRASB-9	PRASB-10	PRASB-15		PRASB-15	
Sample ID:				PRASB-5B(7-8)	PRASB-5B(13-15)	PRASB-5B(19-20)	PRASB-5C(7-8)	PRASB-5C(12-13)	PRASB-7A(4-5)	PRASB-7B(5-7)	PRASB-7C(4-5)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5)	PRASB-10(2-3)	PRASB-15(4-5)		PRASB-15(30-35)	
Depth (ft):				7-8	13-15	19-20	7-8	12-13	4-5	5-7	4-5	5-7	5-6	3.5-4.5	2-3	4-5		30-35	
Date:				4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009	4/23/2009	11/9/2011		11/10/2011	
Location:				89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	Block 2822		Block 2822	
PAHs (ug/kg)																			
Naphthalene	ug/kg	12,000	500,000	ND	ND	ND	ND	ND	ND	ND	500	ND	ND	860	480	390	U	370	U
2-Methylnaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Acenaphthene	ug/kg	20,000	500,000	ND	ND	ND	ND	ND	ND	ND	210	ND	ND	160	ND	390	U	370	U
Acenaphthylene	ug/kg	100,000	500,000	ND	ND	ND	ND	ND	ND	ND	1,100	ND	ND	1500	1300	390	U	370	U
Anthracene	ug/kg	100,000	500,000	ND	97	ND	ND	ND	ND	ND	2,000	ND	ND	580	290	390	U	370	U
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	ND	880	ND	ND	ND	ND	ND	1,300	ND	ND	910	630	390	U	370	U
Fluoranthene	ug/kg	100,000	500,000	ND	1,000	ND	ND	220	ND	ND	15,000	86	ND	2400	1100	390	U	370	U
Fluorene	ug/kg	30,000	500,000	ND	ND	ND	ND	ND	ND	ND	540	ND	ND	360	160	390	U	370	U
Phenanthrene	ug/kg	100,000	500,000	ND	410	ND	ND	190	ND	ND	7,000	ND	ND	1700	680	390	U	370	U
Pyrene	ug/kg	100,000	500,000	ND	1,000	ND	ND	200	ND	ND	15,000	80	ND	3900	2900	390	U	370	U
Benz(a)anthracene	ug/kg	1,000	5,600	ND	790	ND	ND	110	ND	ND	6,700	ND	ND	2,800	1,500	39	U	37	U
Benzo(a)pyrene	ug/kg	1,000	1,000	ND	1,100	ND	ND	78	ND	ND	6,100	ND	ND	2,200	1,700	39	U	37	U
Benzo(b)fluoranthene	ug/kg	1,000	5,600	ND	1,000	ND	ND	ND	ND	ND	6,500	ND	ND	3,100	2,300	39	U	37	U
Benzo(k)fluoranthene	ug/kg	800	56,000	ND	500	ND	ND	ND	ND	ND	2,400	ND	ND	2,000	1,000	39	U	37	U
Chrysene	ug/kg	1,000	56,000	ND	690	ND	ND	110	ND	ND	5,800	ND	ND	3,300	1,600	390	U	370	U
Dibenz(a,h)anthracene	ug/kg	330	560	ND	170	ND	ND	ND	ND	ND	440	ND	ND	300	160	39	U	37	U
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	ND	780	ND	ND	ND	ND	ND	1,500	ND	ND	950	580	39	U	37	U
Total PAHs			500,000	0	8,397	0	0	908	0	0	72,090	166	0	27,020	16,360	4,524		4,292	
Semivolatile Organic Compounds																			
1,1'-Biphenyl	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	UJ
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
2,4,5-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
2,4,6-Trichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
2,4-Dichlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
2,4-Dimethylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
3-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	790	U	750	U
2-Methylphenol	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	390	U	370	U
4-Chloroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
4-Methylphenol	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	280	ND	ND	ND	ND	390	U	370	U
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	
Butylbenzylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Carbazole	ug/kg	NL	NL	ND	ND	ND	ND	ND	ND	ND	620	ND	ND	130	ND	390	U	370	U
Di-n-butylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Di-n-octylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Dibenzofuran	ug/kg	7,000	350,000	ND	ND	ND	ND	ND	ND	ND	330	ND	ND	ND	ND	390	U	370	U
Diethylphthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Phenol	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	250	ND	ND	ND	ND	390	U	370	U
Hexachlorobenzene	ug/kg	330	6,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	39	U	37	U
Isophorone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	140	J
2,4-Dinitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1200	U	1100	U
2,4-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	79	U	75	U
2,6-Dinitrotoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	79	U	75	U
2-Chloronaphthalene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
2-Chlorophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
2-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	790	U	750	U
2-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
3-Methylphenol	ug/kg	330	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA		NA	
3,3'-Dichlorobenzidine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	790	U	750	U
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1200	U	1100	U
4-Bromophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
4-Chloro-3-methylphenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
4-Nitroaniline	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	790	U	750	U
4-Nitrophenol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1200	U	1100	U
Acetophenone	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Atrazine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Benzaldehyde	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	UJ	370	UJ
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
bis(2-Chloroethyl) ether	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39	U	37	U
Caprolactam	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Dimethyl phthalate	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	U	370	U
Hexachlorobutadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	79	U	75	U
Hexachlorocyclopentadiene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	390	UJ	370	U
Hexachloroethane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39	U	37	U
Nitrobenzene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39	U	37	U
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39	U	37	U
Pentachlorophenol	ug/kg	800	6700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1200	U	1100	U

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A	PRASB-7B	PRASB-7C	PRASB-7D	PRASB-8	PRASB-9	PRASB-10	PRASB-15	PRASB-15
Sample ID:				PRASB-5B(7-8)	PRASB-5B(13-15)	PRASB-5B(19-20)	PRASB-5C(7-8)	PRASB-5C(12-13)	PRASB-7A(4-5)	PRASB-7B(5-7)	PRASB-7C(4-5)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5)	PRASB-10(2-3)	PRASB-15(4-5)	PRASB-15(30-35)
Depth (ft):				7-8	13-15	19-20	7-8	12-13	4-5	5-7	4-5	5-7	5-6	3.5-4.5	2-3	4-5	30-35
Constituent	Date:			4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009	4/23/2009	11/9/2011	11/10/2011
	Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	Block 2822	Block 2822
Pesticides/Polychlorinated Biphenyls (ug/kg)																	
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																	
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17.10	27.50	NA	NA
Cyanide, Free	mg/kg	NL	NL	ND	ND	ND	ND	ND	0.50	ND	ND	ND	ND	ND	ND	NA	NA
Available Cyanide	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.047 U	0.044 U
Metals (mg/kg)																	
Aluminum	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8,000	3,890
Antimony	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2 U	2.2 U
Arsenic	mg/kg	13	16	5.10	11.30	7.10	1.80	3.10	3.6	4.40	5.40	3.90	4.6	15	11.4	3.2	3.1
Barium	mg/kg	350	400	97.20	59.10	210.00	32.10	52.40	56.7	44.20	72.50	42.10	43.7	223	279	83.7	49.6
Beryllium	mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.43 U	0.3 J
Cadmium	mg/kg	2.5	9.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2 J	1.1 U
Calcium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,300	8,320
Chromium	mg/kg	1	400	55.20	40.20	119.00	21.90	20.40	25	40.10	22.00	50.20	23.2	65.4	55.7	25.2	23.1
Cobalt	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.5	8.3 J
Copper	mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	59.1	9.7
Iron	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18,400	12,900
Lead	mg/kg	63	1,000	15.80	126	52.20	9.70	228	30.3	41.60	284	48.30	17.7	489	377	181	5.1
Magnesium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5,820	5,870
Manganese	mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	261	317
Mercury	mg/kg	0.18	2.80	0.29	0.67	0.04	0.22	0.62	0.043	ND	0.55	0.08	0.18	1.30	1.00	0.34	0.036 U
Nickel	mg/kg	30	310	379	247	515	150	95.60	79.8	333	71	622	199	291	93.60	337	108
Potassium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	713 J	879 J
Selenium	mg/kg	3.9	1,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82	0.79	2.2 U	2.2 U
Silver	mg/kg	2	1,500	0.18	0.18	0.22	0.08	0.18	0.079	0.20	0.27	0.16	0.10	0.37	0.47	2.2 U	2.2 U
Sodium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	586 J	71.8 J
Thallium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2 U	2.2 U
Vanadium	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19.7	12.9
Zinc	mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	132	22
Total Organic Carbon (mg/kg)																	
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte r
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-15	PRASB-16	PRASB-16	PRASB-16	PRASB-17	PRASB-17	PRASB-17	PRASB-18	PRASB-18	PRASB-18	PRASB-19	PRASB-19	PRASB-19	PRASB-20-B
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	PRASB-15(37.5-40)	PRASB-16(4-5)	PRASB-16(5-10)	PRASB-16(32.5-35)	PRASB-17(2-3)	PRASB-17(15.17.5)	PRASB-17(35-40)	PRASB-18(4-5)	PRASB-18(17.5-20)	PRASB-18(30-35)	PRASB-19(4-5)	PRASB-19(20-22.5)	PRASB-19(35-40)	PRASB-20-B
Depth (ft):				37.5-40	4-5	5-10	32.5-35	2-3	15-17.5	35-40	4-5	17.5-20	30-35	4-5	20-22.5	35-40	0-7
Constituent Date:				11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/11/2011	11/11/2011	11/9/2011	11/11/2011	11/11/2011	12/28/2011
Location:				Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	89 Willow Ave
BTEX (ug/kg)																	
Benzene	ug/kg	60	44,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	460	1 U	1.3 U	4.6	1.1 U	1.2 U	1.1 U	1 U	NA
Toluene	ug/kg	700	500,000	1.1 U	0.4 J	1.2 U	0.84 J	0.5 J	1,900	0.68 J	0.92 J	1 U	1.3	0.56 J	1.1 U	1 U	NA
Ethylbenzene	ug/kg	1,000	390,000	1.1 U	1.2 U	1.2 U	6.4	1.4 U	2,300	2.3	1.3 U	11	9.5	1.2 U	0.62 J	1 U	NA
Xylene (total)	ug/kg	260	500,000	0.58	ND ND	ND ND	2.3	ND ND	4,500	1.2	ND ND	2.3	6.5	ND ND	ND ND	ND ND	NA
Volatile Organic Compounds																	
1,2,4-Trimethylbenzene	ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	500,000	R R	2.8 J	7 J	R R	R R	R R	10 U	5.5 J	2.6 J	1.2 J	R R	11 U	1.5 J	NA
4-Methyl-2-Pentanone	ug/kg	NL	NL	11 UJ	12 UJ	12 UJ	11 UJ	14 UJ	1100 U	10 UJ	4.6 J	10 UJ	11 UJ	12 UJ	11 UJ	10 UJ	NA
Acetone	ug/kg	50	500,000	57 J	71	72 J	14 J	13 J	R R	10 U	95	30 J	9 J	12 U	11 U	12 J	NA
Carbon Tetrachloride	ug/kg	760	22,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Isopropylbenzene	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	90 J	1 U	1.3 U	0.54 J	1.1 U	1.2 U	1.1 U	1 U	NA
Methylene Chloride	ug/kg	50	500,000	35	16	41	28	39	110 U	1 U	110	4.9	4.5	61	2.1 U	6.8	NA
Styrene	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	2.1	1.4 U	640	0.66 J	1.3 U	1 U	0.63 J	1.2 U	1.1 U	1 U	NA
n-Butylbenzene	ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	500000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,1,2-Trichloroethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,1-Dichloroethane	ug/kg	270	240,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,1-Dichloroethene	ug/kg	330	500,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 UJ	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 UJ	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 UJ	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,2-Dibromoethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,2-Dichlorobenzene	ug/kg	1,100	500,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,2-Dichloroethane	ug/kg	20	30,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,2-Dichloroethene(trans)	ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,3-Dichlorobenzene	ug/kg	2,400	280,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,4-Dichlorobenzene	ug/kg	1,800	130,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
1,4-Dioxane	ug/kg	100	130,000	55 UJ	61 UJ	61 UJ	53 UJ	72 UJ	5300 UJ	52 UJ	67 UJ	51 UJ	53 UJ	62 UJ	56 UJ	50 UJ	NA
2-Hexanone	ug/kg	NL	NL	11 U	12 UJ	12 U	11 U	14 UJ	1100 UJ	10 U	13 UJ	10 U	11 U	12 UJ	11 U	10 U	NA
Bromochloromethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Bromodichloromethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Bromoform	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Bromomethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Carbon disulfide	ug/kg	NL	NL	0.97 J	1.2 U	4.3	0.69 J	1.4 U	110 UJ	1 U	2.3	1 U	1.1 U	1.2 U	1.1 U	0.47 J	NA
Chlorobenzene	ug/kg	1,100	500,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Chloroethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Chloroform	ug/kg	370	350,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Chloromethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
cis-1,2-Dichloroethene	ug/kg	250	500,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
cis-1,3-Dichloropropene	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Cyclohexane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Dibromochloromethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Dichlorodifluoromethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Methyl acetate	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	210 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Methyl tert-butyl ether	ug/kg	930	500,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Methylcyclohexane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Tetrachloroethene	ug/kg	1300	150,000	1.1 U	1.2 U	0.46 J	1.1 U	1.4 U	110 U	1 U	0.91 J	1 U	1.1 U	0.59 J	1.1 U	1 U	NA
trans-1,2-Dichloroethene	ug/kg	190	500,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
trans-1,3-Dichloropropene	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Trichloroethene	ug/kg	470	200,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Trichlorofluoromethane	ug/kg	NL	NL	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA
Tetrachloroethene	ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	13,000	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U	1.2 U	1.1 U	1 U	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-15	PRASB-16	PRASB-16	PRASB-16	PRASB-17	PRASB-17	PRASB-17	PRASB-18	PRASB-18	PRASB-18	PRASB-19	PRASB-19	PRASB-19	PRASB-20-B
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	PRASB-15(37.5-40)	PRASB-16(4-5)	PRASB-16(5-10)	PRASB-16(32.5-35)	PRASB-17(2-3)	PRASB-17(15.17.5)	PRASB-17(35-40)	PRASB-18(4-5)	PRASB-18(17.5-20)	PRASB-18(30-35)	PRASB-19(4-5)	PRASB-19(20-22.5)	PRASB-19(35-40)	PRASB-20-B
Depth (ft):				37.5-40	4-5	5-10	32.5-35	2-3	15-17.5	35-40	4-5	17.5-20	30-35	4-5	20-22.5	35-40	0-7
Constituent Date:				11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/11/2011	11/11/2011	11/9/2011	11/11/2011	11/11/2011	12/28/2011
Location:				Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	89 Willow Ave
PAHs (ug/kg)																	
Naphthalene	ug/kg	12,000	500,000	380 U	2,100 U	440 U	190 J	520 U	1,700	500	200 J	380 U	170 J	68 J	400 U	370 U	NA
2-Methylnaphthalene	ug/kg	NL	NL	380 U	2,100 U	440 U	370 U	520 U	3,100	370 U	170 J	380 U	76 J	420 U	400 U	370 U	NA
Acenaphthene	ug/kg	20,000	500,000	380 U	620 J	440 U	370 U	520 U	460	370 U	190 J	380 U	370 U	420 U	400 U	370 U	NA
Acenaphthylene	ug/kg	100,000	500,000	380 U	510 J	440 U	370 U	170 J	2,100	370 U	1,400	380 U	370 U	220 J	400 U	370 U	NA
Anthracene	ug/kg	100,000	500,000	380 U	2,200	440 U	370 U	520 U	2,100	370 U	1,100	380 U	370 U	160 J	400 U	370 U	NA
Benzo(g,h,i)perylene	ug/kg	100,000	500,000	380 U	6,500	440 U	370 U	220 J	850	370 U	3,300	380 U	370 U	700	400 U	370 U	NA
Fluoranthene	ug/kg	100,000	500,000	380 U	10,000	440 U	370 U	210 J	2,900	370 U	3,300	380 U	370 U	890	400 U	370 U	NA
Fluorene	ug/kg	30,000	500,000	380 U	1,100 J	440 U	370 U	520 U	2,400	370 U	380 J	380 U	370 U	420 U	400 U	370 U	NA
Phenanthrene	ug/kg	100,000	500,000	380 U	12,000	440 U	370 U	150 J	8,500	370 U	3,500	380 U	370 U	520	400 U	370 U	NA
Pyrene	ug/kg	100,000	500,000	380 U	28,000	440 U	370 U	360 J	3,500	370 U	5,300	380 U	370 U	1100	400 U	370 U	NA
Benz(a)anthracene	ug/kg	1,000	5,600	38 U	8,400	30 J	37 U	52 U	1,700	15 J	3,900	38 U	37 U	980	40 U	37 U	NA
Benzo(a)pyrene	ug/kg	1,000	1,000	38 U	6,700	18 J	37 U	410	1,400	12 J	5,500	38 U	37 U	960	40 U	37 U	NA
Benzo(b)fluoranthene	ug/kg	1,000	5,600	38 U	7,300	22 J	37 U	440	1,400	13 J	6,900	38 U	37 U	1,700	40 U	37 U	NA
Benzo(k)fluoranthene	ug/kg	800	56,000	38 U	2,900	11 J	37 U	52 U	450	37 U	2,200	38 U	37 U	560	40 U	37 U	NA
Chrysene	ug/kg	1,000	56,000	380 U	11,000	440 U	370 U	330 J	1,600	370 U	5,700	380 U	370 U	1,200	400 U	370 U	NA
Dibenz(a,h)anthracene	ug/kg	330	560	38 U	1,600	44 U	37 U	52 U	210	37 U	46 U	38 U	37 U	42 U	40 U	37 U	NA
Indeno(1,2,3-cd)pyrene	ug/kg	500	5,600	38 U	4,600	44 U	37 U	170	1,100	9.4 J	2,800	38 U	37 U	670	40 U	37 U	NA
Total PAHs			500,000	4,408	107,630	5,009	4,112	5,216	35,470	4,323	45,886	4,408	3,798	11,030	4,640	4,292	
Semivolatile Organic Compounds																	
1,1'-Biphenyl	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	710	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NL	380 UJ	2100 U	440 UJ	370 UJ	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2,4,5-Trichlorophenol	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2,4,6-Trichlorophenol	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2,4-Dichlorophenol	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2,4-Dimethylphenol	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
3-Nitroaniline	ug/kg	NL	NL	780 U	4200 U	890 U	760 U	1100 U	770 U	750 U	930 U	770 U	750 U	850 U	810 U	740 U	NA
2-Methylphenol	ug/kg	330	500,000	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
4-Chloroaniline	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
4-Methylphenol	ug/kg	330	500,000	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Benzoic acid	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Carbazole	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	450	370 U	150 J	380 U	370 U	420 U	400 U	370 U	NA
Di-n-butylphthalate	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Di-n-octylphthalate	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Dibenzofuran	ug/kg	7,000	350,000	380 U	2100 U	440 U	370 U	520 U	790	370 U	150 J	380 U	370 U	420 U	400 U	370 U	NA
Diethylphthalate	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Phenol	ug/kg	330	500,000	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Hexachlorobenzene	ug/kg	330	6,000	38 U	210 U	44 U	37 U	52 U	38 U	37 U	46 U	38 U	37 U	42 U	40 U	37 U	NA
Isophorone	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	100 J	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2,4-Dinitrophenol	ug/kg	NL	NL	1200 U	6300 U	1300 U	1100 U	1600 U	1100 U	1100 U	1400 U	1200 U	1100 U	1300 U	1200 U	1100 U	NA
2,4-Dinitrotoluene	ug/kg	NL	NL	78 U	420 U	89 U	76 U	110 U	77 U	75 U	93 U	77 U	75 U	85 U	81 U	74 U	NA
2,6-Dinitrotoluene	ug/kg	NL	NL	78 U	420 U	89 U	76 U	110 U	77 U	75 U	93 U	77 U	75 U	85 U	81 U	74 U	NA
2-Chloronaphthalene	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2-Chlorophenol	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
2-Nitroaniline	ug/kg	NL	NL	780 U	4200 U	890 U	760 U	1100 U	770 U	750 U	930 U	770 U	750 U	850 U	810 U	740 U	NA
2-Nitrophenol	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
3-Methylphenol	ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NL	780 U	4200 U	890 U	760 U	1100 U	770 U	750 U	930 U	770 U	750 U	850 U	810 U	740 U	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NL	1200 U	6300 U	1300 U	1100 U	1600 U	1100 U	1100 U	1400 U	1200 U	1100 U	1300 U	1200 U	1100 U	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
4-Chloro-3-methylphenol	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
4-Nitroaniline	ug/kg	NL	NL	780 U	4200 UJ	890 U	760 U	1100 UJ	770 U	750 U	930 UJ	770 U	750 U	850 UJ	810 U	740 U	NA
4-Nitrophenol	ug/kg	NL	NL	1200 U	6300 UJ	1300 U	1100 U	1600 UJ	1100 U	1100 U	1400 UJ	1200 U	1100 U	1300 UJ	1200 U	1100 U	NA
Acetophenone	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Atrazine	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Benzaldehyde	ug/kg	NL	NL	380 UJ	2100 UJ	440 UJ	370 UJ	520 UJ	380 U	370 UJ	460 UJ	380 U	370 UJ	420 UJ	400 UJ	370 UJ	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NL	38 U	210 UJ	44 U	37 U	52 UJ	38 U	37 U	46 UJ	38 U	37 U	42 UJ	40 U	37 U	NA
Caprolactam	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Dimethyl phthalate	ug/kg	NL	NL	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U	420 U	400 U	370 U	NA
Hexachlorobutadiene	ug/kg	NL	NL	78 U	420 U	89 U	76 U	110 U	77 U	75 U	93 U	77 U	75 U	85 U	81 U	74 U	NA
Hexachlorocyclopentadiene	ug/kg	NL	NL	380 U	2100 UJ	440 U	370 U	520 UJ	380 U	370 U	460 UJ	380 U	370 U	420 UJ	400 U	370 U	NA
Hexachloroethane	ug/kg	NL	NL	38 U	210 U	44 U	37 U	52 U	38 U	37 U	46 U	38 U	37 U	42 U	40 U	37 U	NA
Nitrobenzene	ug/kg	NL	NL	38 U	210 U	44 U	37 U	52 U	38 U	37 U	46 U	38 U	37 U	42 U	40 U	37 U	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NL	38 U	210 UJ	44 U	37 U	52 UJ	38 U	37 U	46 UJ	38 U	37 U	42 UJ	40 U	37 U	NA
Pentachlorophenol	ug/kg	800	6700	1200 U	6300 U	1300 U	1100 U	1600 U	1100 U	1100 U	1400 U	1200 U	1100 U	1300 U	1200 U	1100 U	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Yellow highlight indicates exceedance is above the Commercial Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standa
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic a
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective
residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-15	PRASB-16	PRASB-16	PRASB-16	PRASB-17	PRASB-17	PRASB-17	PRASB-18	PRASB-18	PRASB-18	PRASB-19	PRASB-19	PRASB-19	PRASB-20-B
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	Comercial Use Standards (ug/kg)	PRASB-15(37.5-40)	PRASB-16(4-5)	PRASB-16(5-10)	PRASB-16(32.5-35)	PRASB-17(2-3)	PRASB-17(15.17.5)	PRASB-17(35-40)	PRASB-18(4-5)	PRASB-18(17.5-20)	PRASB-18(30-35)	PRASB-19(4-5)	PRASB-19(20-22.5)	PRASB-19(35-40)	PRASB-20-B
Depth (ft):				37.5-40	4-5	5-10	32.5-35	2-3	15-17.5	35-40	4-5	17.5-20	30-35	4-5	20-22.5	35-40	0-7
Constituent Date:				11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/11/2011	11/11/2011	11/9/2011	11/11/2011	11/11/2011	12/28/2011
Location:				Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	89 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)																	
4,4'-DDE	ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)																	
Cyanide, Amenable	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5 U
Cyanide, Total	mg/kg	NL	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.1
Cyanide, Free	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NL	0.046 U	0.051 U	0.053 U	0.045 U	0.063 U	0.046 U	0.044 U	0.056 U	0.046 U	0.045 U	0.051 U	0.048 U	0.044 U	NA
Metals (mg/kg)																	
Aluminum	mg/kg	NL	NL	4,450	5,460	5,960	5,050	2,280	4,170	4,580	6,170	6,150	3,710	6,410	2,170	4,190	NA
Antimony	mg/kg	NL	NL	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	4.2	2.3 U	2.1 U	2.4 U	2.3 U	2.2 U	NA
Arsenic	mg/kg	13	16	2.5	11.2	3.1	6.4	5	1.5	3.6	19.7	3.8	2.3	13.6	2.1	2.8	NA
Barium	mg/kg	350	400	56.9	221	101	65.1	1,350	58.1	56.8	4,900	149	50.3	332	118	54.4	NA
Beryllium	mg/kg	7.2	590	0.38 J	0.31 J	0.29 J	0.34 J	0.61 U	0.26 J	0.4 J	0.29 J	0.42 J	0.35 J	0.32 J	0.21 J	0.41 J	NA
Cadmium	mg/kg	2.5	9.3	1.1 U	1.4	1.3 U	1.1 U	2.9	1.1 U	1.1 U	1.5	1.2 U	1.1 U	1.5	1.2 U	1.1 U	NA
Calcium	mg/kg	NL	NL	12,600	30,900	3,960	11,300	42,400	2,120	12,900	21,000	2,390	5,250	12,700	1,240	8,130	NA
Chromium	mg/kg	1	400	12.4	24.4	28.5	113	59.6	31.8	46.5	25.5	40	105	30.4	31.7	137	NA
Cobalt	mg/kg	NL	NL	5.1 J	12.1 J	12.4 J	35.9	8 J	23.4	21.7	11.6 J	26.7	34	10 J	20.7	26.9	NA
Copper	mg/kg	50	270	22.4	65.6	11.4	19.6	37.6	15.1	30.1	302	21	49	137	11.1	15.6	NA
Iron	mg/kg	NL	NL	12,200	32,200	12,600	25,500	16,300	18,800	19,500	30,300	24,800	24,100	20,000	17,800	23,600	NA
Lead	mg/kg	63	1,000	8.8	1,050	24.6	5.9	1,530	9.3	8.8	3,380	14.3	4.2	1,860	2.8	6	NA
Magnesium	mg/kg	NL	NL	3,840	5,140	5,430	14,900	16,900	30,900	8,680	7,550	8,620	24,200	8,280	33,600	23,100	NA
Manganese	mg/kg	1,600	10,000	370	515	191	492	206	226	454	265	510	348	164	690	407	NA
Mercury	mg/kg	0.18	2.80	0.038 U	0.76	0.041 U	0.036 U	0.47	0.036 U	0.033 U	0.7	0.036 U	0.032 U	1.1	0.035 U	0.034 U	NA
Nickel	mg/kg	30	310	12.6	94.6	191	715	128	450	388	105	476	673	99.5	483	494	NA
Potassium	mg/kg	NL	NL	1,290	598 J	632 J	1070 J	292 J	984 J	1,030 J	820 J	849 J	834 J	547 J	358 J	891 J	NA
Selenium	mg/kg	3.9	1,500	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	1.7 J	2.3 U	2.1 U	1.5 J	2.3 U	1.2 J	NA
Silver	mg/kg	2	1,500	2.2 U	0.59 J	0.23 J	2.2 U	0.37 J	2.2 U	2.1 U	0.94 J	2.3 U	2.1 U	0.55 J	2.3 U	2.2 U	NA
Sodium	mg/kg	NL	NL	101 J	149 J	152 J	69.2 J	117 J	127 J	74.3 J	633 J	85.7 J	66.8 J	671 J	1,160 U	70.6 J	NA
Thallium	mg/kg	NL	NL	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	2.7 U	2.3 U	2.1 U	2.4 U	2.3 U	2.2 U	NA
Vanadium	mg/kg	NL	NL	16.4	23.6	15.8	15.4	10.9 J	15.1	19	27.1	24.6	13.8	35.7	10.1 J	16.9	NA
Zinc	mg/kg	109	10,000	24.4	552	32.7	30.3	1,820	29.2	29.1	1,450	28.5	25.2	655	17.5	29.6	NA
Total Organic Carbon (mg/kg)																	
TOC	mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
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N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Sample ID:				PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Depth (ft):				0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7
Constituent	Date:			12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
	Location:	Units	Unrestricted Use Standards (ug/kg)	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
BTEX (ug/kg)												
Benzene		ug/kg	60	44,000	NA	NA	NA	NA	NA	NA	NA	NA
Toluene		ug/kg	700	500,000	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene		ug/kg	1,000	390,000	NA	NA	NA	NA	NA	NA	NA	NA
Xylene (total)		ug/kg	260	500,000	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds												
1,2,4-Trimethylbenzene		ug/kg	3,600	190,000	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene		ug/kg	8,400	190,000	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone		ug/kg	120	500,000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Acetone		ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride		ug/kg	760	22,000	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride		ug/kg	50	500,000	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene		ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene		ug/kg	3,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene		ug/kg	11,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene		ug/kg	5,900	500,000	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane		ug/kg	680	500000	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		ug/kg	270	240,000	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		ug/kg	20	30,000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)		ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		ug/kg	2,400	280,000	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		ug/kg	1,800	130,000	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane		ug/kg	100	130,000	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		ug/kg	1,100	500,000	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		ug/kg	370	350,000	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene		ug/kg	250	500,000	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether		ug/kg	930	500,000	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene		ug/kg	190	500,000	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	1,300	150,000	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	470	200,000	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		ug/kg	20	13,000	NA	NA	NA	NA	NA	NA	NA	NA

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UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
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D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte
was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Sample ID:				PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Depth (ft):				0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7
Constituent	Date:			12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
	Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
PAHs (ug/kg)												
Naphthalene		ug/kg	12,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene		ug/kg	20,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene		ug/kg	100,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene		ug/kg	100,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene		ug/kg	100,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene		ug/kg	100,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene		ug/kg	30,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene		ug/kg	100,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene		ug/kg	100,000	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene		ug/kg	1,000	5,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene		ug/kg	1,000	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene		ug/kg	1,000	5,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene		ug/kg	800	56,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene		ug/kg	1,000	56,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene		ug/kg	330	560	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene		ug/kg	500	5,600	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PAHs				500,000								
Semivolatile Organic Compounds												
1,1'-Biphenyl		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol		ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol		ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		ug/kg	7,000	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		ug/kg	330	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol		ug/kg	330	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		ug/kg	800	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA

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-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
Shading/bolding indicates an exceedance of established New York State Recommended Soil Cleanup Objective residential soils.
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample cor warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte was between IDL and contract required detection limit (metals)
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- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is r
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-1
Comparison of Pre-Remedial Action Soil Analytical Data to Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:				PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Sample ID:				PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Depth (ft):				0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7
Constituent	Date:			12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
	Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
Pesticides/Polychlorinated Biphenyls (ug/kg)												
4,4'-DDE		ug/kg	3	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT		ug/kg	3	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		ug/kg	5	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		ug/kg	2,400	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		ug/kg	42	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		ug/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide (mg/kg)												
Cyanide, Amenable		mg/kg	NL	NL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5
Cyanide, Total		mg/kg	NL	27	8.7	0.55 U	0.95	26.5	13.2	0.56 U	0.56 U	1	1.2
Cyanide, Free		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)												
Aluminum		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		mg/kg	13	16	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		mg/kg	350	400	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		mg/kg	7.2	590	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		mg/kg	2.5	9.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		mg/kg	1	400	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		mg/kg	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		mg/kg	63	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		mg/kg	1,600	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		mg/kg	0.18	2.80	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		mg/kg	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		mg/kg	3.9	1,500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		mg/kg	2	1,500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		mg/kg	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)												
TOC		mg/kg	NL	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA

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ug/kg - micrograms/kilogram or parts per billion (ppb)
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N - spiked sample recovery was not within control limits (metals)

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	40 Willow Avenue Parcel															
Site ID:		FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03	FPM-MW-03	RW-04	RW-04 (dup)	RW-04	RW-07	RW-07	RW-14	RW-14 (dup)	PZ-03	PZ-04A	PZ-TP-13
Sample ID:		MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	CFRW04-01	CFRW14-01	CF-RW-04	CFRW07-01	CFTAR01[a]	CF-RW-14	CF-RW-10/12/99	CF-DWTR-P23	CF-DWTR-P24	CF-DWTR-P2/TP13
Constituent / Date:		04/14/1993	06/29/1994	04/14/1993	06/29/1994	04/14/1993	06/29/1994	03/31/1999	03/31/1999	10/11/1999	04/01/1999	04/01/1999	10/13/1999	10/13/1999	01/18/2002	01/18/2002	01/18/2002
Volatile Organic Compounds (ug/L)																	
BTEX																	
Benzene	1	10 U	1 U	10 U	1 U	10 U	1 U	5 U	5 U	5 U	**20000**	**4500000**	**2400**	**2000**	**3900**	**10000**	**12000**
Toluene	5	10 U	1 U	10 U	1 U	10 U	1 U	5 U	5 U	0.2 J	**9800**	**7400000**	**870 J**	**530 J**	**1100**	**54 J**	**4300**
Ethylbenzene	5	10 U	1	10 U	2	10 U	1 U	5 U	5 U	5 U	**290 J**	**730000 J**	**190**	**220**	**1300**	**420**	**1300**
Xylene (total)	5	10 U	4	**17**	**12**	10 U	2 U	5 U	5 U	5 U	**2200**	**6100000**	**780**	**840**	**1400**	**270**	**2800**
Total BTEX		0	5	17	14	0	0	0	0	0.2	32,290	18,730,000	4,240	3,590	7,700	10,744	20,400
Other Volatile Organic Compounds																	
1,1,1-Trichloroethane	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	5	NA	3	NA	3	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.6	NA	NA														
1,3,5-Trimethylbenzene	5	NA	3	NA	2	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	50*	30	NA	13	NA	25	NA	10 UJ	10 UJ	NA	2000 U	1400000 U	NA	NA	**610 J**	500 UJ	1000 UJ
Bromodichloromethane	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl bromide	5	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	NA	2000 U	1000000 U	NA	NA	200 UJ	250 UJ	500 UJ
Methyl chloride	5	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	NA	2000 U	1000000 U	NA	NA	200 U	250 U	500 U
Methyl tert-butyl ether	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	5	NA	**6**	NA	**13**	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	5	NA	**6**	NA	1	NA	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	5	NA	1	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	5	NA	1	NA	1	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	5	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	0.4	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5	10 U	NA	10 U	NA	10 U	NA	5 U	5 U	NA	**1800**	**4100000**	NA	NA	200 U	250 U	**670**
Trichloroethylene	5	10 U	NA	10 U	NA	10 U	NA	5 U	5 U	NA	1000 U	1000000 U	NA	NA	200 U	250 U	500 U
Semivolatile Organic Compounds (ug/L)																	
PAHs																	
2-Methylnaphthalene	NE	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	10 U	1300	68000000	840	750	650 J	57 J	800 J
Acenaphthene	20*	10 U	1 U	10 U	1 U	10 U	5	10 U	10 U	10 U	**31 J**	**2200000 J**	**70 J**	**64 J**	1000 U	6 J	2000 U
Acenaphthylene	NE	10 U	NA	10 U	NA	22	NA	10 U	10 U	0.2 J	480 J	19000000 J	220 J	200 J	1000 U	100 U	2000 U
Anthracene	50*	10 U	1 U	10 U	1 U	10 U	1 U	10 U	10 U	10 U	1000 U	40000000 U	7 J	6 J	1000 U	100 U	2000 U
Benzo(g,h,i)perylene	NE	10 U	1 U	10 U	1 U	10 U	1 U	10 UJ	10 UJ	10 U	1000 U	720000 J	500 U	500 U	1000 U	100 U	2000 U
Fluoranthene	50*	10 U	1 U	10 U	1 U	10 U	1 U	10 U	10 U	10 U	1000 U	40000000 U	500 U	500 U	1000 U	100 U	2000 U
Fluorene	50*	10 U	1 U	10 U	1 U	10 U	4	10 U	10 U	10 U	1000 U	**750000 J**	**56 J**	**51 J**	1000 U	100 U	2000 U
Naphthalene	10*	10 U	4 #	10 U	**16 #**	10 U	1 #	0.4 J	10 U	10 U	**7100**	**94000000**	**2400**	**2100**	**6700**	**770**	**7100**
Phenanthrene	50*	10 U	1 U	10 U	1 U	10 U	5	10 U	10 U	10 U	1000 U	**23000000 J**	41 J	38 J	1000 U	100 U	2000 U
Pyrene	50*	10 U	1 U	10 U	1	10 U	1	10 U	10 U	10 U	1000 U	**11000000 J**	500 U	500 U	1000 U	100 U	2000 U
Benz(a)anthracene	0.002*	10 U	1 U	10 U	1 U	10 U	1 U	10 U	10 U	10 U	1000 U	40000000 U	500 U	500 U	1000 U	100 U	2000 U
Benzo(a)pyrene	ND	10 U	1 U	10 U	1 U	10 U	1 U	10 U	10 U	10 U	1000 U	240000 J	500 U	500 U	1000 U	100 U	2000 U
Benzo(b)fluoranthene	0.002*	10 U	1 U	10 U	1 U	10 U	1 U	10 UJ	10 UJ	10 U	1000 U	40000000 U	500 U	500 U	1000 U	100 U	2000 U
Benzo(k)fluoranthene	0.002*	10 U	1 U	10 U	1 U	10 U	1 U	10 UR	10 UR	10 UJ	1000 U	40000000 U	500 U	500 U	1000 U	100 U	2000 U
Chrysene	0.002*	10 U	1 U	10 U	1 U	10 U	1 U	10 U	10 U	10 U	1000 U	40000000 U	500 U	500 U	1000 U	100 U	2000 U
Dibenz(a,h)anthracene	NE	10 U	1 U	10 U	1 U	10 U	1 U	10 U	10 U	10 U	1000 U	40000000 U	500 U	500 U	1000 U	100 U	2000 U
Indeno(1,2,3-cd)pyrene	0.002*	10 U	1 U	10 U	1 U	10 U	1 U	10 U	10 U	10 U	1000 U	730000 J	500 U	500 U	1000 U	100 U	2000 U
Total PAHs		0	4	0	17	22	16	0.4	0	0.2	8,911	219,640,000	3,634	3,209	7,350	833	7,900
Other Semivolatile Organic Compounds (ug/L)																	
2,4-Dimethylphenol	50*	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	10 U	**160 J**	NA	500 U	500 U	1000 UJ	26 J	**140 J**
2-Methylphenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	NE	NA	NA	NA	NA	NA	NA	50 UR	50 UR	50 U	5000 U	NA	2500 U	2500 U	5000 UR	500 UR	10000 UR
Benzyl alcohol	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	NE	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	10 U	1000 U	NA	16 J	15 J	1000 U	100 U	2000 U
Dibenzofuran	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	50*	10 U	NA	NA	NA	10 U	NA	10 U	10 U	10 U	1000 U	NA	500 U	500 U	1000 U	26 J	2000 U
(2-Methylphenol) o-Cresol	1	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	10 U	**47 J**	NA	500 U	500 U	1000 UJ	**7 J**	**120 J**
(4-Methylphenol) p-Cresol	1	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	10 U	1000 U	NA	500 U	500 U	1000 UJ	**7 J**	**140 J**
Phenol	1	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	10 U	1000 U	NA	500 U	500 U	1000 UJ	**26 J**	**170 J**

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient	40 Willow Avenue Parcel															
Site ID:	Groundwater	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03	FPM-MW-03	RW-04	RW-04 (dup)	RW-04	RW-07	RW-07	RW-14	RW-14 (dup)	PZ-03	PZ-04A	PZ-TP-13
Sample ID:	Quality Standards	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	CFRW04-01	CFRW14-01	CF-RW-04	CFRW07-01	CFTAR01[a]	CF-RW-14	CF-RW-10/12/99	CF-DWTR-P23	CF-DWTR-P24	CF-DWTR-P2/TP13
Constituent Date:	(GA)	04/14/1993	06/29/1994	04/14/1993	06/29/1994	04/14/1993	06/29/1994	03/31/1999	03/31/1999	10/11/1999	04/01/1999	04/01/1999	10/13/1999	10/13/1999	01/18/2002	01/18/2002	01/18/2002
Inorganics (ug/L)																	
Aluminum	NE	NA	NA	NA	NA	NA	NA	22 U	22 U	NA	62.5 B	NA	NA	NA	NA	NA	NA
Arsenic	25	NA	NA	NA	NA	NA	NA	6 U	6 U	4 U	8.8 U	NA	4 U	4 U	7 U	7 U	7 U
Barium	1000	NA	NA	NA	NA	NA	NA	423	420	492	105 B	NA	118 B	115 B	428	263	536
Cadmium	5	NA	NA	NA	NA	NA	NA	1.2 U	1 U	1 U	1.3 U	NA	1 U	1 U	1.3 U	1.3 U	1.3 U
Calcium	NE	NA	NA	NA	NA	NA	NA	81800	81300	NA	60300	NA	NA	NA	NA	NA	NA
Chromium	50	NA	NA	NA	NA	NA	NA	1 U	1 U	2 U	1 U	NA	2 U	2 U	4.3 B	2.9 J	1.5 U
Cobalt	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	200	NA	NA	NA	NA	NA	NA	1 U	1 U	NA	1 U	NA	NA	NA	3.8 U	5.4 U	6.2 U
Iron	300	NA	NA	NA	NA	NA	NA	50 U	50 U	NA	264	NA	NA	NA	NA	NA	NA
Lead	25	NA	NA	NA	NA	NA	NA	2 U	2 U	3 U	3.4 U	NA	3 UJ	3 NUJ	3.4 U	15.2 U	4.7 U
Magnesium	35000*	NA	NA	NA	NA	NA	NA	**36900**	**37000**	NA	28400	NA	NA	NA	NA	NA	NA
Manganese	300	NA	NA	NA	NA	NA	NA	**621**	**618**	NA	**635**	NA	NA	NA	NA	NA	NA
Nickel	100	NA	NA	NA	NA	NA	NA	5.2 U	4.6 U	NA	5.8 U	NA	NA	NA	27.2 J	62.1 J	21.5 J
Potassium	NE	NA	NA	NA	NA	NA	NA	3810 J	3850 J	NA	2660 JB	NA	NA	NA	NA	NA	NA
Selenium	10	NA	NA	NA	NA	NA	NA	4 U	4 U	8.2 NJ	4 U	NA	5 U	5 U	6.9 U	6.9 U	6.9 U
Silver	50	NA	NA	NA	NA	NA	NA	2 U	2 U	1 U	2 U	NA	1.2 NJ	1 NUJ	1.4 R	1.4 R	2.5 J
Sodium	20000	NA	NA	NA	NA	NA	NA	**23700**	**24200**	NA	14600	NA	NA	NA	NA	NA	NA
Vanadium	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2000	NA	NA	NA	NA	NA	NA	11 U	24.9 U	NA	8 U	NA	NA	NA	16.2 U	21.5 J	16.2 U
Total Cyanide (mg/L)																	
Cyanide	200	NA	NA	NA	NA	NA	NA	0.01 U	0.01 U	0.01 UR	0.01 U	NA	0.328	0.340	0.564	0.258	0.294
Cyanide, amenable	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.564	0.258	0.084
Total Petroleum Hydrocarbons (mg/L)																	
TPH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.86	NA	1.50
Other (mg/L)																	
Hardness, Total (as CaCO3)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	360	431	205
Hardness, Calcium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	218	252	131
Hardness, Magnesium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	142	179	73.7
Total Dissolved Solids	NE	NA	NA	NA	NA	NA	NA	485	465	NA	353	NA	NA	NA	460	610	510
Total Suspended Solids	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28	772	1.9 U
pH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.66 J	7.56 J	7.79 J
Ignitability (degrees F)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	>201	>201	>201
Salinity (psu)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Only detected analytes are shown on the table

* guidance value

N - spiked sample recovery was not within control limits (metals)

NE - not established

NA - not analyzed

J - estimated value

U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis

UJ - estimated detection limit

(dup) - indicates duplicate sample

Shading/bolding indicates an exceedance of established New York State ambient groundwater quality standards (GA)

ND - indicates standard is applicable to analyte detection limit

R - the reported results or detection limits are estimated or rejected based upon the recovery

B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of the analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)

\# - Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.

mg/L - milligrams/liter

ug/L - micrograms/liter

JB - estimated detection limit/analyte was found within laboratory method blank

a - indicates tar sample from bottom of RW-7

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient	49 Lynhurst Avenue		51 Lynhurst Avenue	53 Lynhurst Avenue	55 Lynhurst Avene	59 Lynhurst Avenue	61 Lynhurst Avenue	63 Lynhurst Avenue	67 Lynhurst Avenue	25 Willow Avenue Parcel									
Site ID:	Groundwater	PZ-11	PZ-11 (dup)	PZ-05	PZ-06	PZ-07	PZ-08	PZ-09	PZ-10	PZ-12	FPM-OW-03									
Sample ID:	Quality Standards	CF-P2-11	CF-P2-49	CF-P2-5	CF-P2-6	CF-P2-7	CF-PZ-8	CF-P2-9	CF-PZ-10	CF-P2-12	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3
Constituent Date:	(GA)	06/10/2002	06/10/2002	06/05/2002	06/10/2002	06/10/2002	06/12/2002	06/07/2002	06/04/2002	06/10/2002	11/15/1993	12/07/1993	05/12/1994	12/07/1995	01/03/1996	02/01/1996	03/06/1996	04/09/1996	05/01/1996	06/05/1996
Volatile Organic Compounds (ug/L)																				
BTEX																				
Benzene	1	5 U	0.3 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	**3300D**	**8300D**	**3800D**	**3100D**	**3700D**	**4400D**	**2300D**	**4100D**	**1600D**
Toluene	5	0.3 J	0.3 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	**9**	**11**	**8**	4	14	**19**	**8**	**9**	5
Ethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	**270D**	**120**	**380D**	2U	**330D**	**430D**	**200D**	**310**	**150**
Xylene (total)	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	**182**	**190**	**144**	**115**	**200**	**560D**	**130**	**197**	**100**
Total BTEX		0.3	0.6	0	0	0	0	0	0	0	--	3,761	8,621	4,332	3,219	4,244	5,409	2,638	4,616	1,855
Other Volatile Organic Compounds																				
1,1,1-Trichloroethane	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**110**	NA	**150**	**110**	10U	**500D**	**100**	**150**	1
1,2-Dichloroethane	0.6										NA	**50U**	**61**	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**66**	NA	**82**	**49**	**96**	**290D**	**100**	**100**	2
Acetone	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 R	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA	NA	NA	NA
Bromoform	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	75	NA	100	15	80	**170D**	**68**	**89**	1U
Methyl bromide	5	5 UJ	5 UJ	5 U	5 UJ	5 U	4 J	5 U	5 U	**5 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl chloride	5	5 U	5 U	5 U	5 U	5 U	1 J	5 U	5 U	1 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1U	2U	10U	1U	1U	8	1U
Tetrachloroethene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	NA	1U	2U	10U	1U	1U	1U	1U
n-Propylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**17**	NA	**27**	2U	**14**	**19**	1U	**17**	**5**
p-Isopropyltoluene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**7**	NA	**18**	**13**	**36**	**40**	**39**	**11**	4
sec-Butylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	NA	1U	2U	10U	1U	1U	1U	1U
tert-Butylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	NA	1U	**12**	**17**	1U	1U	1U	1U
trans-1,3-Dichloropropene	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	NA	NA	NA	NA	NA	NA
Styrene	5	5 UJ	5 UJ	5 U	5 UJ	5 U	5 U	5 U	5 U	5 U	NA	NA	10U	NA	NA	NA	NA	NA	NA	NA
Trichloroethylene	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA	10U	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (ug/L)																				
PAHs																				
2-Methylnaphthalene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	54	NA	310D	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	20*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**63**	NA	**63**	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10U	NA	10U	NA	NA	NA	NA	NA	NA	NA
Anthracene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	4J	NA	10U	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10U	NA	10U	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6J	NA	10U	NA	NA	NA	NA	NA	NA	NA
Fluorene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	20	NA	27	NA	NA	NA	NA	NA	NA	NA
Naphthalene	10*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**870D**	**2400D**	**1200D**	**6800D**	**2500D**	**5800D**	**7800D**	**3400D**	**5600D**	**1900D**
Phenanthrene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	19	NA	21	NA	NA	NA	NA	NA	NA	NA
Pyrene	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6J	NA	10U	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**3J**	NA	10U	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ND	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**2J**	NA	10U	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**2J**	NA	10U	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1J**	NA	10U	NA	NA	NA	NA	NA	NA	NA
Chrysene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**3J**	NA	10U	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U		NA	10U	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.002*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1J**	NA	10U	NA	NA	NA	NA	NA	NA	NA
Total PAHs		0	0	0	0	0	0	0	0	0	1,054	2,400	1,621	6,800	2,500	5,800	7,800	3,400	5,600	1,900
Other Semivolatile Organic Compounds (ug/L)																				
2,4-Dimethylphenol	50*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10U	NA	20	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	25U	NA	10U	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	25U	NA	10U	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	NE	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	10U	NA	NA	NA	NA	NA	NA	NA
Carbazole	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	NA	12	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	50*	10 U	0.4 J	0.5 J	10 U	0.6 J	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(2-Methylphenol) o-Cresol	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(4-Methylphenol) p-Cresol	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	1	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10U	NA	**16**	NA	NA	NA	NA	NA	NA	NA

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient	49 Lynhurst Avenue		51 Lynhurst Avenue	53 Lynhurst Avenue	55 Lynhurst Avene	59 Lynhurst Avenue	61 Lynhurst Avenue	63 Lynhurst Avenue	67 Lynhurst Avenue	25 Willow Avenue Parcel									
Site ID:	Groundwater	PZ-11	PZ-11 (dup)	PZ-05	PZ-06	PZ-07	PZ-08	PZ-09	PZ-10	PZ-12	FPM-OW-03									
Sample ID:	Quality Standards	CF-P2-11	CF-P2-49	CF-P2-5	CF-P2-6	CF-P2-7	CF-PZ-8	CF-P2-9	CF-PZ-10	CF-P2-12	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3
Constituent Date:	(GA)	06/10/2002	06/10/2002	06/05/2002	06/10/2002	06/10/2002	06/12/2002	06/07/2002	06/04/2002	06/10/2002	11/15/1993	12/07/1993	05/12/1994	12/07/1995	01/03/1996	02/01/1996	03/06/1996	04/09/1996	05/01/1996	06/05/1996
Inorganics (ug/L)																				
Aluminum	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	35000*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	20000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/L)																				
Cyanide	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, amenable	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (mg/L)																				
TPH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (mg/L)																				
Hardness, Total (as CaCO3)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness, Calcium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness, Magnesium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Suspended Solids	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitability (degrees F)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Salinity (psu)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Only detected analytes are shown on the table

* guidance value

N - spiked sample recovery was not within control limits (metals)

NE - not established

NA - not analyzed

J - estimated value

U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis

UJ - estimated detection limit

(dup) - indicates duplicate sample

Shading/bolding indicates an exceedance of established New York State ambient groundwater quality standards (GA)

ND - indicates standard is applicable to analyte detection limit

R - the reported results or detection limits are estimated or rejected based upon the recovery

B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of the analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)

\# - Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.

mg/L - milligrams/liter

ug/L - micrograms/liter

JB - estimated detection limit/analyte was found within laboratory method blank

a - indicates tar sample from bottom of RW-7

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	25 Willow Avenue Parcel																			
Site ID:		FPM-OW-03												FPM-OW-03 (dup)	FPM-OW-04						
Sample ID:		OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW3-DUPE	OW3	OW-3	OW-3	OW-3	OW-3A	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4
Constituent / Date:		07/12/1996	08/01/1996	09/06/1996	10/03/1996	11/21/1996	04/02/1997	05/07/1997	09/09/1997	10/22/1997	11/24/1997	12/29/1997	01/13/1998	01/13/1998	11/15/1993	12/07/1993	05/12/1994	12/07/1995	01/03/1996	02/01/1996	03/06/1996
Volatile Organic Compounds (ug/L)																					
BTEX																					
Benzene	1	**4200D**	**3400D**	**3200**	**4200**	**3400D**	**3500**	**2700**	**4100**	**2600**	**3700**	**2700**	**2600**	2600	NA	5U	**22**	**22**	**36**	**29**	**27**
Toluene	5	**14**	**9**	5	**7**	**6**	5	**6**	**8**	5U	**7J**	5	50U	20U	NA	**110**	**110**	**180**	**12**	**62**	**45**
Ethylbenzene	5	**200D**	1U	**230**	**330**	**180D**	**310**	**240**	**350**	**270**	**400**	**250**	**230**	220	NA	**9**	10U	4	2U	<10	5
Xylene (total)	5	**170**	**410**	**110**	**159**	**144**	**175**	**148**	**199**	**134**	**205**	**131**	100U	119	NA	**62**	**22**	**27**	**6**	**19**	**31**
Total BTEX		4,584	3,819	3,545	4,696	3,730	3,990	3,094	4,657	3,004	4,312	3,086	2,830	2,939	--	181	154	233	54	110	108
Other Volatile Organic Compounds																					
1,1,1-Trichloroethane	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
1,1,2-Trichloroethane	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
1,1-Dichloroethane	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
1,2,4-Trimethylbenzene	5	**130**	**130**	**92**	**160**	**120**	**130**	**110**	**170**	**120**	**210**	**130**	**120**	**120**	NA	**20**	NA	4	2	10U	**8**
1,2-Dichloroethane	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
1,3,5-Trimethylbenzene	5	**150**	**130**	**32**	**52**	**41**	**48**	**39**	**54**	**39**	**55**	**41**	50U	28	NA	**25**	NA	4	2	10U	**12**
Acetone	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
Bromoform	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
Carbon Disulfide	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	NA	NA	NA
Chlorobenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
Dibromochloromethane	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
Isopropylbenzene	5	**57**	**79**	**63**	**94**	**85**	**93**	**71**	**120**	**89**	**120**	**77**	**85**	72	NA	**15**	NA	**15**	4	**21**	**32**
Methyl bromide	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl chloride	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	5	1U	1U	5U	5U	2U	5U	5	5U	5U	10U	3U	50U	20U	NA	NA	NA	1U	7	10U	1U
Tetrachloroethene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5U	10U	NA	NA	NA	NA
cis-1,3-Dichloropropene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	NA	NA	NA
n-Butylbenzene	5	1U	3	**21**	**29**	2U	**15**	5U	**29**	**16**	10U	3U	50U	20U	NA	5U	NA	1U	2U	10U	1U
n-Propylbenzene	5	**9**	**20**	**13**	**21**	**25**	**27**	**18**	**34**	**26**	**43**	**27**	50U	20U	NA	5U	NA	4	2U	10U	**6**
p-Isopropyltoluene	5	**8**	**10**	**5**	**9**	**8**	**9**	**10**	**11**	**12**	**15**	**10**	50U	20U	NA	5U	NA	1	2U	**10**	**6**
sec-Butylbenzene	5	1U	1U	5U	**12**	**7**	**8**	**7**	**9**	5U	**10**	8	50U	20U	NA	5U	NA	1U	2U	10U	1U
tert-Butylbenzene	5	1U	1U	5U	5U	2U	5U	5U	5U	NA	10U	3U	NA	NA	NA	5U	NA	1U	2U	10U	1U
trans-1,3-Dichloropropene	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	NA	NA	NA
Styrene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	NA	NA	NA
Trichloroethylene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	NA	NA	NA
Semivolatile Organic Compounds (ug/L)																					
PAHs																					
2-Methylnaphthalene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5J	NA	10U	NA	NA	NA	NA
Acenaphthene	20*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**230J**	**230J**	**35**	NA	**41**	NA	NA	NA	NA
Acenaphthylene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	500U	10U	NA	10U	NA	NA	NA	NA
Anthracene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11J	11J	2J	NA	10U	NA	NA	NA	NA
Benzo(g,h,i)perylene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400U	500U	10U	NA	10U	NA	NA	NA	NA
Fluoranthene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	800U	500U	2J	NA	10U	NA	NA	NA	NA
Fluorene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**77J**	**75J**	4J	NA	10U	NA	NA	NA	NA
Naphthalene	10*	**4200D**	**3900D**	**2700**	**2400**	**4400D**	**5500**	**4600**	**6700**	**3500**	**10000**	**5100**	**3900#**	**3100#**	**14**	**23**	10U	**23**	**72**	**190**	**78D**
Phenanthrene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**59J**	**60J**	4J	NA	10U	NA	NA	NA	NA
Pyrene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400U	500U	2J	NA	10U	NA	NA	NA	NA
Benz(a)anthracene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400U	500U	10U	NA	10U	NA	NA	NA	NA
Benzo(a)pyrene	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400U	500U	10U	NA	10U	NA	NA	NA	NA
Benzo(b)fluoranthene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400U	500U	10U	NA	10U	NA	NA	NA	NA
Benzo(k)fluoranthene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400U	500U	10U	NA	10U	NA	NA	NA	NA
Chrysene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400U	500U	10U	NA	10U	NA	NA	NA	NA
Dibenz(a,h)anthracene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400U	500U	10U	NA	10U	NA	NA	NA	NA
Total PAHs		4,200	3,900	2,700	2,400	4,400	5,500	4,600	6,700	3,500	10,000	5,100	4,277	3,476	68	23	41	23	72	190	78
Other Semivolatile Organic Compounds (ug/L)																					
2,4-Dimethylphenol	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6J	NA	10U	NA	NA	NA	NA
2-Methylphenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5J**	NA	10U	NA	NA	NA	NA
4-Methylphenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**7J**	NA	10U	NA	NA	NA	NA
Benzoic acid	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	NA	10U	NA	NA	NA	NA
Carbazole	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1J	NA	10U	NA	NA	NA	NA
Diethylphthalate	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(2-Methylphenol) o-Cresol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(4-Methylphenol) p-Cresol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**30**	NA	10U	NA	NA	NA	NA

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	25 Willow Avenue Parcel																			
Site ID:		FPM-OW-03												FPM-OW-03 (dup)	FPM-OW-04						
Sample ID:		OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW-3	OW3-DUPE	OW3	OW-3	OW-3	OW-3	OW-3A	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4
Constituent / Date:		07/12/1996	08/01/1996	09/06/1996	10/03/1996	11/21/1996	04/02/1997	05/07/1997	09/09/1997	10/22/1997	11/24/1997	12/29/1997	01/13/1998	01/13/1998	11/15/1993	12/07/1993	05/12/1994	12/07/1995	01/03/1996	02/01/1996	03/06/1996
Inorganics (ug/L)																					
Aluminum	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	35000*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	20000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/L)																					
Cyanide	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, amenable	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (mg/L)																					
TPH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (mg/L)																					
Hardness, Total (as CaCO3)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness, Calcium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness, Magnesium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Suspended Solids	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitability (degrees F)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Salinity (psu)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Only detected analytes are shown on the table

* guidance value

N - spiked sample recovery was not within control limits (metals)

NE - not established

NA - not analyzed

J - estimated value

U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis

UJ - estimated detection limit

(dup) - indicates duplicate sample

Shading/bolding indicates an exceedance of established New York State ambient groundwater quality standards (GA)

ND - indicates standard is applicable to analyte detection limit

R - the reported results or detection limits are estimated or rejected based upon the recovery

B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of the analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)

- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.

mg/L - milligrams/liter

ug/L - micrograms/liter

JB - estimated detection limit/analyte was found within laboratory method blank

a - indicates tar sample from bottom of RW-7

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	25 Willow Avenue Parcel																				
Site ID:		FPM-OW-04															FPM-OW-05			FPM-OW-06		
Sample ID:		OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW4-DUPE	OW4	OW4	OW-4	OW-4	OW-5	CFOW05-01	CF-OW-05	OW-6	CFOW06-01	CF-OW-06
Constituent / Date:		04/09/1996	05/01/1996	06/05/1996	07/12/1996	08/01/1996	09/06/1996	10/03/1996	11/21/1996	04/02/1997	05/07/1997	09/09/1997	10/22/1997	11/24/1997	12/29/1997	01/13/1998	01/13/1998	03/30/1999	10/12/1999	01/13/1998	03/31/1999	10/07/1999
Volatile Organic Compounds (ug/L)																						
BTEX																						
Benzene	1	**24**	**48**	**22**	**47**	**32**	**40**	**35**	**30**	**35**	**38**	**63**	**72**	**30**	**52**	**39**	**1100**	**850**	**440**	**20**	1J	**120**
Toluene	5	**46**	**28**	**29**	**23**	**30**	**10**	**18**	**6**	**40**	**12**	4	1U	2	1U	0.8J	**3500**	**2400**	**820**	2	0.5J	**7**
Ethylbenzene	5	2	3	3	**8**	1U	3	2	1	2	1	4	2	1U	1U	1U	**160**	**330**	**210**	**23**	2J	**33**
Xylene (total)	5	**12**	**17**	**16**	**37**	**15**	**20**	**15**	4	**8**	3	**10**	2	2U	2U	1J	**860**	**2000**	**680**	**16**	**52**	**27**
Total BTEX		84	96	70	115	77	73	68	41	85	54	81	76	32	52	40.8	5,620	5,580	2,150	61	55.5	187
Other Volatile Organic Compounds																						
1,1,1-Trichloroethane	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100U	NA	NA	0.3J	NA
1,1,2-Trichloroethane	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**18J**	NA	NA	5U	NA
1,1-Dichloroethane	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**21J**	NA	NA	5U	NA
1,2,4-Trimethylbenzene	5	1U	**7**	4	4	**10**	**5**	5	1	2	1	4	1U	1U	1	1U	**90**	NA	NA	**44**	NA	NA
1,2-Dichloroethane	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100U	NA	NA	5U	NA
1,3,5-Trimethylbenzene	5	1U	**8**	**8**	**9**	**5**	**5**	3	1	2	2	2	1U	1U	1	1U	**32**	NA	NA	4	NA	NA
Acetone	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10J	NA	NA	5U	NA
Bromoform	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10J	NA	NA	5U	NA
Carbon Disulfide	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100U	NA	NA	5U	NA
Chlorobenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100U	NA	NA	5U	NA
Dibromochloromethane	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11J	NA	NA	5U	NA
Isopropylbenzene	5	**18**	**19**	**8**	**18**	**15**	**12**	10 U	**13**	**20**	**15**	**14**	**12**	**14**	**11**	12	25U	NA	NA	**14**	NA	NA
Methyl bromide	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl chloride	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	5	1U	6	1U	1U	1U	2U	5	1	3	1	2U	1U	1U	1U	0.9J	240	NA	NA	12	NA	NA
Tetrachloroethene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**12J**	NA	NA	5U	NA
cis-1,3-Dichloropropene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**10J**	NA	NA	5U	NA
n-Butylbenzene	5	1U	1U	1U	1U	1U	2U	20 U	1U	1U	**260**	2U	4	1U	1U	1U	25U	NA	NA	1U	NA	NA
n-Propylbenzene	5	**5**	4	2	3	4	2U	**7**	3	4	3	3	4	3	2	3	25U	NA	NA	2	NA	NA
p-Isopropyltoluene	5	**9**	1U	1U	1U	1U	2U	2	1U	1U	1U	2U	1U	1U	1U	1U	25U	NA	NA	1	NA	NA
sec-Butylbenzene	5	1U	1U	1U	1U	1U	2U	2U	1U	1	1U	2U	1U	1U	1U	1U	25U	NA	NA	1U	NA	NA
tert-Butylbenzene	5	1U	1U	1U	1U	1U	2U	2U	1U	1U	1U	2U	NA	1U	1U	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**12J**	NA	NA	5U	NA
Styrene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethylene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (ug/L)																						
PAHs																						
2-Methylnaphthalene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13	34	NA	10U	10U
Acenaphthene	20*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**60**	18J	11J	19J	7J	0.5J	0.9J
Acenaphthylene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2J	6J	NA	10U	0.7J
Anthracene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2J	11J	10U	8J	1J	10U	0.6J
Benzo(g,h,i)perylene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	**4J**	10UJ	20U	**1J**	10UJ	0.3J
Fluoranthene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3J	18J	10U	5J	2J	10U	0.3J
Fluorene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5J	20	2J	17J	3J	10U	0.5J
Naphthalene	10*	1U	10	**16**	**11**	7	**37**	**46**	4	6	**19**	**93**	**94**	**530**	2	2#	**340#**	**66**	**140**	**32#**	4J	2J
Phenanthrene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3J	39	10	19J	5J	10U	10U
Pyrene	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3J	17J	3J	4J	3J	10U	0.4J
Benz(a)anthracene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	**6J**	10U	**1J**	**1J**	10U	10U
Benzo(a)pyrene	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	**4J**	10U	**0.3J**	**1J**	10U	10U
Benzo(b)fluoranthene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	**3J**	10UJ	**0.2J**	**1J**	10UJ	10U
Benzo(k)fluoranthene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	**4J**	10UR	**0.3J**	**1J**	10UR	10UJ
Chrysene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	**6J**	10U	**1J**	**1J**	10U	10U
Dibenz(a,h)anthracene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.002*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	**4J**	10U	20U	**1J**	10U	**0.3J**
Total PAHs		0	10	16	11	7	37	46	4	6	19	93	94	530	2	78	494	107	254	60	4.5	6
Other Semivolatile Organic Compounds (ug/L)																						
2,4-Dimethylphenol	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8J	17J	NA	2J	0.4J
2-Methylphenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4J**	**8J**	NA	10U	10U
4-Methylphenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4J**	**19J**	NA	10U	10U
Benzoic acid	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11J	13J	NA	50UR	53U
Benzyl alcohol	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	3J	NA	10U	10U
Butylbenzylphthalate	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	20U	NA	10U	10U
Carbazole	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2J	17J	NA	10U	1J
Dibenzofuran	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10U	8J	NA	10U	10U
Diethylphthalate	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(2-Methylphenol) o-Cresol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(4-Methylphenol) p-Cresol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**51**	**87**	NA	10U	**4J**

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	25 Willow Avenue Parcel																				
Site ID:		FPM-OW-04															FPM-OW-05			FPM-OW-06		
Sample ID:		OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW-4	OW4-DUPE	OW4	OW4	OW-4	OW-4	OW-5	CFOW05-01	CF-OW-05	OW-6	CFOW06-01	CF-OW-06
Constituent	Date:	04/09/1996	05/01/1996	06/05/1996	07/12/1996	08/01/1996	09/06/1996	10/03/1996	11/21/1996	04/02/1997	05/07/1997	09/09/1997	10/22/1997	11/24/1997	12/29/1997	01/13/1998	01/13/1998	03/30/1999	10/12/1999	01/13/1998	03/31/1999	10/07/1999
Inorganics (ug/L)																						
Aluminum	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**450.**	NA	NA	**41.4B**	NA
Arsenic	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**25.0U**	12.2	NA	6.0U	5.5B
Barium	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23.7B	36.4B	NA	526.	567.
Cadmium	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	46900	NA	NA	54100	NA
Chromium	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0U	2.0U	NA	1.0U	2.0U
Cobalt	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0U	NA	NA	2.0U	NA
Copper	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0U	NA	NA	2.5B	NA
Iron	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	279.	NA	NA	**8810**	NA
Lead	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.9U	3.4J	NA	3.8U	4.4J
Magnesium	35000*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2030B	NA	NA	30200	NA
Manganese	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.6B	NA	NA	191.	NA
Nickel	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.8U	NA	NA	11.5U	NA
Potassium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25400J	NA	NA	12500J	NA
Selenium	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0U	8.0J	NA	4.0U	**11.7J**
Silver	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0U	1.2U	NA	2.0U	1.0U
Sodium	20000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**113000**	NA	NA	**96100**	NA
Vanadium	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.8B	NA	NA	2.0U	NA
Zinc	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/L)																						
Cyanide	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**434**	**568J**	NA	96	118J
Cyanide, amenable	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**	**NA**	NA	NA	NA
Total Petroleum Hydrocarbons (mg/L)																						
TPH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**	**NA**	NA	NA	NA
Other (mg/L)																						
Hardness, Total (as CaCO3)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness, Calcium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness, Magnesium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	741	NA	NA	705	NA
Total Suspended Solids	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitability (degrees F)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Salinity (psu)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.640	NA	NA	0.670	NA

Notes:

Only detected analytes are shown on the table

* guidance value

N - spiked sample recovery was not within control limits (metals)

NE - not established

NA - not analyzed

J - estimated value

U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis

UJ - estimated detection limit

(dup) - indicates duplicate sample

Shading/bolding indicates an exceedance of established New York State ambient groundwater quality standards (GA)

ND - indicates standard is applicable to analyte detection limit

R - the reported results or detection limits are estimated or rejected based upon the recovery

B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of the analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)

\# - Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.

mg/L - milligrams/liter

ug/L - micrograms/liter

JB - estimated detection limit/analyte was found within laboratory method blank

a - indicates tar sample from bottom of RW-7

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	25 Willow Avenue Parcel																
Site ID:		FPM-OW-07			RW-01		RW-02		RW-03		RW-06		RW-13	RW-15	RW-16	RW-17	RW-18	
Sample ID:		OW-7	CFOW07-01	CF-OW-07	CFRW01-01	CF-RW-01	CFRW02-01	CF-RW-02	CFRW03-01	CF-RW-03	CFRW06-01	CF-RW-06	CF-RW-13	CF-RW-15	CF-RW-16	CF-RW-17	CF-RW-18	CF-RW-81-DUPE
Constituent Date:		01/13/1998	03/29/1999	10/05/1999	03/31/1999	10/07/1999	03/29/1999	10/06/1999	03/30/1999	10/04/1999	03/30/1999	10/04/1999	10/06/1999	10/06/1999	10/12/1999	01/17/2002	01/17/2002	01/17/2002
Volatile Organic Compounds (ug/L)																		
BTEX																		
Benzene	1	0.6J	5U	5U	5U	5U	5U	**3J**	5U	5U	5U	5U	**81**	5U	5U	**360**	**820**	**790**
Toluene	5	1U	5U	5U	5	5U	5U	5U	0.4J	5U	0.3J	5U	0.5J	0.7J	0.6J	**1100 J**	**52**	**53**
Ethylbenzene	5	1U	5U	5U	5U	5U	5U	1J	5U	5U	5U	5U	**17**	5U	5U	**1800 J**	**1300**	**1300**
Xylene (total)	5	2U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	**12**	5U	5U	**1900**	**1000**	**1100**
Total BTEX		0.6	0	0	5	0	0	4	0.4	0	0.3	0	110.5	0.7	0.6	5160.00	3172.00	3243.00
Other Volatile Organic Compounds																		
1,1,1-Trichloroethane	5	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	1	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	5	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	5	0.6J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.6	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	5	1U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	50	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
Bromoform	50	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NE	NA	5U	NA	5U	NA	0.3J	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	5	NA	5U	NA	5U	NA	3J	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	50	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	5	1U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl bromide	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl chloride	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	5	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	5	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	5	1U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	5	1U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	5	1U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	5	1U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	0.4	NA	5U	NA	5U	NA	5U	NA	5U	NA	5U	NA	NA	NA	NA	NA	NA	NA
Styrene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethylene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (ug/L)																		
PAHs																		
2-Methylnaphthalene	NE	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	41	11U	10U	870 J	660 J	720 J
Acenaphthene	20*	10U	0.9J	0.3J	0.9J	0.5J	10U	11U	10U	10U	10U	10U	16J	11U	10U	**170 J**	**160 J**	**160 J**
Acenaphthylene	NE	NA	10U	11U	10U	0.2J	10U	0.3J	10U	10U	10U	10U	0.6J	11U	10U	1000 U	1000 U	1000 U
Anthracene	50*	10U	10U	0.2J	10U	0.4J	10U	11U	10U	10U	10U	10U	0.7J	11U	10U	1000 U	1000 U	1000 U
Benzo(g,h,i)perylene	NE	10U	10U	11U	10UJ	0.4J	10U	0.2J	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Fluoranthene	50*	0.5J	10U	11U	10U	0.3J	10U	0.2J	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Fluorene	50*	10U	10U	0.2J	10U	1J	10U	11U	10U	10U	10U	10U	6J	11U	10U	1000 U	1000 U	1000 U
Naphthalene	10*	2#	0.3J	0.2J	10U	10U	10U	0.2J	10U	10U	10U	10U	**150**	11U	10U	**7100**	**5100**	**5300**
Phenanthrene	50*	10U	10U	0.2J	10U	10U	10U	11U	10U	10U	10U	10U	4J	11U	10U	1000 U	1000 U	1000 U
Pyrene	50*	0.6J	10U	11U	3J	1J	0.2J	0.2J	10U	10U	10U	10U	0.3J	11U	10U	1000 U	1000 U	1000 U
Benz(a)anthracene	0.002*	10U	10U	11U	10U	**0.2J**	10U	**0.2J**	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Benzo(a)pyrene	ND	10U	10U	11U	10U	**0.2J**	10U	11U	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Benzo(b)fluoranthene	0.002*	10U	10U	11U	10UJ	10U	10U	**0.2J**	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Benzo(k)fluoranthene	0.002*	10U	10U	11UJ	10UR	10UJ	10U	**0.3J**	10U	10UJ	10U	10UJ	20UJ	11UJ	10UJ	1000 U	1000 U	1000 U
Chrysene	0.002*	10U	10U	11U	10U	**0.4J**	10U	**0.3J**	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Dibenz(a,h)anthracene	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.002*	10U	10U	11U	10U	10U	10U	**0.1J**	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Total PAHs		3.1	1.2	1.1	3.9	4.6	0.2	2.2	0	0	0	0	218.6	0	0	8140	5920	6180
Other Semivolatile Organic Compounds (ug/L)																		
2,4-Dimethylphenol	50*	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	20U	11U	10U	1000 UJ	1000 UJ	1000 UJ
2-Methylphenol	1	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	20U	11U	10U	1000 UJ	1000 UJ	1000 UJ
4-Methylphenol	1	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	20U	11U	10U	1000 UJ	1000 UJ	1000 UJ
Benzoic acid	NE	NA	50UR	54UJ	50UR	50U	50UR	57UJ	50UR	50UJ	50UR	50UJ	100U	54UJ	50U	2200 R	2200 R	2200 R
Benzyl alcohol	NE	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Butylbenzylphthalate	50*	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	20U	0.2J	10U	1000 U	1000 U	1000 U
Carbazole	NE	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Dibenzofuran	NE	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	20U	11U	10U	1000 U	1000 U	1000 U
Diethylphthalate	50*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(2-Methylphenol) o-Cresol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(4-Methylphenol) p-Cresol	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	1	NA	10U	11U	10U	10U	10U	11U	10U	10U	10U	10U	**1J**	11U	10U	1000 UJ	1000 UJ	1000 UJ

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

AECOM

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	25 Willow Avenue Parcel																
Site ID:		FPM-OW-07			RW-01		RW-02		RW-03		RW-06		RW-13	RW-15	RW-16	RW-17	RW-18	
Sample ID:		OW-7	CFOW07-01	CF-OW-07	CFRW01-01	CF-RW-01	CFRW02-01	CF-RW-02	CFRW03-01	CF-RW-03	CFRW06-01	CF-RW-06	CF-RW-13	CF-RW-15	CF-RW-16	CF-RW-17	CF-RW-18	CF-RW-81-DUPE
Constituent	Date:	01/13/1998	03/29/1999	10/05/1999	03/31/1999	10/07/1999	03/29/1999	10/06/1999	03/30/1999	10/04/1999	03/30/1999	10/04/1999	10/06/1999	10/06/1999	10/12/1999	01/17/2002	01/17/2002	01/17/2002
Inorganics (ug/L)																		
Aluminum	NE	NA	**27.9B**	NA	**124.B**	NA	**528.**	NA	**1250**	NA	**69.8B**	NA	NA	NA	NA	NA	NA	NA
Arsenic	25	NA	13.8U	4.0U	6.0U	4.0U	6.0U	4.0U	8.8U	6.3B	6.1U	4.0U	4.0U	9.8B	4.0U	7 U	7 U	7 U
Barium	1000	NA	159.B	228.	148.B	238.	114.B	150.B	71.8B	94.2B	74.7B	241.	730.	294.	161.B	280	325	317
Cadmium	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NE	NA	111000	NA	75800	NA	48100	NA	69000	NA	41000	NA	NA	NA	NA	NA	NA	NA
Chromium	50	NA	1.0U	2.0U	1.0U	2.0U	3.8B	2.0U	9.0B	3.2U	1.4B	2.0U	2.0U	2.0U	2.0U	1.6 J	1.5 U	1.5 U
Cobalt	5	NA	**6.6B**	NA	2.0U	NA	2.0U	NA	3.4B	NA	2.0U	NA	NA	NA	NA	NA	NA	NA
Copper	200	NA	1.0U	NA	1.0U	NA	3.2B	NA	4.9B	NA	1.4B	NA	NA	NA	NA	NA	NA	NA
Iron	300	NA	**4530**	NA	**6490**	NA	**1580**	NA	**3330**	NA	238.	NA	NA	NA	NA	NA	NA	NA
Lead	25	NA	2.2U	4.9J	7.1U	3.0U	8.6U	5.1J	6.4U	13.9	2.3U	3.0U	3.2J	3.0U	3.6J	3.4 U	3.4 U	3.4 U
Magnesium	35000*	NA	**51200**	NA	27300	NA	**44900**	NA	33200	NA	**35700**	NA	NA	NA	NA	NA	NA	NA
Manganese	300	NA	**2330**	NA	**981.**	NA	292.	NA	**421.**	NA	13.3B	NA	NA	NA	NA	NA	NA	NA
Nickel	100	NA	16.4U	NA	7.7U	NA	34.6B	NA	68.1	NA	11.6U	NA	NA	NA	NA	NA	NA	NA
Potassium	NE	NA	11900J	NA	4720J	NA	3690J	NA	4980J	NA	7100J	NA	NA	NA	NA	NA	NA	NA
Selenium	10	NA	4.0U	**20.3J**	4.0U	**14.2J**	4.0U	5.8J	4.0U	5.6J	4.0U	**10.7J**	8.9J	5.5J	5.0U	6.9 U	6.9 U	6.9 U
Silver	50	NA	2.0U	1.3U	2.0U	1.1U	2.0U	1.2U	2.0U	1.3U	2.0U	1.0U	1.0U	1.2U	1.0UJ	1.4 R	1.4 R	1.4 R
Sodium	20000	NA	**93900**	NA	**60700**	NA	13700	NA	**27000**	NA	**101000**	NA	NA	NA	NA	NA	NA	NA
Vanadium	14	NA	4.3B	NA	2.0U	NA	2.0U	NA	2.8B	NA	2.0U	NA	NA	NA	NA	NA	NA	NA
Zinc	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/L)																		
Cyanide	200	NA	**274**	**444J**	**514**	**270**	15.9	10 UR	10U	10UR	10U	22J	10UR	10UR	10.0U	3 U	3 U	5.9 J
Cyanide, amenable	NE	NA	**NA**	**NA**	**NA**	**NA**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (mg/L)																		
TPH	NE	NA	**NA**	**NA**	**NA**	**NA**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other (mg/L)																		
Hardness, Total (as CaCO3)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness, Calcium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hardness, Magnesium	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	NE	NA	882	NA	510	NA	361	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Suspended Solids	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitability (degrees F)	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Salinity (psu)	NE	NA	0.840	NA	0.480	NA	0.310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Only detected analytes are shown on the table

* guidance value

N - spiked sample recovery was not within control limits (metals)

NE - not established

NA - not analyzed

J - estimated value

U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis

UJ - estimated detection limit

(dup) - indicates duplicate sample

Shading/bolding indicates an exceedance of established New York State ambient groundwater quality standards (GA)

ND - indicates standard is applicable to analyte detection limit

R - the reported results or detection limits are estimated or rejected based upon the recovery

B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of the analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)

- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.

mg/L - milligrams/liter

ug/L - micrograms/liter

JB - estimated detection limit/analyte was found within laboratory method blank

a - indicates tar sample from bottom of RW-7

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	89 Willow Avenue Parcel				
Site ID:		RW-08	RW-09	RW-10	RW-11	RW-12
Sample ID:		CF-RW-08	CF-RW-09	CF-RW-10	CF-RW-11	CF-RW-12
Constituent / Date:		10/05/1999	10/08/1999	10/08/1999	10/11/1999	10/11/1999
Volatile Organic Compounds (ug/L)						
BTEX						
Benzene	1	5U	5U	5U	5U	5U
Toluene	5	5U	5U	5U	0.4J	5U
Ethylbenzene	5	5U	5U	5U	1J	5U
Xylene (total)	5	5U	5U	5U	2J	5U
Total BTEX		0	0	0	3.4	0
Other Volatile Organic Compounds						
1,1,1-Trichloroethane	5	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	1	NA	NA	NA	NA	NA
1,1-Dichloroethane	5	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	5	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.6	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	5	NA	NA	NA	NA	NA
Acetone	50*	NA	NA	NA	NA	NA
Bromodichloromethane	50	NA	NA	NA	NA	NA
Bromoform	50	NA	NA	NA	NA	NA
Carbon Disulfide	NE	NA	NA	NA	NA	NA
Chlorobenzene	5	NA	NA	NA	NA	NA
Dibromochloromethane	50	NA	NA	NA	NA	NA
Isopropylbenzene	5	NA	NA	NA	NA	NA
Methyl bromide	5	NA	NA	NA	NA	NA
Methyl chloride	5	NA	NA	NA	NA	NA
Methyl tert-butyl ether	5	NA	NA	NA	NA	NA
Tetrachloroethene	5	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	5	NA	NA	NA	NA	NA
n-Butylbenzene	5	NA	NA	NA	NA	NA
n-Propylbenzene	5	NA	NA	NA	NA	NA
p-Isopropyltoluene	5	NA	NA	NA	NA	NA
sec-Butylbenzene	5	NA	NA	NA	NA	NA
tert-Butylbenzene	5	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	0.4	NA	NA	NA	NA	NA
Styrene	5	NA	NA	NA	NA	NA
Trichloroethylene	5	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (ug/L)						
PAHs						
2-Methylnaphthalene	NE	10U	10U	11U	7J	10U
Acenaphthene	20*	10U	10U	11U	1J	10U
Acenaphthylene	NE	10U	10U	11U	0.6J	10U
Anthracene	50*	10U	0.1J	11U	0.4J	10U
Benzo(g,h,i)perylene	NE	10U	0.2J	11U	11U	10U
Fluoranthene	50*	10U	0.4J	11U	0.8J	10U
Fluorene	50*	10U	10U	11U	2J	10U
Naphthalene	10*	10U	10U	11U	3J	10U
Phenanthrene	50*	10U	0.4J	11U	11U	10U
Pyrene	50*	10U	0.4J	11U	0.7J	10U
Benz(a)anthracene	0.002*	10U	**0.2J**	11U	**0.2J**	10U
Benzo(a)pyrene	ND	10U	**0.3J**	11U	11U	10U
Benzo(b)fluoranthene	0.002*	10U	**0.2J**	11U	11U	10U
Benzo(k)fluoranthene	0.002*	10UJ	**0.3J**	11UJ	11UJ	10UJ
Chrysene	0.002*	10U	**0.3J**	11U	**0.2J**	10U
Dibenz(a,h)anthracene	NE	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.002*	10U	10U	11U	11U	10U
Total PAHs		0	2.8	0	15.9	0
Other Semivolatile Organic Compounds (ug/L)						
2,4-Dimethylphenol	50*	10U	10U	11U	11U	10U
2-Methylphenol	1	10U	10U	11U	11U	10U
4-Methylphenol	1	0.5J	10U	11U	**12**	10U
Benzoic acid	NE	50UJ	50U	53U	28J	50U
Benzyl alcohol	NE	10U	10U	11U	1J	10U
Butylbenzylphthalate	50*	10U	10U	11U	11U	10U
Carbazole	NE	10U	10U	11U	0.5J	10U
Dibenzofuran	NE	10U	10U	11U	0.4J	10U
Diethylphthalate	50*	NA	NA	NA	NA	NA
(2-Methylphenol) o-Cresol	1	NA	NA	NA	NA	NA
(4-Methylphenol) p-Cresol	1	NA	NA	NA	NA	NA
Phenol	1	10U	10U	11U	**38**	10U

Table 1-2
Comparison of Pre-Remedial Action Groundwater Analytical Data to Aquatic Water Quality Standards and Guidance Values
Former Clifton MGP Site
Clifton, New York

Parcel:	NY State Ambient Groundwater Quality Standards (GA)	89 Willow Avenue Parcel				
Site ID:		RW-08	RW-09	RW-10	RW-11	RW-12
Sample ID:		CF-RW-08	CF-RW-09	CF-RW-10	CF-RW-11	CF-RW-12
Constituent / Date:		10/05/1999	10/08/1999	10/08/1999	10/11/1999	10/11/1999
Inorganics (ug/L)						
Aluminum	NE	NA	NA	NA	NA	NA
Arsenic	25	14.8	5.4B	4.0U	7.4B	4.5B
Barium	1000	177.B	186.B	468	181.B	128.B
Cadmium	5	NA	NA	NA	NA	NA
Calcium	NE	NA	NA	NA	NA	NA
Chromium	50	2.0U	2.0U	2.0U	2.0U	2.0U
Cobalt	5	NA	NA	NA	NA	NA
Copper	200	NA	NA	NA	NA	NA
Iron	300	NA	NA	NA	NA	NA
Lead	25	**28.8**	**35.6**	3.0U	6.3J	3.0U
Magnesium	35000*	NA	NA	NA	NA	NA
Manganese	300	NA	NA	NA	NA	NA
Nickel	100	NA	NA	NA	NA	NA
Potassium	NE	NA	NA	NA	NA	NA
Selenium	10	**21.2J**	**14.1J**	8.5J	5.9J	8.6J
Silver	50	1.2U	1.0U	1.0U	1.0U	1.0U
Sodium	20000	NA	NA	NA	NA	NA
Vanadium	14	NA	NA	NA	NA	NA
Zinc	2000	NA	NA	NA	NA	NA
Total Cyanide (mg/L)						
Cyanide	200	10UR	10UR	10UR	38.8J	10UR
Cyanide, amenable	NE	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (mg/L)						
TPH	NE	NA	NA	NA	NA	NA
Other (mg/L)						
Hardness, Total (as CaCO3)	NE	NA	NA	NA	NA	NA
Hardness, Calcium	NE	NA	NA	NA	NA	NA
Hardness, Magnesium	NE	NA	NA	NA	NA	NA
Total Dissolved Solids	NE	NA	NA	NA	NA	NA
Total Suspended Solids	NE	NA	NA	NA	NA	NA
pH	NE	NA	NA	NA	NA	NA
Ignitability (degrees F)	NE	NA	NA	NA	NA	NA
Salinity (psu)	NE	NA	NA	NA	NA	NA

Notes:

Only detected analytes are shown on the table

* guidance value

N - spiked sample recovery was not within control limits (metals)

NE - not established

NA - not analyzed

J - estimated value

U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis

UJ - estimated detection limit

(dup) - indicates duplicate sample

Shading/bolding indicates an exceedance of established New York State ambient groundwater quality standards (GA)

ND - indicates standard is applicable to analyte detection limit

R - the reported results or detection limits are estimated or rejected based upon the recovery

B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of the analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)

- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.

mg/L - milligrams/liter

ug/L - micrograms/liter

JB - estimated detection limit/analyte was found within laboratory method blank

a - indicates tar sample from bottom of RW-7

Table 1-3
Unrestricted Use and Restricted Use SCOs
National Grid Former Clifton MGP Site
Clifton, New York

Chemical	6NYCRR Part 375 UNRESTRICTED USE	6NYCRR Part 375 RESTRICTED USE RESIDENTIAL	6NYCRR Part 375 RESTRICTED USE COMMERCIAL
BTEX (mg/kg)			
Benzene	0.06	4.8	44
Toluene	0.7	100	500
Ethylbenzene	1	41	390
Xylene, total	0.26	100	500
PAHs (mg/kg)			
Acenaphthene	20	100	500
Acenaphthylene	100	100	500
Anthracene	100	100	500
Benz[a]anthracene	1	1	5.6
Benzo[a]pyrene	1	1	1
Benzo[b]fluoranthene	1	1	5.6
Benzo[g,h,i]perylene	100	100	500
Benzo[k]fluoranthene	0.8	3.9	56
Chrysene	1	3.9	56
Dibenz[a,h]anthracene	0.33	0.33	0.56
Dibenzofuran	7	59	350
Fluoranthene	100	100	500
Fluorene	30	100	500
Indeno[1,2,3-cd]pyrene	0.5	0.5	5.6
Methylnaphthalene,2-	0.41	NE	NE
Naphthalene	12	100	500
Phenanthrene	100	100	500
Pyrene	100	100	500
Metals (mg/kg)			
Aluminum	NA	NA	NA
Antimony	NA	NA	NA
Arsenic	13	16	16
Barium	350	400	400
Beryllium	7.2	72	590
Cadmium	2.5	4.3	9.3
Chromium	30	180	1,500
CR, Hexavalent	1	110	400
Cobalt	30	NA	NA
Copper	50	270	270
Iron	2000	NA	NA
Lead	63	400	1000
Magnesium	NA	NA	NA
Manganese	1600	2000	10000
Mercury	0.18	0.81	2.8
Nickel	30	310	310
Potassium	NA	NA	NA
Selenium	3.9		
Silver	2	180	1500
Sodium	NA	NA	NA
Thallium	NA	NA	NA
Vanadium	100	NA	NA
Zinc	109	10000	10000

Table 1-4
25 and 89 Willow Avenue 2012-2013
Remedial Action Waste Removal Summary
Former Clifton MGP Site
Clifton, New York

Waste	Facility							Total
	Bayshore	CESP	CENJ	GROWS	Action	Balemet	EQ Detroit	
SCB Slurry Wall Soils								
# Trucks	455							455
Weight (tons)	13,968							13,968
MGP Soils								
# Trucks	3,233	258						3,491
Weight (tons)	90,872	5,522						96,394
Hazardous Lead Soil								
# Trucks			10					10
Weight (tons)			289					289
C&D Debris								
# Trucks				11	39	40		90
Weight (tons)				185	346	279		810
DNAPL Drums								
# Drums							1	1
Volume (gallons)							25	25
Hazardous Water (Benzene)								
# Trucks			8					8
Volume (gallons)			41,980					41,980
Corrosive Liquid UN3254								
# Drums							1	1
Volume (gallons)							55	55
Sodium Hydride Solution								
# Drums							1	1
Volume (gallons)							55	55
Total Weight (Tons)	**104,840**	**5,522**	**289**	**185**	**346**	**279**		**111,461**
Total Volume (gallons)	**0**	**0**	**41,980**	**0**	**0**	**0**	**135**	**42,115**
Total Volume (gallons)Construction Water Treated and Discharged to New York Harbor								**1,941,847**

Notes:

Bayshore - Bayshore RecyclingCorp, 75 Crows Mill Rd., Keasbey, NJ 08832

CESP - Clean Earth of Southeast Pennsylvania, 7 Steel Road East, Morrisville, PA 19067

CENJ - Clean Earth of New Jersey,

GROWS - G.R.O.W.S Landfill, Morrisville, Pennsylvania

Action - Action Carting Environmental Services, Inc., 451 Frelinghuysen Avenue, Newark, NJ 07114

Balemet - Balemet Recycling Metal, Inc., 227 Clifford St, Newark, NJ 07105

EQ Detroit - Environmental Quality Company, 1923 Frederick St, Detroit, MI 48211

SCB - Slag Cement Bentonite

C&D - Construction and Demolition Debris

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			RW-01	RW-02	RW-03	RW-06	RW-13			RW-13	RW-13 (dup)	RW-15	RW-16 (dup)	RW-16		RW-16		SB-09		SB-11	SB-13	SB-13 (dup)
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB11	CF-SB13	CF-DUP-1
Depth (ft):			(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)	(39-41)		(123-125)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(24-26)	(33-34)	(21-23)	(18-20)	
Constituent Date:			02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999
Location:			25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																						
Benzene	ug/kg	60	16 U	NA	2 J	6 U	1,000 J	940 J	74 J	6 U	6 U	6 U	6,300	660 J	84,000	5 U	6 U	4,500	6 U	6,600	16,000 J	11,000
Toluene	ug/kg	700	16 U	NA	6 U	6 U	230 J	180 J	2 J	6 U	6 U	6 U	87 J	45	130,000	5 U	6 U	1,300 J	6 U	11,000	19,000 J	24,000
Ethylbenzene	ug/kg	1,000	16 U	NA	6 U	6 U	3,500	24,000	360 J	6 U	6 U	6 U	2,300	370 J	380,000	5 UJ	6 U	33,000	6 U	10,000	92,000	79,000
Xylene (total)	ug/kg	260	16 U	NA	6 U	6 U	3,800	5,500	310 J	6 U	6 U	6 U	460 J	320	540,000	5 UJ	6 U	26,000	6 U	14,000	81,000	61,000
Volatile Organic Compounds (ug/kg)																						
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 UJ	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400 J	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			RW-01	RW-02	RW-03	RW-06	RW-13			RW-13 (dup)	RW-13 (dup)	RW-15	RW-16 (dup)	RW-16		RW-16		SB-09		SB-11	SB-13	SB-13 (dup)
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB11	CF-SB13	CF-DUP-1
Depth (ft):			(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)	(39-41)		(123-125)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(24-26)	(33-34)	(21-23)	(18-20)	
Constituent	Date:		02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999
PAHs (ug/kg)																						
Naphthalene	ug/kg	12,000	160 J	NA	7 J	9 J	NA	**160,000** J	3,800 J	370 U	360 U	380 U	**120,000**	1,900	**3,700,000**	14 J	350 U	**630,000**	370 U	**190,000**	**110,000** J	**30,000** J
2-Methylnaphthalene	ug/kg	NL	940 U	NA	380 U	370 U	NA	81,000 J	610 J	370 U	360 U	380 U	12,000 J	1,400	2,000,000	370 U	350 U	350,000	370 U	160,000 J	56,000 J	18,000 J
Acenaphthene	ug/kg	20,000	48 J	NA	380 U	370 U	NA	**49,000** J	360 J	370 U	360 U	380 U	**92,000**	320 J	**650,000** J	370 U	350 U	**90,000** J	370 U	**38,000** U	**28,000** J	8,000 J
Acenaphthylene	ug/kg	100,000	71 J	NA	380 U	370 U	NA	16,000 J	170 J	370 U	360 U	380 U	8,300 J	240 J	100,000 J	370 U	350 U	99,000	370 U	11,000 J	3,500 J	7,300 U
Anthracene	ug/kg	100,000	940 UJ	NA	380 U	370 U	NA	45,000 J	290 J	370 U	4 J	380 U	41,000 J	140 J	**280,000** J	370 U	350 U	16,000 J	370 U	38,000 U	19,000 U	7,300 U
Benzo(g,h,i)perylene	ug/kg	100,000	850 J	NA	380 U	370 U	NA	15,000 J	2,900 UJ	370 U	360 U	380 UJ	3,900 J	400 UJ	37,000 J	370 U	350 UJ	76,000 J	370 U	4,000 J	17,000 J	1,100 J
Fluoranthene	ug/kg	100,000	940 UJ	NA	380 U	370 U	NA	61,000 J	450 J	7 J	8 J	380 U	44,000	160 J	**350,000** J	370 U	350 U	15,000 J	370 U	38,000 U	19,000 U	7,300 U
Fluorene	ug/kg	30,000	940 U	NA	380 U	370 U	NA	**44,000** J	320 J	370 U	360 U	380 U	**84,000**	350 J	**450,000** J	370 U	350 U	**30,000** J	370 U	**38,000** U	6,300 J	7,300 U
Phenanthrene	ug/kg	100,000	440 J	NA	24 J	8 J	NA	**130,000** J	1,000 J	12 J	13 J	380 U	**180,000**	610	**1,200,000**	370 U	350 U	**310,000**	370 U	92,000 J	62,000 J	24,000 J
Pyrene	ug/kg	100,000	450 J	NA	12 J	8 J	NA	70,000 J	760 J	13 J	8 J	380 U	67,000	230 J	**470,000** J	370 U	350 U	90,000 J	13 J	38,000	18,000 J	8,600
Benz(a)anthracene	ug/kg	1,000	230 J	NA	380 U	6 J	NA	**37,000** J	290 J	370 U	5 J	380 U	**24,000** J	86 J	**170,000** J	370 U	350 U	**43,000** J	6 J	**14,000** J	**7,900** J	**3,000** J
Benzo(a)pyrene	ug/kg	1,000	340 J	NA	380 U	370 U	NA	**22,000** J	160 J	370 U	360 U	380 U	**15,000** J	64 J	**120,000** J	370 U	350 U	**33,000** J	370 U	**10,000** J	**6,600** J	**2,500** J
Benzo(b)fluoranthene	ug/kg	1,000	200 J	NA	380 U	370 U	NA	**20,000** J	160 J	370 U	360 U	380 U	**6,300** J	27 J	**50,000** J	370 U	350 U	**13,000** J	370 U	**4,700** J	**2,700** J	**1,100** J
Benzo(k)fluoranthene	ug/kg	800	250 J	NA	380 U	370 U	NA	**20,000** J	150 J	370 U	360 U	380 U	**11,000** J	50 J	**88,000** J	370 UJ	350 U	**24,000** J	370 U	**38,000** U	**3,800** J	**7,300** U
Chrysene	ug/kg	1,000	370 J	NA	380 UJ	370 UJ	NA	**38,000** J	310 J	370 U	4 J	380 U	**23,000** J	90 J	**160,000** J	370 UJ	350 U	**45,000** J	370 U	**14,000** J	**8,200** J	**3,200** J
Dibenz(a,h)anthracene	ug/kg	330	**940** U	NA	**380** U	**370** U	NA	**4,800** J	**2,900** UJ	**370** U	**360** U	**380** U	**1,400** J	**400** U	**740,000** U	**370** U	**350** U	**88,000** U	**370** U	**38,000** U	**19,000** U	**7,300** U
Indeno(1,2,3-cd)pyrene	ug/kg	500	**780** J	NA	380 U	370 U	NA	**13,000** J	**2,900** UJ	370 U	360 U	380 U	**3,700** J	12 J	**33,000** J	370 U	350 U	**67,000** J	370 U	**3,100** J	**15,000** J	**940** J
Total PAHs			4,189		43	31	825,800	8,830		32	42	0	736,600	5,679	9,858,000	14	0	1,931,000	19	540,800	345,000	100,440
Other Semivolatile Organic Compounds (ug/kg)																						
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	**940** U	NA	**380** U	**370** U	NA	**27,000** UJ	**2,900** UJ	**370** U	**360** U	**380** U	**43,000** U	**400** U	**740,000** U	**370** U	**350** U	**88,000** U	**370** U	**38,000** U	**19,000** U	**7,300** U
Benzoic acid	ug/kg	NL	250 J	NA	1,800 U	1,800 U	NA	130,000 UJ	14,000 UJ	1,800 U	1,800 U	1,900 U	210,000 U	2,000 U	3,600,000 U	1,800 U	1,700 U	430,000 U	1,800 U	190,000 U	91,000 U	36,000 U
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	940 UJ	NA	380 U	370 U	NA	1,700 J	2,900 UJ	370 U	360 U	380 U	43,000 J	77 J	16,000 J	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U
Di-n-butylphthalate	ug/kg	NL	940 UJ	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	740,000 U	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U
Di-n-octylphthalate	ug/kg	NL	940 U	NA	380 U	5 J	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	740,000 U	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U
Dibenzofuran	ug/kg	7,000	25 J	NA	380 U	370 U	NA	**7,700** J	41 J	370 U	360 U	380 U	**43,000** J	47 J	**65,000** J	370 U	350 U	4,500 J	370 U	**38,000** U	1,200 J	**7,300** U
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	940 UJ	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	740,000 U	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U
Phenol	ug/kg	330	**940** U	NA	**380** U	**370** U	NA	**27,000** UJ	**2,900** UJ	**370** U	**360** U	**380** U	**43,000** U	82 J	**740,000** U	**370** U	**350** U	**88,000** U	**370** U	**38,000** U	**19,000** U	**7,300** U
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	440 J	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	740,000 U	370 U	350 U	88,000 UJ	370 U	38,000 U	19,000 UJ	7,300 U
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:	Units	Unrestricted Use Standards (ug/kg)	RW-01	RW-02	RW-03	RW-06	RW-13			RW-13	RW-13 (dup)	RW-15	RW-16 (dup)	RW-16		RW-16		SB-09		SB-11	SB-13	SB-13 (dup)
Sample ID:			CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB11	CF-SB13	CF-DUP-1
Depth (ft):			(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)	(39-41)		(123-125)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(24-26)	(33-34)	(21-23)	(18-20)	
Constituent Date:			02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999
Pesticides/Polychlorinated Biphenyls (ug/kg)																						
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9 J	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15 J	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99 U	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	51 U	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 J	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6 J	NA	NA	NA	NA
Total Cyanide (mg/kg)																						
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	24 J	NA	1 UJ	1 UJ	NA	27	2 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	2	1 UJ	1 U	1 U	1 UJ	1 U
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																						
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,990	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.40 U	NA	NA	NA	NA
Arsenic	mg/kg	13	5.20 J	NA	1.90	3.40	NA	2.00 UJ	10.60 UJ	3.2 J	1.20 UJ	1.50 UJ	6.30 J	5.40 J	3.60 J	2.10 J	1.20 UJ	8.60	1.20 J	3.00 J	2.10	1.00 UJ
Barium	mg/kg	350	180 J	NA	47	52.70	NA	98.80	168.00 UJ	82.4	26.80 B	15.20 B	44.20 B	45.60	74.90	41.60	43.90	39	66.70	61.80	46.40	39.10
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.18 B	NA	NA	NA	NA
Cadmium	mg/kg	2.5	1.10 J	NA	0.17 U	0.38 U	NA	0.50 B	0.61 UJ	0.16 UJ	0.23 B	0.19 U	0.22 U	0.17 U	0.12 U	0.15 U	<1.0 B	0.21 U	0.28 J	0.63 J	0.36 U	0.60 J
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,110	NA	NA	NA	NA
Chromium	mg/kg	1	38.60 J	NA	37.4	79.20	NA	12.30	32.60 UJ	15.80 J	5.10 J	8.30 J	44.80 J	61 J	39.50 J	27.50 J	21.90 J	28.90	26.60	50.00	172.00 J	52.40 J
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.90	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.00	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21,500	NA	NA	NA	NA
Lead	mg/kg	63	8.10 J	NA	4.2	22.80	NA	13.20	11.50 UJ	10.10 J	3.60 J	11.10 J	12.90 J	10.90 J	10.30 J	5.30 J	6.80 J	4.80	6.40 J	7.10 J	8.40	5.30 U
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29,400	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	222	NA	NA	NA	NA
Mercury	mg/kg	0.18	0.10 UJ	NA	0.03 U	0.03 U	NA	0.05 B	0.20 UJ	0.03 U	0.03 U	0.02 U	0.01 U	0.01 U	0.02 U	0.02 U	0.01 U	0.02 U	0.02 U	0.02 U	0.03 U	0.03 U
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	383	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	671.00 J	NA	NA	NA	NA
Selenium	mg/kg	3.9	2.60 UJ	NA	0.69 UJ	1.40 J	NA	1.20 UJ	5.00 UJ	1.40 U	0.76 UJ	2.30 UJ	1.10 UJ	0.85 UJ	1.30 UJ	0.76 UJ	5 UJ	1.60 J	0.64 B	0.90	1.10 J	0.85 B
Silver	mg/kg	2	1.30 UJ	NA	0.34 U	0.33 U	NA	0.25 UJ	0.61 UJ	0.16 UJ	0.15 UJ	1.19 UJ	0.22 UJ	0.17 UJ	0.12 UJ	0.15 UJ	0.15 UJ	0.28 U	0.28 U	0.35 U	0.40 U	0.34 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	142.00 U	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.00 UJ	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.50 J	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31.00	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																						
TOC	mg/kg	NL	NA	516	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,380	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			SB-14 (dup)	SB-14	SB-16	SB-19		SB-19 (dup)	SB-51		SB-52		SB-54	SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17		RW-18	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-DUP-2	CF-SB14	CF-SB16	CF-SB19	CF-SB19	CF-SB19	CF-SB-51	CF-SB-51	CFSB-52	CFSB-52	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69	SB-70A	SB-70A
Depth (ft):				(24-28)	(5-7)	(5-7)	(34-36)	(34-36)	(5-7)	(39-41)	(11-13)	(39-41)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)	(31.5-32)	(54.5-55)
Constituent Date:			02/24/1999	02/24/1999	02/22/1999	02/24/1999	02/25/1999	02/25/1999	08/04/1999	08/04/1999	07/29/1999	07/29/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001	12/07/2001	12/07/2001
Location:			25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																									
Benzene	ug/kg	60	58,000 J	150	6 U	3 J	1 J	NA	150 J	11 J	7 U	6 U	80,000	41,000 J	1 J	5 U	1 J	140	4 J	12 J	6 U	52,000 U	6 U	140,000	6 U
Toluene	ug/kg	700	33,000 U	5 U	6 U	6 U	5 U	NA	120 J	6 J	0 J	6 U	120,000	120,000 J	6 U	5 U	6 U	110	3 J	23 U	6 U	52,000 U	6 U	120,000	6 U
Ethylbenzene	ug/kg	1,000	420,000 J	200	2 J	6 U	5 U	NA	210 J	2 J	5 J	6 U	100,000	23,000 J	6 U	5 U	6 U	780	2 J	5 J	6 U	95,000	3 J	390,000	2 J
Xylene (total)	ug/kg	260	130,000 J	100	2 J	6 U	2 J	NA	470 J	1 J	7	6 U	160,000	170,000 J	6 U	5 U	6 U	570	4 J	18 J	6 U	97,000	2 J	490,000	2 J
Volatile Organic Compounds (ug/kg)																									
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
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T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
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Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-14 (dup)	SB-14	SB-16	SB-19		SB-19 (dup)	SB-51		SB-52		SB-54	SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17		RW-18	
Sample ID:		Unrestricted Use Standards (ug/kg)	CF-DUP-2	CF-SB14	CF-SB16	CF-SB19	CF-SB19	CF-SB19	CF-SB-51	CF-SB-51	CFSB-52	CFSB-52	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69	SB-70A	SB-70A
Depth (ft):				(24-28)	(5-7)	(5-7)	(34-36)	(34-36)	(5-7)	(39-41)	(11-13)	(39-41)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)	(31.5-32)	(54.5-55)
Constituent	Date:	Units	02/24/1999	02/24/1999	02/22/1999	02/24/1999	02/25/1999	02/25/1999	08/04/1999	08/04/1999	07/29/1999	07/29/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001	12/07/2001	12/07/2001
PAHs (ug/kg)																									
Naphthalene		ug/kg	12,000	**1,500,000**	1,100	100 J	51 J	230 J	NA	9,000 B	170 JB	890 U	370 U	**3,000,000** B	**700,000** B	400 U	360 U	370 U	**18,000**	240 J	870	370 U	**290,000**	330 J	**7,100,000**	530
2-Methylnaphthalene		ug/kg	NL	1,900,000 J	510	380 U	400 U	380 U	NA	7,700 J	99 J	890 U	370 U	2,300,000	360,000	400 U	360 U	6 J	1,000 J	68 J	310 J	370 U	240,000	200 J	5,300,000	360 U
Acenaphthene		ug/kg	20,000	**400,000** U	200 J	30 J	400 U	380 U	NA	13,000	370 U	890 U	370 U	**480,000**	**23,000** J	400 U	360 U	370 U	1,900 J	370 U	370 U	370 U	**97,000**	51 J	**1,700,000**	360 U
Acenaphthylene		ug/kg	100,000	**400,000** U	21 J	37 J	400 U	380 U	NA	5,500 J	6 J	890 U	370 U	**520,000**	**140,000**	400 U	2 J	370 U	1,800 J	16 J	60 J	370 U	9,000 J	370 U	**250,000** J	360 U
Anthracene		ug/kg	100,000	**400,000** U	370 U	380 U	400 U	380 U	NA	14,000	3 J	890 U	370 U	**360,000** J	64,000 J	2 J	3 J	370 U	5,000 J	370 U	370 U	370 U	39,000 J	370 U	**690,000** J	360 U
Benzo(g,h,i)perylene		ug/kg	100,000	79,000 J	290 J	290 J	400 U	380 U	NA	11,000	370 U	890 U	370 U	28,000 J	14,000 J	400 U	360 U	370 U	18,000 J	370 U	370 U	370 U	71,000 U	370 U	**1,100,000** U	360 U
Fluoranthene		ug/kg	100,000	**400,000** U	370 U	380 U	400 U	380 U	NA	22,000	9 J	890 U	370 U	**320,000** J	64,000 J	400 U	5 J	370 U	39,000	370 U	370 U	370 U	33,000 J	370 U	**670,000** J	360 U
Fluorene		ug/kg	30,000	**86,000** J	370 U	380 U	400 U	380 U	NA	13,000	370 U	890 U	370 U	**520,000**	**98,000** J	400 U	360 U	370 U	1,800 J	370 U	370 U	370 U	**49,000** J	370 U	**1,000,000** J	360 U
Phenanthrene		ug/kg	100,000	**1,400,000** J	380	230 J	45 J	380 U	NA	41,000	19 J	890 U	370 U	**1,200,000**	**240,000**	4 J	10 J	370 U	10,000	370 U	370 U	370 U	**140,000**	370 U	**2,400,000**	360 U
Pyrene		ug/kg	100,000	**580,000**	94 J	82 J	15 J	9 J	NA	30,000	11 J	890 U	370 U	**360,000** J	**130,000** J	3 J	6 J	370 U	41,000	370 U	370 U	370 U	52,000 J	370 U	**920,000** J	360 U
Benz(a)anthracene		ug/kg	1,000	**180,000** J	40 J	41 J	400 U	380 U	NA	**11,000**	370 U	890 U	370 U	**150,000** J	**36,000** J	400 U	4 J	370 U	**20,000**	370 U	370 U	370 U	**18,000** J	370 U	**360,000** J	360 U
Benzo(a)pyrene		ug/kg	1,000	**140,000** J	36 J	32 J	400 U	380 U	NA	**13,000**	370 U	890 U	370 U	**100,000** J	**27,000** J	400 U	360 U	370 U	**26,000**	370 U	370 U	370 U	**71,000** U	370 U	**210,000** J	360 U
Benzo(b)fluoranthene		ug/kg	1,000	**56,000** J	13 J	15 J	400 U	380 U	NA	**8,500**	370 U	890 U	370 U	**50,000** J	**11,000** J	400 U	360 U	370 U	**17,000**	370 U	370 U	370 U	**71,000** U	370 U	**1,100,000** U	360 U
Benzo(k)fluoranthene		ug/kg	800	**400,000** U	22 J	25 J	400 U	380 U	NA	**8,500**	370 U	**890** U	370 U	**77,000** J	**19,000** J	400 U	360 U	370 U	**29,000**	370 U	370 U	370 U	**71,000** U	370 U	**150,000** J	360 U
Chrysene		ug/kg	1,000	**200,000** J	49 J	40 J	400 UJ	380 U	NA	**14,000**	370 U	890 U	370 U	**170,000** J	**36,000** J	400 U	3 J	370 U	**21,000**	370 U	370 U	370 U	**18,000** J	370 U	**390,000** J	360 U
Dibenz(a,h)anthracene		ug/kg	330	**400,000** U	**370** U	**380** U	**400** U	**380** U	NA	**4,300** J	**370** U	**890** U	**370** U	**12,000** J	**130,000** U	**400** U	**360** U	**370** U	**6,300** J	**370** U	**370** U	**370** U	**71,000** U	**370** U	**1,100,000** U	**360** U
Indeno(1,2,3-cd)pyrene		ug/kg	500	**60,000**	260 J	270 J	400 U	380 U	NA	**9,000**	370 U	**890** U	370 U	**26,000** J	**9,400** J	400 U	360 U	370 U	**16,000** J	370 U	370 U	370 U	**71,000** U	370 U	**1,100,000** U	360 U
Total PAHs				6,181,000	3,015	1,192	111	239		234,500	317	0	0	9,673,000	1,971,400	9	33	6	272,800	324	1,240	0	985,000	581	21,140,000	530
Other Semivolatile Organic Compounds (ug/kg)																									
1,1'-Biphenyl		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol		ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol		ug/kg	330	**400,000** U	**370** U	**380** U	**400** U	**380** U	NA	**8,000** U	**370** U	**890** U	**370** U	**400,000** U	**130,000** U	**400** U	**360** U	**370** U	**8,500** U	**370** U	**370** U	**370** U	**71,000** U	**370** U	**1,100,000** U	**360** U
Benzoic acid		ug/kg	NL	2,000,000 U	1,800 U	1,800 U	2,000 U	1,900 U	NA	39,000 U	1,800 U	4,300 U	1,800 U	1,900,000 U	640,000 U	2,000 U	1,800 U	1,800 U	41,000 U	1,800 U	NA	NA	NA	NA	NA	NA
Benzyl alcohol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		ug/kg	NL	400,000 U	370 U	380 U	400 U	380 U	NA	2,900 J	370 U	890 U	370 UJ	16,000 J	130,000 U	400 U	360 U	370 U	2,000 J	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U
Di-n-butylphthalate		ug/kg	NL	400,000 U	370 U	380 U	400 U	380 U	NA	8,000 U	370 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U
Di-n-octylphthalate		ug/kg	NL	400,000 U	370 U	380 U	400 U	380 U	NA	8,000 U	0 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U
Dibenzofuran		ug/kg	7,000	**400,000** U	67 J	380 U	400 U	380 U	NA	4,400 J	370 U	890 U	370 U	**58,000** J	**12,000** J	400 U	360 UJ	370 U	650 J	370 U	370 U	370 U	6,000 J	370 U	**120,000** J	360 U
Diethylphthalate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)		ug/kg	NL	400,000 U	370 U	380 U	400 U	380 U	NA	8,000 U	370 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	470 J	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U
Phenol		ug/kg	330	**400,000** U	46 J	**380** U	**400** U	**380** U	NA	**8,000** U	**370** U	**890** U	**370** U	**400,000** U	**130,000** U	**400** U	**360** U	**370** U	**8,500** U	**370** U	**370** U	**370** U	**71,000** U	**370** U	**1,100,000** U	**360** U
Hexachlorobenzene		ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate		ug/kg	NL	400,000 U	370 U	380 U	400 U	380 U	NA	8,000 U	0 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U
2,4-Dinitrophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol		ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

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Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-14 (dup)	SB-14	SB-16	SB-19		SB-19 (dup)	SB-51		SB-52		SB-54	SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17		RW-18	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-DUP-2	CF-SB14	CF-SB16	CF-SB19	CF-SB19	CF-SB19	CF-SB-51	CF-SB-51	CFSB-52	CFSB-52	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69	SB-70A	SB-70A
Depth (ft):				(24-28)	(5-7)	(5-7)	(34-36)	(34-36)	(5-7)	(39-41)	(11-13)	(39-41)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)	(31.5-32)	(54.5-55)
Constituent Date:			02/24/1999	02/24/1999	02/22/1999	02/24/1999	02/25/1999	02/25/1999	08/04/1999	08/04/1999	07/29/1999	07/29/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001	12/07/2001	12/07/2001
Pesticides/Polychlorinated Biphenyls (ug/kg)																									
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																									
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	1	1 UJ	1 UJ	1 UJ	1 U	NA	**34** J	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	**31**	1 U	0 UJ	0 U	0 U	0 UJ	0 U	0 UJ
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																									
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	1.40 J	2.20	1.90 B	4.40	2.80 J	NA	7.10 J	**61.30**	7.30 J	3.80 J	2.20 J	2.00 J	1.30 UJ	1.30 UJ	1.40 UJ	5.70 J	4.00 J	1.10 J	2.50	2.30	2.00	4.10	2.60
Barium	mg/kg	350	16.80 U	44.00	51.30	44.60 B	54.50	NA	105	282	96.90	88.10	25.40 B	61.20	51.20	69.20	49.80	67.00	66.60	36.60	72.50	33.80	75.50	83.60	69.90
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	0.19 U	0.41 U	0.20 U	0.23 U	0.21 J	NA	0.65 J	**63.70**	**3.10** J	**3.50** J	0.22 B	0.46 J	0.29 B	0.16 B	0.17 U	**3.50** J	**2.50** UJ	0.30 U	0.33 J	0.30 J	0.30 J	0.58 J	0.28 J
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	**26.80**	**35.70**	**15.20**	**70.00**	**18.60**	NA	**31.80**	**44.10**	**57.70** J	**35.50** J	**31.00**	**192.00**	**8.80**	**12**	**8.60**	**41.70** J	**21.00** J	**20.50**	**15.30**	**39.70**	**16.20**	**72.00**	**17.80**
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	20.70 J	4.80	7.90	13.80	8.10	NA	**103.00**	**92.20**	15.40	14.10	3.50	6.20	5.20	7.00	5.40	**79.30**	9.10	3.80 J	7.40 J	3.80 J	7.30 J	9.50 J	6.90 J
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	0.07 B	0.03 U	0.02 U	0.03 U	0.02 U	NA	**0.79**	0.04 U	0.01 B	0.00 U	0.04 U	0.03 U	0.03 U	0.03 U	0.05 U	**0.38**	0.01 U	0.00 J	0.00 J	0.00 J	0.00 J	0.00 U	0.00 J
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	2.30	0.70 J	0.80 UJ	2.30 J	0.63 U	NA	0.88 UJ	**59.60** J	1.60 UJ	0.84 UJ	1.40 UJ	0.86 UJ	1.10 UJ	0.97 UJ	0.86 UJ	1.60 U	0.92 UJ	1.70 U	1.20 U	1.50 U	1.30 U	1.70 U	1.30 U
Silver	mg/kg	2	0.39 U	0.25 U	0.40 U	0.47 U	0.31 U	NA	0.18 UJ	**58.10** J	0.20 U	0.17 U	0.19 UJ	0.17 UJ	0.17 UJ	0.16 UJ	0.17 UJ	0.19 U	0.18 U	0.27 U	0.20 U	0.24 U	0.21 U	0.27 U	0.21 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																									
TOC	mg/kg	NL	NA	3,000	402	NA	2,230	2,460	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

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Constituent	Units	Unrestricted Use Standards (ug/kg)	SB-71		SB-72		SB-73		SB-74		SB-75		SB-76		FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12	
Sample ID:			SB-71	SB-71	SB-72	SB-72	SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12
Depth (ft):			(30-30.5)	(44-45)	(24.5-25)	(48-49)	(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)
Date:			12/11/2001	12/11/2001	12/12/2001	12/12/2001	12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998
Location:			25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave
BTEX (ug/kg)																						
Benzene	ug/kg	60	2 J	6 U	2 J	2 J	2 J	3 J	3,800 J	13	8,800 J	4 J	870,000	6 U	18,125 U	8,500	1,700	2,975 U	2 U	2 U	110 J	600 U
Toluene	ug/kg	700	6 U	6 U	6 U	6 U	6 U	6 U	6,400	13	33,000	6 U	2,100,000	6 U	43,000	5,875 U	600 U	2,975 U	2 U	2 U	76 J	230 J
Ethylbenzene	ug/kg	1,000	6 U	1 J	1 J	1 J	6 U	6 U	30,000	35	26,000	1 J	1,300,000	1 J	640,000	66,000	2,900	2,975 U	2 U	2 U	510	1,000
Xylene (total)	ug/kg	260	1 J	2 J	2 J	2 J	6 U	6 U	36,000	27	56,000	3 J	1,700,000	6 U	1,000,000	45,000	690	2,975 U	2 U	2 U	530 J	1,630
Volatile Organic Compounds (ug/kg)																						
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	470,000	40,000	2,600	8,000	1 U	1 U	2,000	1,900
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	180,000	13,000	810	3,000	1 U	1 U	170	670
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	87,000	7,700	530	1,500	1 U	1 U	440	190 J
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8,700 U	2,820 U	290 U	1,428 U	1 U	1 U	1,100	300 U
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	24,000	2,500 J	290 U	1,428 U	1 U	1 U	350	300 U
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	4,700	240 J	2,000	1 U	1 U	250	300 U
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8,700 U	2,820 U	290 U	1,428 U	1 U	1 U	130 J	300 U
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:				SB-71		SB-72		SB-73		SB-74		SB-75		SB-76		FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12	
Sample ID:				SB-71	SB-71	SB-72	SB-72	SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12
Depth (ft):				(30-30.5)	(44-45)	(24.5-25)	(48-49)	(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)
Constituent	Date:			12/11/2001	12/11/2001	12/12/2001	12/12/2001	12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998
PAHs (ug/kg)																							
Naphthalene	ug/kg	12,000	380 U	360 U	370 U	1,600	360 U	390 U	180,000	530	950,000	360 J	13,000,000	3,900	1,400,000 #	420,000 #	37,000 #	560,000 #	180 #J	35 #J	2,900 #J	48,000 #
2-Methylnaphthalene	ug/kg	NL	380 U	360 U	370 U	1,200	360 U	390 U	190,000	360 U	690,000	320 J	3,400,000	2,700	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	20,000	380 U	360 U	370 U	20 J	360 U	390 U	27,000 J	360 U	31,000 J	390 U	330,000 J	360 J	84 J	100 J	4,350 U	140,000	110 J	390 U	5,000	390 J
Acenaphthylene	ug/kg	100,000	380 U	360 U	370 U	120 J	360 U	390 U	8,100 J	360 U	240,000	80 J	1,300,000 J	920	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	100,000	380 U	360 U	370 U	390 U	360 U	390 U	21,000 J	360 U	92,000 J	50 J	780,000 J	670 J	320 J	290 J	2,900 J	44,000 J	170 J	14 J	5,300	840
Benzo(g,h,i)perylene	ug/kg	100,000	380 UJ	360 UJ	370 UJ	390 UJ	360 UJ	390 UJ	41,000 U	360 UJ	150,000 U	390 UJ	1,800,000 U	140 J	4,400	1,400 U	9,300	81,500 U	460	79 J	720 J	110 J
Fluoranthene	ug/kg	100,000	380 U	360 U	370 U	390 U	360 U	390 U	27,000 J	360 U	95,000 J	390 U	1,600,000 J	1,100	1,700	1,700	16,000	32,000 J	1,400	46 J	3,700 J	700 J
Fluorene	ug/kg	30,000	380 U	360 U	370 U	390 U	360 U	390 U	41,000 J	360 U	150,000	57 J	1,200,000 J	1,100	67 J	110 J	4,350 U	56,000 J	42 J	390 U	6,500	1,100
Phenanthrene	ug/kg	100,000	380 U	360 U	370 U	390 U	360 U	390 U	100,000	360 U	350,000	230 J	4,100,000	3,000	880	1,300	7,600	130,000	150 J	41 J	16,000	2,700
Pyrene	ug/kg	100,000	380 U	360 U	370 U	390 U	360 U	390 U	47,000	360 U	120,000 J	390 U	2,000,000	1,400	2,700	2,200	23,000	46,000 J	2,100	85 J	6,500	1,100
Benz(a)anthracene	ug/kg	1,000	380 U	360 U	370 U	390 U	360 U	390 U	17,000 J	360 U	45,000 J	390 U	690,000 J	550 J	1,500	1,100	14,000	19,000 J	870	37 J	2,400 J	500 J
Benzo(a)pyrene	ug/kg	1,000	380 U	360 U	370 U	390 U	360 U	390 U	13,000 J	360 UJ	27,000 J	390 U	550,000 J	420 J	2,900	1,100	11,000	12,000 J	1,000	75 J	1,600 J	300 J
Benzo(b)fluoranthene	ug/kg	1,000	380 U	360 U	370 U	390 U	360 U	390 U	6,100 J	360 U	150,000 U	390 U	250,000 J	190 J	1,700	870	6,300	7,100 J	540	58 J	680 J	120 J
Benzo(k)fluoranthene	ug/kg	800	380 U	360 U	370 U	390 U	360 U	390 U	7,000 J	360 U	150,000 U	390 U	400,000 J	300 J	1,800	820	7,300	7,900 J	680	57 J	1,200 J	190 J
Chrysene	ug/kg	1,000	380 U	360 U	370 U	390 U	360 U	390 U	18,000 J	360 U	48,000 J	390 U	650,000 J	570 J	1,900	1,200	14,000	18,000 J	870	52 J	2,500 J	510 J
Dibenz(a,h)anthracene	ug/kg	330	380 U	360 U	370 U	390 U	360 U	390 U	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	1,200	385 U	2,900 J	81,500 U	370 U	390 U	3,795 U	815 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	380 UJ	360 UJ	370 UJ	390 UJ	360 UJ	390 UJ	3,100 J	360 U	150,000 U	390 UJ	1,800,000 U	120 J	3,400	1,000	7,100	81,500 U	380	57 J	570 J	92 J
Total PAHs			0	0	0	2,940	0	0	705,300	530	2,838,000	1,097	30,250,000	17,440	1,424,551	433,190	158,400	1,072,000	8,952	636	55,570	56,652
Other Semivolatile Organic Compounds (ug/kg)																							
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	380 U	360 U	NA	NA	NA	NA	6,500 J	360 U	18,000 J	390 U	160,000 J	130 J	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	380 U	360 U	NA	NA	NA	NA	41,000 U	360 U	150,000 U	160 J	1,800,000 U	95 J	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	380 U	260 J	NA	NA	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			SB-71		SB-72		SB-73		SB-74		SB-75		SB-76		FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	SB-71	SB-71	SB-72	SB-72	SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12
Depth (ft):			(30-30.5)	(44-45)	(24.5-25)	(48-49)	(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)
Constituent Date:			12/11/2001	12/11/2001	12/12/2001	12/12/2001	12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998
Pesticides/Polychlorinated Biphenyls (ug/kg)																						
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																						
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	0 UJ	0 UJ	0 U	0 U	0 U	0 U	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																						
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	3.10	4.40	6.80	2.00	3.00	3.20	2.60	3.00	2.10	1.60 J	6.10	2.40	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	350	66.00	65.00	52.70	56.20	61.30	33.00	36.00	82.70	57.70	62.70	36.70	89.40	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	0.34 J	0.30 J	0.35 J	0.25 UJ	0.34 J	0.29 UJ	0.39 J	0.29 J	0.22 U	0.30 U	0.42	0.35 J	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	**41.60**	**20.30**	**75.80**	**11.10**	**82.20**	**9.90**	**46.10**	**15.70**	**12.20**	**10.40**	**46.70**	**40.60**	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	8.40 J	8.30 J	6.80 J	6.40 J	6.60 J	5.40 J	5.20 J	8.20 J	6.70 J	5.50 J	3.70 J	6.70 J	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	0.01 U	0.01 U	0.06 U	0.07 U	0.06 U	0.07 U	0.01 U	0.01 U	0.01 U	0.01 U	0.00 J	0.00 J	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1.30 U	1.50 U	1.60 U	1.40 U	1.50 U	1.60 U	1.30 U	1.30 U	1.20 U	1.70 U	1.10 U	1.60 U	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	2	0.20 U	0.24 U	0.26 U	0.23 U	0.24 U	0.27 U	0.20 U	0.21 U	0.20 U	0.28 U	0.18 U	0.26 U	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																						
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:				SB-30		SB-31		SB-32		SB-33		SB-34		SB-35		RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)
Sample ID:				CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32	CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB
Depth (ft):				(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)	(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)	(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99
Constituent	Date:			03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999
	Location:			Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
BTEX (ug/kg)																						
Benzene		ug/kg	60	6 U	7 U	6 U	3 J	31 U	6 U	3,900 J	1,000 J	4 J	6 U	6 U	6 U	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U
Toluene		ug/kg	700	1 J	1 J	6 U	1 J	31 U	6 U	11,000 U	730 J	6 U	6 U	6 U	6 U	5 U	12 UJ	NA	7 U	6 UJ	1 J	1 J
Ethylbenzene		ug/kg	1,000	1 J	1 J	6 U	6 U	150	1 J	43,000	4,900 J	6 U	1 J	6 U	6 U	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U
Xylene (total)		ug/kg	260	3 J	3 J	6 U	6 U	340	2 J	47,000	6,600 B	62	3 J	6 U	6 U	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U
Volatile Organic Compounds (ug/kg)																						
1,2,4-Trimethylbenzene		ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene		ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone		ug/kg	120	NA	NA	NA	NA	62 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone		ug/kg	NL	NA	NA	NA	NA	62 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone		ug/kg	50	NA	NA	NA	NA	62 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride		ug/kg	760	NA	NA	NA	NA	31 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride		ug/kg	50	NA	NA	NA	NA	47 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		ug/kg	NL	NA	NA	NA	NA	31 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene		ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene		ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene		ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene		ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane		ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)		ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane		ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene		ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether		ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene		ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-30		SB-31		SB-32		SB-33		SB-34		SB-35		RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32	CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB
Depth (ft):			(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)	(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)	(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99
Constituent	Date:		03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	380 U	490 U	380 U	400 U	880	37 J	**150,000** B	**210,000** B	590 JB	63 J	400 U	380 U	110 J	1,800 UJ	NA	450 U	18 J	1,200 U	1,300 U
2-Methylnaphthalene	ug/kg	NL	380 U	49 J	380 U	400 U	200 J	380 U	120,000 J	260,000 J	740 U	420 U	400 U	380 U	72 J	1,800 UJ	NA	450 U	22 J	1,200 U	1,300 U
Acenaphthene	ug/kg	20,000	380 U	490 U	380 UJ	29 J	25 J	67 J	**26,000** J	**41,000** J	320 J	420 U	400 U	380 U	44 J	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U
Acenaphthylene	ug/kg	100,000	380 U	58 J	380 U	400 U	16 J	25 J	3,200 J	46,000	160 J	420 U	400 U	380 U	150 J	64 J	NA	450 U	27 J	1,200 U	1,300 U
Anthracene	ug/kg	100,000	380 U	19 J	380 U	400 U	14 J	380 U	39,000 U	7,400 J	210 J	420 U	400 U	380 U	200 J	1,800 UJ	NA	450 U	26 J	1,200 U	1,300 U
Benzo(g,h,i)perylene	ug/kg	100,000	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	26,000 J	1,500	420 U	400 U	180 J	340 J	1,800 UJ	NA	450 U	98 J	1,200 U	1,300 U
Fluoranthene	ug/kg	100,000	18 J	490 U	380 U	400 U	19 J	380 U	39,000 U	36,000 U	1,700	420 U	400 U	380 U	710	27 J	NA	450 U	200 J	1,200 U	1,300 U
Fluorene	ug/kg	30,000	380 U	490 U	380 U	400 U	18 J	380 U	**39,000** U	**36,000**	740 U	420 U	400 U	380 U	120 J	42 J	NA	450 U	390 U	1,200 U	1,300 U
Phenanthrene	ug/kg	100,000	16 J	70 J	380 U	400 U	66 J	380 U	17,000 J	**110,000**	1,300	420 U	400 U	8 J	650	1,800 UJ	NA	450 U	130 J	1,200 U	1,300 U
Pyrene	ug/kg	100,000	22 J	29 J	380 U	400 U	31 J	380 U	9,200 J	35,000 J	2,100	420 U	400 U	6 J	760	34 J	NA	450 U	230 J	1,200 U	1,300 U
Benz(a)anthracene	ug/kg	1,000	16 J	490 U	380 U	400 UJ	11 J	380 U	**3,900** J	**13,000** J	**1,800**	420 U	400 U	8 J	480	**1,800** UJ	NA	450 U	140 J	**1,200** U	**1,300** U
Benzo(a)pyrene	ug/kg	1,000	24 J	490 U	380 U	400 U	380 U	380 U	**2,800** J	**8,600** J	**2,000**	420 U	400 U	14 J	460	**1,800** UJ	NA	450 U	120 J	**1,200** U	**1,300** U
Benzo(b)fluoranthene	ug/kg	1,000	180 J	490 U	380 U	400 U	380 U	380 U	**1,200** J	**3,400** J	**1,500**	420 U	400 U	380 U	300 J	**1,800** UJ	NA	450 U	110 J	**1,200** U	**1,300** U
Benzo(k)fluoranthene	ug/kg	800	26 J	490 U	380 U	400 U	380 U	380 U	**39,000** U	**36,000** U	**1,400** J	420 U	400 U	380 U	500 J	**1,800** UJ	NA	450 U	150 J	**1,200** U	**1,300** U
Chrysene	ug/kg	1,000	17 J	490 U	380 U	400 U	380 U	380 U	**3,300** J	**11,000** J	**1,700**	420 U	400 U	8 J	490	**1,800** UJ	NA	450 U	160 J	**1,200** U	**1,300** U
Dibenz(a,h)anthracene	ug/kg	330	**380** U	**490** U	**380** U	**400** U	**380** U	**380** U	**39,000** U	**36,000** U	**840**	**420** U	**400** U	**380** U	120 J	**1,800** UJ	NA	**450** U	33 J	**1,200** U	**1,300** U
Indeno(1,2,3-cd)pyrene	ug/kg	500	17 J	490 U	380 U	400 U	380 U	380 U	**39,000** U	**22,000** J	**1,600**	420 U	400 U	380 U	360 J	**1,800** UJ	NA	450 U	83 J	**1,200** U	**1,300** U
Total PAHs			336	225	0	29	1,280	129	336,600	829,400	18,720	63	0	224	5,866	167		0	1,547	0	0
Other Semivolatile Organic Compounds (ug/kg)																					
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	**380** U	**490** U	**380** U	**400** U	**380** U	**380** U	**39,000** U	**36,000** U	**740** U	**420** U	**400** U	**380** U	78 J	**1,800** UJ	NA	**450** U	**390** U	**1,200** U	**1,300** U
Benzoic acid	ug/kg	NL	1,800 U	2,400 U	1,900 U	2,000 U	1,900 U	1,800 U	190,000 U	180,000 U	3,600 U	2,000 U	2,000 U	1,800 U	140 J	560 J	NA	71 J	76 J	160 J	6,200 J
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	740 U	420 U	400 U	380 U	62 J	1,800 UJ	NA	450 U	9 J	1,200 U	1,300 U
Di-n-butylphthalate	ug/kg	NL	380 U	490 U	380 U	400 U	380 U	18 JB	39,000 U	36,000 U	740 U	420 U	400 U	380 U	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U
Di-n-octylphthalate	ug/kg	NL	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	740 U	420 U	400 U	380 U	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U
Dibenzofuran	ug/kg	7,000	380 U	490 U	380 U	400 U	380 U	380 U	1,800 J	6,000 J	220 J	420 U	400 U	380 U	76 J	1,800 UJ	NA	14 J	12 J	1,200 U	1,300 U
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	380 U	490 U	380 U	400 U	380 U	380 U	39,000 U	36,000 U	740 U	420 U	400 U	380 U	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U
Phenol	ug/kg	330	**380** U	**490** U	**380** U	**400** U	**380** U	**380** U	**39,000** U	**36,000** U	**740** U	**420** U	**400** U	**380** U	17 J	**1,800** UJ	NA	34 J	**390** U	**1,200** U	**1,300** U
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	380 U	490 U	380 U	400 U	380 U	11 JB	39,000 U	36,000 U	740 U	420 U	400 U	380 U	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
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B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-30		SB-31		SB-32		SB-33		SB-34		SB-35		RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32	CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB
Depth (ft):			(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)	(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)	(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99
Constituent Date:			03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	4 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	0 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	4 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	4 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UR	1 UR	1 U	1 UR	1 UR	1 UR	1 UR
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NA	NA	NA	NA	4,420	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	1.80 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	2.50 J	5.20 J	1.40 J	1.20 J	1.50 J	2.70 J	6.30 J	1.40 J	2.80 J	1.20 J	1.30 U	3.50	5.00	2.90 J	2.60 B	4.50	7.40	10.30	11.40
Barium	mg/kg	350	50.30	95.30	44.70	23.10	42.10	31.20	72.80	35.80	43.10	319	74	54.20	95.90	611 J	535	138.00	50.20	143.00	149.00
Beryllium	mg/kg	7.2	NA	NA	NA	NA	0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	0.22 U	0.34 U	0.51 U	0.32 U	0.50 U	0.64 U	0.19 U	0.41 U	0.20 U	0.20 U	0.21N N	0.17 U	0.22 J	0.41 J	0.37 U	0.19N N	0.19N N	0.32N N	0.32N N
Calcium	mg/kg	NL	NA	NA	NA	NA	1,850.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	49.70 J	33.50 J	50.00 J	50.80 J	44.20 J	36.60 J	69.80 J	41.50 J	52.80 J	22.90 J	64.50 J	47.00	42.10	88.90 J	78.30	79.90	13.10	33.30	35.90
Cobalt	mg/kg	NL	NA	NA	NA	NA	28.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	13.80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	22,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	11.90 J	11.50 J	7.80 J	4.00 J	6.10 J	5.50 J	9.30 J	6.30 J	18.80 J	9.80 J	10.60 J	6.00 J	93.70	12.10 J	9.60	12.70 J	203.00 J	13.60 J	11.20 J
Magnesium	mg/kg	NL	NA	NA	NA	NA	44,200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	396	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	0.02 U	0.03 U	0.03 U	0.03 U	0.03 U	0.02 U	0.04 U	0.02 U	0.06 B	0.04 U	0.03 U	0.03 U	0.69 J	0.20 J	0.21	0.02 J	0.34 J	0.03 J	0.02 J
Nickel	mg/kg	30	NA	NA	NA	NA	541	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	997.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1.10 J	1.50 J	1.80 J	1.60 J	2 J	1.20 J	2.40 J	0.85 J	0.96 J	1.20	2.30 J	0.67 UJ	0.92 UJ	4.20 J	3.40	0.97 UJ	0.97 UJ	1.60 UJ	1.60 UJ
Silver	mg/kg	2	0.35	0.50	0.29	0.38	0.36	0.36	0.33	0.29	0.40	0.40	0.43 U	0.33 UJ	0.18 U	0.35 UJ	0.37 U	0.19 U	0.19 U	0.32 U	0.32 U
Sodium	mg/kg	NL	NA	NA	NA	NA	154 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	1.20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	14.80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	30.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NA	NA	NA	1,410	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			RW-10		RW-11		RW-12		SB-81		SB-82		SB-88			SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92	
Sample ID:			CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82	CF-SB-88	CF-SB-88	CF-SB-88	CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92
Depth (ft):			(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)	(28-32)	(44-48)	(44-48 DUP)	(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)
Constituent	Units	Unrestricted Use Standards (ug/kg)	09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002	06/11/2002	06/11/2002	06/11/2002	06/19/2002	06/21/2002	11/14/2002	11/14/2002	11/15/2002	11/15/2002	11/12/2002	11/12/2002	11/12/2002
Location:			North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	Block 2822	Block 2822	Bay Street	Bay Street	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St
BTEX (ug/kg)																								
Benzene	ug/kg	60	6 U	6 U	47 J	6 U	6 U	6 U	**2,700**	6 U	6 U	6 U	1 J	6 U	6 U	**410** J	1 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U
Toluene	ug/kg	700	6 U	6 U	78 J	2 J	6 U	6 U	**27,000**	6 U	6 U	6 U	6 U	6 U	6 U	**3,100** U	1 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U
Ethylbenzene	ug/kg	1,000	6 U	6 U	160 J	6 U	6 U	6 U	**40,000**	6	6 U	6 U	2 J	6 U	6 U	**30,000**	7	6 U	6 U	6 U	6 U	29 U	6 U	6 U
Xylene (total)	ug/kg	260	6 U	6 U	**1,500** U	6 U	6 U	6 U	**72,000**	3 J	6 U	6 U	1 J	6 U	6 U	**30,000**	4 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U
Volatile Organic Compounds (ug/kg)																								
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			RW-10		RW-11		RW-12		SB-81		SB-82		SB-88			SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92	
Sample ID:			CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82	CF-SB-88	CF-SB-88	CF-SB-88	CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92
Depth (ft):			(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)	(28-32)	(44-48)	(44-48 DUP)	(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)
Constituent	Units	Unrestricted Use Standards (ug/kg)	09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002	06/11/2002	06/11/2002	06/11/2002	06/19/2002	06/21/2002	11/14/2002	11/14/2002	11/15/2002	11/15/2002	11/12/2002	11/12/2002	11/12/2002
PAHs (ug/kg)																								
Naphthalene	ug/kg	12,000	250 J	380 U	**14,000** J	380 U	400 U	370 U	**1,400,000**	160 J	400 U	360 U	240 J	340 U	360 U	**24,000**	390	380 U	370 U	370 U	370 U	380 U	360 U	360 U
2-Methylnaphthalene	ug/kg	NL	300 J	380 U	130,000	380 U	400 U	370 U	800,000	360 U	400 U	360 U	360 U	340 U	360 U	2,600 J	270 J	380 U	370 U	370 U	370 U	380 U	360 U	360 U
Acenaphthene	ug/kg	20,000	110 J	380 U	**27,000** J	380 U	400 U	370 U	**58,000** J	360 U	35 J	360 U	360 UJ	340 U	360 U	4,100 U	360 U	380 U	370 U	370 U	370 U	58 J	360 U	360 U
Acenaphthylene	ug/kg	100,000	1,700	380 U	95,000	380 U	400 U	370 U	**240,000**	360 U	400 U	360 U	360 U	340 U	360 U	4,100 U	360 U	380 U	370 UJ	100 J	370 U	260 J	360 U	360 U
Anthracene	ug/kg	100,000	660 J	380 U	89,000	380 U	400 U	370 U	**130,000** J	360 U	400 U	360 U	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	53 J	370 U	87 J	360 U	360 U
Benzo(g,h,i)perylene	ug/kg	100,000	1,600 J	380 U	**120,000**	380 U	400 U	370 U	16,000 J	360 U	400 U	360 U	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	140 J	370 U	170 J	360 U	360 U
Fluoranthene	ug/kg	100,000	4,200	380 U	**260,000**	380 U	400 U	370 U	**150,000** J	360 U	400 U	360 U	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	270 J	370 U	140 J	360 U	360 U
Fluorene	ug/kg	30,000	160 J	380 U	**83,000**	380 U	400 U	370 U	**160,000** J	360 U	400 U	360 U	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	370 U	370 U	34 J	360 U	360 U
Phenanthrene	ug/kg	100,000	1,500 J	380 U	**330,000**	380 U	400 U	370 U	**440,000**	360 U	400 U	360 U	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	52 J	370 U	61 J	360 U	360 U
Pyrene	ug/kg	100,000	7,600	380 U	**240,000**	380 U	4 J	370 U	**170,000** J	360 U	400 U	360 U	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	320 J	370 U	170 J	360 U	360 U
Benz(a)anthracene	ug/kg	1,000	**4,300**	380 U	**190,000**	380 U	400 U	370 U	**68,000** J	360 U	400 U	360 U	360 U	340 U	360 U	**4,100** U	360 U	380 U	370 U	170 J	370 U	120 J	360 U	360 U
Benzo(a)pyrene	ug/kg	1,000	**2,700**	380 U	**130,000**	380 U	400 U	370 U	**46,000** J	360 U	400 U	360 U	360 U	340 U	360 U	**4,100** U	360 U	380 U	370 U	250 J	370 U	170 J	360 U	360 U
Benzo(b)fluoranthene	ug/kg	1,000	**1,600** J	380 U	**130,000**	380 U	400 U	370 U	**24,000** J	360 U	400 U	360 U	360 U	340 U	360 U	**4,100** U	360 U	380 U	370 U	160 J	370 U	120 J	360 U	360 U
Benzo(k)fluoranthene	ug/kg	800	**2,700** J	380 U	**130,000** J	380 U	400 U	370 U	**39,000** J	360 U	400 U	360 U	360 U	340 U	360 U	**4,100** U	360 U	380 U	370 U	370 J	370 U	130 J	360 U	360 U
Chrysene	ug/kg	1,000	**3,600**	380 U	**180,000**	380 U	400 U	370 U	**66,000** J	360 U	400 U	360 U	360 U	340 U	360 U	**4,100** U	360 U	380 U	370 U	180 J	370 U	140 J	360 U	360 U
Dibenz(a,h)anthracene	ug/kg	330	**730** J	**380** U	**51,000** J	**380** U	**400** U	**370** U	**180,000** U	**360** U	**400** U	**360** U	**360** U	**340** U	**360** U	**4,100** U	**360** U	**380** U	**370** U	53 J	**370** U	49 J	**360** U	**360** U
Indeno(1,2,3-cd)pyrene	ug/kg	500	**1,600** J	380 U	**120,000**	380 U	400 U	370 U	**16,000** J	360 U	400 U	360 U	360 U	340 U	360 U	**4,100** U	360 U	380 U	370 U	140 J	370 U	110 J	360 U	360 U
Total PAHs			35,310	0	2,319,000	0	4	0	3,823,000	160	35	0	240	0	0	26,600	660	0	0	2,258	0	1,819	0	0
Other Semivolatile Organic Compounds (ug/kg)																								
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	**1,700** U	**380** U	**56,000** U	**380** U	**400** U	**370** U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	8,100 UJ	91 J	270,000 UJ	1,800 UJ	1,900 U	1,800 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	160 J	380 U	11,000 J	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	130 J	380 U	**33,000** J	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	**1,700** U	**380** U	**56,000** U	**380** U	**400** U	**370** U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:	Units	Unrestricted Use Standards (ug/kg)	RW-10		RW-11		RW-12		SB-81		SB-82		SB-88			SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92	
Sample ID:			CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82	CF-SB-88	CF-SB-88	CF-SB-88	CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92
Depth (ft):			(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)	(28-32)	(44-48)	(44-48 DUP)	(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)
Constituent Date:			09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002	06/11/2002	06/11/2002	06/11/2002	06/19/2002	06/21/2002	11/14/2002	11/14/2002	11/15/2002	11/15/2002	11/12/2002	11/12/2002	11/12/2002
Pesticides/Polychlorinated Biphenyls (ug/kg)																								
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																								
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 U	0 U	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																								
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	8.80	2.00	5.60	3.50	4.00	1.70	3.20	4.00	3.50	3.70	6.00 J	1.90 J	2.50 J	**19.40**	2.20	2.60 J	7.00 J	2.00 J	2.80 J	2.70 J	7.20 J	6.80 J
Barium	mg/kg	350	105.00	43.80	45.30	63.60	112.00	65.70	48.50	53.50	43.60	65.20	71.20	72.30	71.30	**1430**	69.00	43.60	66.50	11.00	48.00	22.50	62.70	47.80
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	0.19N N	0.18N N	0.19N N	0.19N N	0.20N N	0.13N N	1.00 U	0.76 U	0.97 U	0.93 U	0.86 U	0.89 U	0.83 U	**2.6** U	0.83 U	1.00 U	0.96 U	0.90 U	1.00 U	0.83 U	0.99 U	0.94 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	**27.00**	**113.00**	**8.60**	**97.70**	**62.60**	**13.50**	**37.50**	**73.60**	**56.90**	**99.50**	**99.90** J	**17.90** J	**20.50** J	**65.90**	**20.00**	**33.60**	**94.80**	**10.60**	**84.60**	**20.20**	**82.20**	**72.00**
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	**1,380** J	5.80 J	21.40 J	6.90 J	10.40 J	5.80 J	13.00	5.10	24.20	5.00	6.70 J	6.70 J	10.20 J	11.60	6.60	4.00	7.00	12.80	4.70	35.20	6.20	5.30
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	0.09 J	0.00 UR	0.07 J	0.01 J	0.01 UR	0.00 UR	0.09 U	0.09 U	0.10 U	0.10 U	0.09 U	0.08 U	0.09 U	**0.27** U	0.09 U	0.04 U	0.06 U	0.05 U	0.05 U	0.04 U	0.05 U	0.05 U
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1.40 J	0.90 UJ	1.40 J	0.94 UJ	0.98 UJ	0.66 UJ	1.60 U	1.20 U	1.50 U	1.50 U	1.40 UJ	1.40 UJ	1.30 UJ	**4.20** U	1.30 U	1.60 U	1.50 U	1.40 U	1.60 U	1.30 U	1.60 U	1.50 U
Silver	mg/kg	2	0.19 U	0.18 U	0.19 U	0.19 U	0.20 U	0.13 U	0.30 U	0.23 U	0.29 U	0.28 U	0.26 U	0.27 U	0.25 U	0.79 U	0.25 U	0.30 U	0.29 U	0.27 U	0.30 U	0.25 U	0.30 U	0.28 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																								
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Constituent	Units	Unrestricted Use Standards (ug/kg)	SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07
Sample ID:			CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17
Depth (ft):			(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(6-8)	(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)
Date:			11/13/2002	11/13/2002	11/14/2002	11/14/2002	04/01/1993	04/01/1993	04/01/1993	04/01/1993	04/05/1993	04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999
Location:			Edgewater St	Edgewater St	Edgewater St	Edgewater St	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																				
Benzene	ug/kg	60	6,200 U	6 U	5,800 U	6 U	11 U	11 U	11 U	11 U	13 U	44	3 U	2 U	2 U	3 U	6 U	6 U	3,500 J	80,000
Toluene	ug/kg	700	6,200 U	6 U	4,900 J	6 U	11 U	11 U	11 U	11 U	13 U	200	3 U	2 U	2 U	3 U	6 U	6 U	9,200 J	170,000
Ethylbenzene	ug/kg	1,000	28,000	4 J	9,400	3 J	11 U	11 U	11 U	11 U	13 U	45	3 U	4	2 U	2 J	6 U	6 U	22,000	21,000 J
Xylene (total)	ug/kg	260	16,000	6 U	16,000	1 J	11 U	11 U	11 U	11 U	13	380	3 U	27	6	8	6 U	6 U	25,000	210,000
Volatile Organic Compounds (ug/kg)																				
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	31	3	5	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	23	2	5	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	11 U	11 U	11 U	11 U	24	12 U	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	3	1 U	1 U	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U	960 D	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	1	1 U	1 U	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17
Depth (ft):			(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(6-8)	(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)
Constituent Date:			11/13/2002	11/13/2002	11/14/2002	11/14/2002	04/01/1993	04/01/1993	04/01/1993	04/01/1993	04/05/1993	04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999
PAHs (ug/kg)																				
Naphthalene	ug/kg	12,000	**1,600,000**	320 J	**62,000**	390	370 U	370 U	390 U	370 U	6,900 D	2,000	33 #	2,400 #	500 #	1,400 #	29 JB	29 JB	**420,000** B	**3,500,000**
2-Methylnaphthalene	ug/kg	NL	80,000 J	360 U	30,000	140 J	370 U	370 U	390 U	370 U	4,800 D	1,600	NA	NA	NA	NA	330 U	370 U	440,000 J	2,600,000
Acenaphthene	ug/kg	20,000	**1,200,000**	56 J	2,800 J	21 J	370 U	370 U	390 U	370 U	460	130 J	2,900	470 U	410 U	420 U	330 U	370 U	11,000 J	**96,000** J
Acenaphthylene	ug/kg	100,000	**190,000** J	18 J	14,000 J	25 J	370 U	370 U	390 U	370 U	2,000	820	NA	NA	NA	NA	8 JB	8 J	64,000 J	**780,000**
Anthracene	ug/kg	100,000	**810,000**	360 U	7,400 J	370 U	370 U	370 U	390 U	370 U	660	390 U	500 U	810	770	610	330 U	370 U	78,000 U	**580,000** U
Benzo(g,h,i)perylene	ug/kg	100,000	**260,000** J	360 U	1,200 J	370 U	370 U	370 U	390 U	370 U	430 U	390 U	500 U	740	1,000	970	330 U	370 U	54,000 J	22,000 J
Fluoranthene	ug/kg	100,000	**1,900,000**	360 U	9,500 J	370 U	370 U	370 U	390 U	370 U	600	390 U	500 U	2,400	3,300 D	2,400	330 U	370 U	78,000 U	**580,000** U
Fluorene	ug/kg	30,000	**890,000**	360 U	9,500 J	370 U	370 U	370 U	390 U	370 U	1,300	510	2,100	1,000	410 U	420 U	7 JB	7 J	3,600 J	**230,000** J
Phenanthrene	ug/kg	100,000	**3,800,000**	28 J	25,000	370 U	370 U	370 U	390 U	370 U	2,500	390 U	500 U	2,800	2,500	2,000	27 JB	27 JB	69,000 J	**960,000**
Pyrene	ug/kg	100,000	**1,500,000**	360 U	10,000 J	370 U	370 U	370 U	390 U	370 U	1,500	390 U	500 U	2,900	3,400 D	3,100	330 U	370 U	37,000 J	**400,000** J
Benz(a)anthracene	ug/kg	1,000	**640,000** J	360 U	**3,700** J	370 U	370 U	370 U	390 U	370 U	430	390 U	500 U	**1,400**	**2,500**	**1,400**	330 U	370 U	**16,000** J	**580,000** U
Benzo(a)pyrene	ug/kg	1,000	**540,000** J	360 U	**2,900** J	370 U	370 U	370 U	390 U	370 U	350 J	390 U	500 U	**1,500**	**2,700**	**2,000**	330 U	370 U	**14,000** J	**130,000** J
Benzo(b)fluoranthene	ug/kg	1,000	**460,000** J	360 U	**15,000** U	370 U	370 U	370 U	390 U	370 U	190 J	390 U	500 U	**1,300**	**1,900**	**1,900**	330 U	370 U	**4,700** J	**580,000** U
Benzo(k)fluoranthene	ug/kg	800	**390,000** J	360 U	**3,200** J	370 U	370 U	370 U	390 U	370 U	290 J	390 U	500 U	**1,500**	**2,800**	**1,800**	330 U	370 U	**78,000** U	**580,000** U
Chrysene	ug/kg	1,000	**450,000** J	360 U	**3,500** J	370 U	370 U	370 U	390 U	370 U	420 J	390 U	500 U	**1,600**	**2,600**	**1,800**	330 U	370 U	**15,000** J	**580,000** U
Dibenz(a,h)anthracene	ug/kg	330	**800,000** U	**360** U	**15,000** U	**370** U	**370** U	**370** U	**390** U	**370** U	**430** U	**390** U	**500** U	**470** U	**410** U	**420** U	**330** U	**370** U	**78,000** U	**580,000** U
Indeno(1,2,3-cd)pyrene	ug/kg	500	**240,000** J	360 U	**1,000** J	370 U	370 U	370 U	390 U	370 U	430 U	390 U	500 U	**770**	**1,100**	**1,100**	330 U	370 U	**47,000** J	**27,000** J
Total PAHs			14,950,000	422	185,700	576	6,290	6,290	6,630	6,290	23,690	9,740	11,033	22,060	26,300	21,740	4,361	4,881	1,507,300	12,805,000
Other Semivolatile Organic Compounds (ug/kg)																				
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	NA	NA	NA	NA	**370** U	**370** U	**390** U	**370** U	**430** U	**390** U	NA	NA	NA	NA	330 U	**370** U	**78,000** U	**580,000** U
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	530	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
4-Methylphenol	ug/kg	330	NA	NA	NA	NA	**370** U	**370** U	**390** U	**370** U	**430** U	**390** U	NA	NA	NA	NA	330 U	**370** U	**78,000** U	**580,000** U
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,600 UJ	1,800 U	380,000 U	2,800,000 U
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	330 U	370 UJ	78,000 U	580,000 U
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
Carbazole	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
Dibenzofuran	ug/kg	7,000	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	60 J	NA	NA	NA	NA	330 U	1,800 U	**7,000** J	**580,000** U
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
N-Nitrosodiphenylamine (1)	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
Phenol	ug/kg	330	NA	NA	NA	NA	**370** U	**370** U	**390** U	**370** U	**430** U	**390** U	NA	NA	NA	NA	330 U	**370** U	**78,000** U	**580,000** U
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	370 U	370 U	390 U	180 JB	230 JB	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17
Depth (ft):			(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(6-8)	(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)
Constituent Date:			11/13/2002	11/13/2002	11/14/2002	11/14/2002	04/01/1993	04/01/1993	04/01/1993	04/01/1993	04/05/1993	04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999
Pesticides/Polychlorinated Biphenyls (ug/kg)																				
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																				
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	0 UJ	0 UJ	0 UJ	0 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U	1 UJ	1 UJ
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																				
Aluminum	mg/kg	NL	NA	NA	NA	N N	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	N N	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	2.60 J	6.60 J	2.50 J	7.70 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.50	2.50	2.80 J	2.00
Barium	mg/kg	350	8.70	71.30	48.90	81.60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	43.60 J	43.60 J	105.00	42.00
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	1.00 U	0.90 U	0.82 U	1.10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.29 U	0.17 U	0.34 U	0.15 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	**14.00**	**83.80**	**27.30**	**91.30**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**14.70**	**14.70**	**28.90** J	**11.50**
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	3.80	7.60	4.60	7.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.8 J	7.8J	9.2 J	5.1
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	0.06 U	0.04 U	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.06 U	0.02 U	0.03 U	0.02 U
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1.60 U	1.40 U	1.30 U	1.70 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.20 UJ	0.69 UJ	1.50 J	0.61 UJ
Silver	mg/kg	2	0.31 U	0.27 U	0.25 U	0.32 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.58 UJ	0.34 UJ	0.42 U	0.31 UJ
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																				
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	581	581	NA	NA

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Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			RW-14	RW-14	RW-14	RW-14	RW-14	SB-18	SB-18	SB-18 (dup)	SB-21	SB-22	SB-22	SB-23	SB-23	SB-23	SB-23	SB-36	SB-36	SB-40	SB-40	SB-40	SB-41
Sample ID:			CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB18	CF-SB18	CF-DUP3	CF-SB2I	CF-SB22	CF-SB22	CF-SB23	CF-SB23	CF-23	CF-SB23	CF-RW4	CF-RW4	CF-SB-40	CF-SB-40	CF-SB-40	CF-SB-41
Depth (ft):			(24-25)	(58-61)	(78-78.5)	(119-119.5)	(126-126.5)	(4-7.5)	(73-76)	(73-76)	(5-7)	(2-3)	(20-21)	(4-8)	(29-31)	(92-94)	(109-111)	(4-8)	(16-20)	(4-6)	(16-18)	(18-20)	(10-12)
Constituent	Date:		08/23/1999	08/24/1999	08/24/1999	08/26/1999	08/26/1999	03/02/1999	03/09/1999	03/09/1999	02/25/1999	02/25/1999	02/26/1999	03/02/1999	03/04/1999	03/10/1999	03/11/1999	03/02/1999	03/02/1999	07/27/1999	07/27/1999	07/27/1999	07/28/1999
	Location:		40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	0 Willow Av	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																							
Benzene	ug/kg	60	62,000	570 J	90,000	72	6 U	4 J	1,100 U	100 J	1,500	2,600 J	2,000 J	6 J	NA	23 J	18	2 J	10	10,000	63,000	5,400,000	6 U
Toluene	ug/kg	700	110,000	340 J	190,000	320	6 U	2 J	720 J	560 J	110 J	32,000	860 J	1 J	NA	16 JB	11 U	1 J	3 J	18,000	26,000	3,700,000	6 U
Ethylbenzene	ug/kg	1,000	68,000	32	28,000	120	6 U	6 U	590 J	470 J	5,800	150,000	390 J	4 J	NA	6 J	2 J	3 J	2 J	22,000	42,000	170,000 J	6 U
Xylene (total)	ug/kg	260	110,000	210	200,000	870	6 U	6 U	7,200	5,500	1,900	150,000	580 J	16	NA	41	6 J	12	4 J	24,000	26,000	1,400,000	6 U
Volatile Organic Compounds (ug/kg)																							
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID: / Sample ID: / Depth (ft): / Constituent	Units	Unrestricted Use Standards (ug/kg)	RW-14 CF-SB-42 (24-25) 08/23/1999	RW-14 CF-SB-42 (58-61) 08/24/1999	RW-14 CF-SB-42 (78-78.5) 08/24/1999	RW-14 CF-SB-42 (119-119.5) 08/26/1999	RW-14 CF-SB-42 (126-126.5) 08/26/1999	SB-18 CF-SB18 (4-7.5) 03/02/1999	SB-18 CF-SB18 (73-76) 03/09/1999	SB-18 (dup) CF-DUP3 (73-76) 03/09/1999	SB-21 CF-SB2I (5-7) 02/25/1999	SB-22 CF-SB22 (2-3) 02/25/1999	SB-22 CF-SB22 (20-21) 02/26/1999	SB-23 CF-SB23 (4-8) 03/02/1999	SB-23 CF-SB23 (29-31) 03/04/1999	SB-23 CF-23 (92-94) 03/10/1999	SB-23 CF-SB23 (109-111) 03/11/1999	SB-36 CF-RW4 (4-8) 03/02/1999	SB-36 CF-RW4 (16-20) 03/02/1999	SB-40 CF-SB-40 (4-6) 07/27/1999	SB-40 CF-SB-40 (16-18) 07/27/1999	SB-40 CF-SB-40 (18-20) 07/27/1999	SB-41 CF-SB-41 (10-12) 07/28/1999
PAHs (ug/kg)																							
Naphthalene	ug/kg	12,000	**290,000**	8,800	**880,000**	8,900	100 J	170 J	**58,000** J	**120,000** J	**430,000** B	NA	**16,000** B	410 U	NA	**19,000** B	190 JB	65 J	370 U	**240,000** B	**120,000** B	NA	370 U
2-Methylnaphthalene	ug/kg	NL	200,000	6,700	600,000	9,300	130 J	380 U	69,000 J	140,000 J	420,000 J	NA	19,000 J	410 U	NA	25,000	380 U	380 U	370 U	120,000	65,000	NA	7 J
Acenaphthene	ug/kg	20,000	5,400 J	310 J	**29,000** J	550 J	26 J	230 J	4,000 J	7,500 J	**73,000** J	NA	500 J	410 U	NA	2,000 J	8 J	380 U	370 U	3,600 J	12,000 J	NA	370 U
Acenaphthylene	ug/kg	100,000	49,000	2,400	**220,000**	3,800	430 U	190 J	29,000	54,000	9,600 J	NA	4,000	46 J	NA	12,000	49 J	58 J	8 J	30,000 J	6,500 J	NA	6 J
Anthracene	ug/kg	100,000	19,000 J	770 J	58,000 J	1,300 J	41 J	330 J	7,500 J	15,000 J	76,000 U	NA	3,700 U	410 U	NA	3,800	380 U	380 U	370 U	13,000 J	8,100 J	NA	370 U
Benzo(g,h,i)perylene	ug/kg	100,000	4,800 J	100 J	8,400 J	200 J	430 U	1,000	1,100 JB	2,400 JB	57,000 J	NA	2,600 J	30 J	NA	1,000 JB	380 U	200 J	370 U	6,200 J	4,300 J	NA	370 U
Fluoranthene	ug/kg	100,000	20,000 J	850 J	63,000 J	1,300 J	74 J	2,900 J	12,000 B	23,000 B	76,000 U	NA	3,700 U	410 U	NA	5,200 B	380 U	380 U	370 U	18,000 J	9,400 J	NA	8 J
Fluorene	ug/kg	30,000	**30,000** J	1,500	**180,000**	2,600	72 J	220 J	19,000	**32,000**	13,000 J	NA	140 J	410 U	NA	7,800	20 J	380 U	370 U	15,000 J	14,000 J	NA	370 U
Phenanthrene	ug/kg	100,000	65,000	3,000	**230,000**	4,700	240 J	500	33,000 B	66,000 B	**120,000**	NA	3,800	410 U	NA	15,000 B	380 U	120 J	18 J	56,000	32,000	NA	20 J
Pyrene	ug/kg	100,000	42,000	1,300 J	**110,000** J	2,500	110 J	2,400	15,000 B	30,000 B	61,000 J	NA	1,800 J	250 J	NA	7,800 B	380 U	63 J	7 J	38,000	19,000 J	NA	15 J
Benz(a)anthracene	ug/kg	1,000	**14,000** J	450 J	**38,000** J	780 J	40 J	**1,900**	**6,900** JB	**14,000** JB	**24,000** J	NA	670 J	410 U	NA	**3,400** JB	380 U	33 J	370 U	**13,000** J	**5,200** J	NA	6 J
Benzo(a)pyrene	ug/kg	1,000	**10,000** J	350 J	**25,000** J	600 J	26 J	**1,800**	**4,500** JB	**9,400** JB	**24,000** J	NA	570 J	130 J	NA	**2,400** JB	380 U	43 J	370 U	**10,000** J	**5,400** J	NA	370 U
Benzo(b)fluoranthene	ug/kg	1,000	**4,100** J	150 J	**22,000** J	220 J	12 J	**1,000** J	**2,000** JB	**3,600** JB	**10,000** J	NA	270 J	410 U	NA	880 JB	380 U	380 U	370 U	**4,400** J	**2,600** J	NA	370 U
Benzo(k)fluoranthene	ug/kg	800	**6,300** J	240 J	**20,000** J	470 J	26 J	**1,600** J	**3,200** JB	**7,000** JB	**76,000** U	NA	**3,700** U	410 U	NA	**1,400** JB	380 U	380 U	370 U	**4,200** J	**2,900** J	NA	370 UJ
Chrysene	ug/kg	1,000	**14,000** J	440 J	**37,000** J	830 J	430 U	**1,700**	**6,100** JB	**12,000** JB	**25,000** J	NA	640 J	410 U	NA	**2,900** JB	380 U	46 J	370 U	**12,000** J	**5,300** J	NA	370 U
Dibenz(a,h)anthracene	ug/kg	330	**38,000** U	**1,500** U	**150,000** U	**1,600** U	**430** U	**400**	**480** JB	**900** JB	**34,000** J	NA	**3,700** U	14 J	NA	**3,800** U	**380** U	**380** U	**370** U	**38,000** U	**1,000** J	NA	**370** U
Indeno(1,2,3-cd)pyrene	ug/kg	500	**3,000** J	100 J	**7,800** J	190 J	430 U	**1,200**	**1,200** JB	**2,400** JB	**49,000** J	NA	**2,200** J	33 J	NA	**1,000** JB	380 U	24 J	370 U	**4,000** J	**3,000** J	NA	370 U
Total PAHs			814,600	28,960	2,678,200	39,840	3,047	17,920	271,980	539,200	1,577,600	0	66,990	5,013	0	114,380	5,207	3,692	5,213	625,400	315,700		4,132
Other Semivolatile Organic Compounds (ug/kg)																							
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 UR	9,100 U	18,000 U	76,000 U	NA	240 J	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	**38,000** U	**1,500** U	**150,000** U	**1,600** U	**430** U	**380** U	**9,100** U	**18,000** U	**76,000** U	NA	220 J	**410** U	NA	**3,800** U	**380** U	**380** U	**370** U	**38,000** U	**21,000** U	NA	**370** U
4-Chloroaniline	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U
4-Methylphenol	ug/kg	330	**38,000** U	78 J	**150,000** U	**1,600** U	**430** U	**380** U	**9,100** U	**18,000** U	**76,000** U	NA	**3,700** U	**410** U	NA	**3,800** U	**380** U	**380** U	**370** U	**38,000** U	**860** J	NA	**370** U
Benzoic acid	ug/kg	NL	180,000 U	7,100 U	710,000 U	7,700 U	2,100 U	1,900 U	44,000 UJ	89,000 UJ	370,000 U	NA	18,000 U	2,000 U	NA	18,000 U	1,900 U	1,800 U	1,800 U	180,000 U	100,000 U	NA	1,800 U
Benzyl alcohol	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	410 U	NA	3,800 UJ	380 UJ	380 U	370 U	38,000 UJ	21,000 U	NA	370 U
Butylbenzylphthalate	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U
Carbazole	ug/kg	NL	1,000 J	56 J	5,000 J	95 J	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	590 J	NA	370 UJ
Di-n-butylphthalate	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	24 J	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U
Di-n-octylphthalate	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U
Dibenzofuran	ug/kg	7,000	6,000 J	200 J	**17,000** J	340 J	430 U	380 U	2,800 J	5,500 J	**8,500** J	NA	460 J	410 U	NA	1,200 J	380 U	380 U	370 U	2,700 J	1,700 J	NA	370 U
Diethylphthalate	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U
N-Nitrosodiphenylamine (1)	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U
Phenol	ug/kg	330	**38,000** U	120 J	**150,000** U	**1,600** U	**430** U	**380** U	**9,100** U	**18,000** U	**76,000** U	NA	**510** J	**410** U	NA	**3,800** U	**380** U	**380** U	**370** U	**38,000** U	**710** J	NA	**370** U
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	38,000 U	1,500 U	150,000 U	1,600 U	29 J	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			RW-14	RW-14	RW-14	RW-14	RW-14	SB-18	SB-18	SB-18 (dup)	SB-21	SB-22	SB-22	SB-23	SB-23	SB-23	SB-23	SB-36	SB-36	SB-40	SB-40	SB-40	SB-41
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB18	CF-SB18	CF-DUP3	CF-SB2I	CF-SB22	CF-SB22	CF-SB23	CF-SB23	CF-23	CF-SB23	CF-RW4	CF-RW4	CF-SB-40	CF-SB-40	CF-SB-40	CF-SB-41
Depth (ft):			(24-25)	(58-61)	(78-78.5)	(119-119.5)	(126-126.5)	(4-7.5)	(73-76)	(73-76)	(5-7)	(2-3)	(20-21)	(4-8)	(29-31)	(92-94)	(109-111)	(4-8)	(16-20)	(4-6)	(16-18)	(18-20)	(10-12)
Constituent Date:			08/23/1999	08/24/1999	08/24/1999	08/26/1999	08/26/1999	03/02/1999	03/09/1999	03/09/1999	02/25/1999	02/25/1999	02/26/1999	03/02/1999	03/04/1999	03/10/1999	03/11/1999	03/02/1999	03/02/1999	07/27/1999	07/27/1999	07/27/1999	07/28/1999
Pesticides/Polychlorinated Biphenyls (ug/kg)																							
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																							
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	1 UJ	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	NA	1 UJ	1 UJ	NA	1 U	1 U	1 UJ	1 UJ	1 U	2 J	NA	1 U
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																							
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	3.60 J	2.50 J	2.10 J	2.20 J	2.70 J	6.10	3.60	6.40	3.00 J	NA	4.20 J	3.20	NA	1.30	1.20	3.30	3.10	5.00 J	5.10 J	NA	3.50 J
Barium	mg/kg	350	61.40	61.70	50.40	23.80 B	37.00	50.50	57.60 J	51.90 J	43.70	NA	70.10	89.00	NA	35.80 J	26.80 J	61.40	56.30	41.30	128.00	NA	39.40
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	0.14 UJ	0.18 UJ	0.14 UJ	0.23 UJ	0.15 UJ	0.21 U	0.17 J	0.18 U	0.16 U	NA	0.69 U	0.18 U	NA	0.12 U	0.13 J	0.20 U	0.16 U	**2.80** UJ	**4.40** J	NA	**3.70** J
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	**37.40** J	**14.40** J	**16.80** J	**7.40** J	**60.20** J	**38.20**	**18.80**	**16.70**	**13.40** J	NA	**26.90** J	**25.70**	NA	**19.00**	**9.70**	**53.70**	**67.50**	**18.80** J	**33.70** J	NA	**58.00** J
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	10.6	9.2	8.3	4.9	6.9	56.6	8.8 J	12.5 J	34.5 J	NA	5.8 J	**162.0**	NA	3.6 J	2.4 U	27.9	6.0 J	23.2	**370.0**	NA	8.3
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	0.01 U	0.01 U	0.00 U	0.11	0.01 U	0.05 B	0.02 U	0.03 U	0.03 U	NA	0.02 U	**0.24**	NA	0.02 U	0.02 U	0.04 B	0.02 U	0.01 B	**0.45**	NA	0.01 B
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1.10 UJ	0.93 UJ	0.71 UJ	1.10 UJ	0.78 UJ	0.83 UJ	0.69 UJ	0.72 UJ	0.68 J	NA	0.77 J	1.60 J	NA	0.48 UJ	0.53 UJ	0.82 UJ	1.00 J	2.20 UJ	0.73 UJ	NA	3.10 UJ
Silver	mg/kg	2	1.70 J	0.18 UJ	0.14 UJ	0.23 UJ	0.15 UJ	0.41 UJ	0.34 UJ	0.36 UJ	0.26 U	NA	0.26 U	0.36 UJ	NA	0.24 UJ	0.26 UJ	0.41 UJ	0.33 UJ	0.20 U	0.15 U	NA	0.17 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																							
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	4,980	3,450	NA	NA	NA	NA	1,730	279	100 U	NA	NA	NA	NA	NA	NA

Notes:
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Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			SB-41	SB-41	SB-43	SB-43	SB-44	SB-44	TP-10	TP-10A	GP-01B	GP-01B	GP-02	GP-02	GP-03A	GP-3A (dup)	GP-03A	GP-04	GP-04	GP-05	GP-05
Sample ID:			CF-SB-41	CF-SB-41	CF-SB-43	CF-SB-43	CF-SB-44	CF-SB-44	CF-TP10	CF-TP10A	GP-01	GP-01	GP-02	GP-02	GP-03	GP-033	GP-03	GP-04	GP-04	GP-05	GP-05
Depth (ft):			(18-20)	(28-30)	(6-8)	(28-30)	(3-5)	(29-31)	(3)	(3)	(34-38)	(42-45)	(24-28)	(43-45)	(16-20)	(16-20)	(28-32)	(12-16)	(16-20')	(16-20)	(32-35)
Constituent	Date:		07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/26/1999	07/27/1999	02/24/1999	02/25/1999	11/13/2001	11/13/2001	11/12/2001	11/12/2001	11/12/2001	11/12/2001	11/13/2001	11/13/2001	11/13/2001	11/14/2001	11/14/2001
	Location:		40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																					
Benzene	ug/kg	60	1 J	88 J	90	7,300 J	6 U	1 J	6 U	5 U	9,700	650 J	240 U	100 J	9,000	8,400	4,300 J	2,200,000	3,700,000	23,000	8,900
Toluene	ug/kg	700	6 U	260 J	31	12,000	6 U	6 U	6 U	5 U	170,000	3,400	3,500	270 J	34,000	38,000	18,000	1,700,000	3,000,000	31,000	49,000
Ethylbenzene	ug/kg	1,000	0 J	400 J	210	7,000 J	6 U	6 U	6 U	2 J	13,000	300 J	7,500	550 UJ	49,000	51,000	18,000	780,000	1,000,000	150,000	38,000
Xylene (total)	ug/kg	260	1 J	2,100	210	13,000	6 U	6 U	6 U	3 J	170,000	4,100	12,000	430 J	81,000	88,000	60,000	940,000	1,600,000	190,000	78,000
Volatile Organic Compounds (ug/kg)																					
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	11 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Pink highlight indicates that the material was detected at the standard
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J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
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-- unable to calculate because it was non-detected or not analyzed
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D - identifies all compounds in the analysis completed at secondary dilution factor
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T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-41		SB-41		SB-43		SB-43		SB-44		SB-44		TP-10		TP-10A		GP-01B		GP-01B		GP-02		GP-02		GP-03A		GP-3A (dup)		GP-03A		GP-04		GP-04		GP-05		GP-05	
Sample ID:			CF-SB-41		CF-SB-41		CF-SB-43		CF-SB-43		CF-SB-44		CF-SB-44		CF-TP10		CF-TP10A		GP-01		GP-01		GP-02		GP-02		GP-03		GP-033		GP-03		GP-04		GP-04		GP-05		GP-05	
Depth (ft):			(18-20)		(28-30)		(6-8)		(28-30)		(3-5)		(29-31)		(3)		(3)		(34-38)		(42-45)		(24-28)		(43-45)		(16-20)		(16-20)		(28-32)		(12-16)		(16-20')		(16-20)		(32-35)	
Constituent	Date:	Unrestricted Use Standards (ug/kg)	07/28/1999		07/28/1999		07/28/1999		07/28/1999		07/26/1999		07/27/1999		02/24/1999		02/25/1999		11/13/2001		11/13/2001		11/12/2001		11/12/2001		11/12/2001		11/12/2001		11/13/2001		11/13/2001		11/13/2001		11/14/2001		11/14/2001	
PAHs (ug/kg)																																								
Naphthalene	ug/kg	12,000	520	JB	**130,000**	B	**91,000**	B	**430,000**	B	190	JB	330	U	740		750	U	**480,000**		**39,000**		**97,000**		2,600		**870,000**		**1,100,000**		**45,000**		**16,000,000**		NA		**1,200,000**		**880,000**	
2-Methylnaphthalene	ug/kg	NL	26	J	92,000		21,000		250,000		130	J	330	U	1,300		750	U	370,000		34,000		75,000		2,000		600,000		730,000		42,000		10,000,000		NA		780,000		600,000	
Acenaphthene	ug/kg	20,000	110	J	3,000	J	12,000	J	8,400	J	32	J	330	U	5	J	750	U	13,000	J	1,400	J	3,700	J	59	J	15,000	J	18,000	J	1,800	J	**670,000**	J	NA		**79,000**	J	13,000	J
Acenaphthylene	ug/kg	100,000	1,300		24,000		10,000	J	46,000	J	870		330	U	400	U	75	J	**120,000**		14,000		16,000		570		100,000	J	**120,000**	J	11,000		**2,000,000**		NA		72,000	J	**120,000**	J
Anthracene	ug/kg	100,000	1,300		6,200	J	5,600	J	17,000	J	440	J	330	U	220	J	750	U	32,000	J	4,200	J	6,600	J	110	J	31,000	J	36,000	J	4,700	J	**1,100,000**	J	NA		41,000	J	32,000	J
Benzo(g,h,i)perylene	ug/kg	100,000	340	J	1,500	J	19,000	U	5,900	J	3,700		330	U	580		680	J	72,000	U	7,400	U	15,000	U	360	U	15,000	U	16,000	U	7,300	U	**320,000**	J	NA		**150,000**	U	**150,000**	U
Fluoranthene	ug/kg	100,000	2,500		9,200	J	4,500	J	26,000	J	2,500		330	U	840	J	750	U	36,000	J	4,100	J	6,600	J	87	J	34,000	J	44,000	J	4,600	J	**1,400,000**	J	NA		45,000	J	36,000	J
Fluorene	ug/kg	30,000	120	J	13,000	J	7,700	J	**35,000**	J	88	J	330	U	35	J	750	U	**61,000**	J	6,700	J	10,000	J	190	J	**55,000**	J	**70,000**	J	6,700	J	**1,400,000**	J	NA		**66,000**	J	**54,000**	J
Phenanthrene	ug/kg	100,000	4,200		37,000		23,000		100,000		1,200		330	U	2,000		750	U	**140,000**		16,000		25,000		420		**140,000**	J	**160,000**		17,000		**4,300,000**		NA		**160,000**		**140,000**	J
Pyrene	ug/kg	100,000	4,100		15,000	J	7,700	J	54,000	J	3,700		330	U	1,700	J	490	J	51,000	J	6,000	J	9,400	J	120	J	56,000	J	70,000	J	6,400	J	**2,400,000**		NA		79,000	J	59,000	J
Benz(a)anthracene	ug/kg	1,000	**1,400**		**4,400**	J	**2,800**	J	**16,000**	J	**1,900**		330		860	J	250	J	**19,000**	J	**2,100**	J	**3,500**	J	37	J	**20,000**	J	**25,000**	J	**2,400**	J	**900,000**	J	NA		**27,000**	J	**21,000**	J
Benzo(a)pyrene	ug/kg	1,000	**1,200**		**3,300**	J	**1,400**	J	**13,000**	J	**2,800**		330	U	**1,100**		300	J	**11,000**	J	**1,300**	J	**2,200**	J	22	J	**12,000**	J	**16,000**	J	**1,600**	J	**740,000**	J	NA		**19,000**	J	**13,000**	J
Benzo(b)fluoranthene	ug/kg	1,000	530	J	880	J	560	J	**3,800**	J	**2,100**		330	U	860		250	J	**72,000**	U	**7,400**	U	**15,000**	U	360	U	**15,000**	U	**16,000**	U	**7,300**	U	**310,000**	J	NA		**150,000**	U	**150,000**	U
Benzo(k)fluoranthene	ug/kg	800	**890**		**2,200**	J	**820**	J	**8,400**	J	**1,800**		330	UJ	580		750	U	**72,000**	U	**920**	J	**1,800**	U	360	U	**15,000**	U	**16,000**	U	**1,100**	J	**470,000**	J	NA		**150,000**	U	**150,000**	U
Chrysene	ug/kg	1,000	**1,700**		**4,800**	J	**3,200**	J	**18,000**	J	**2,300**		330	U	**1,200**	J	320	J	**20,000**	J	**2,200**	J	**3,800**	J	360	J	**21,000**	J	**28,000**	J	**2,600**	J	**1,000,000**	J	NA		**30,000**	J	**23,000**	J
Dibenz(a,h)anthracene	ug/kg	330	190	J	**18,000**	U	**19,000**	U	**73,000**	U	**1,000**		330	U	300	J	**390**	J	**72,000**	U	**7,400**	U	**15,000**	U	**360**	U	**15,000**	U	**16,000**	U	**7,300**	U	**2,000,000**	U	NA		**150,000**	U	**150,000**	U
Indeno(1,2,3-cd)pyrene	ug/kg	500	320	J	**1,300**	J	**19,000**	U	**4,500**	J	**3,200**		330	U	**670**		**640**	J	**72,000**	U	**7,400**	U	**15,000**	U	360	U	**15,000**	U	**16,000**	U	**7,300**	U	**200,000**	J	NA		**150,000**	U	**150,000**	U
Total PAHs			20,746		365,780		248,280		1,109,000		27,950		5,610		13,390		9,395		1,713,000		161,520		320,600		8,375		2,029,000		2,497,000		176,100		45,210,000				3,348,000		2,741,000	
Other Semivolatile Organic Compounds (ug/kg)																																								
1,1'-Biphenyl	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4,5-Trichlorophenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4,6-Trichlorophenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-Dichlorophenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-Dimethylphenol	ug/kg	NL	720	U	18,000	U	19,000	U	73,000	U	22	J	330	U	400	U	750	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
3-Nitroaniline	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Methylphenol	ug/kg	330	**720**	U	**18,000**	U	**19,000**	U	**73,000**	U	**720**	U	330	U	**400**	U	**750**	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Chloroaniline	ug/kg	NL	720	U	18,000	U	19,000	U	73,000	U	720	U	330	U	400	U	750	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Methylphenol	ug/kg	330	**720**	U	**18,000**	U	**19,000**	U	**73,000**	U	63	J	330	U	**400**	U	**750**	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzoic acid	ug/kg	NL	3,500	U	89,000	U	92,000	U	360,000	U	3,500	U	1,600	U	37	J	2,500	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzyl alcohol	ug/kg	NL	720	U	18,000	UJ	19,000	UJ	73,000	U	720	U	330	U	400	U	430	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Butylbenzylphthalate	ug/kg	NL	720	U	18,000	U	19,000	U	73,000	U	720	U	330	U	400	UJ	750	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Carbazole	ug/kg	NL	720	U	440	J	19,000	U	1,200	J	230	J	330	UJ	400	U	750	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Di-n-butylphthalate	ug/kg	NL	720	U	18,000	U	19,000	U	73,000	U	720	U	330	U	400	U	750	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Di-n-octylphthalate	ug/kg	NL	720	U	18,000	U	19,000	U	73,000	U	720	U	330	U	400	U	750	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibenzofuran	ug/kg	7,000	46	J	1,400	J	1,100	J	6,200	J	56	J	330	U	400	U	22	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Diethylphthalate	ug/kg	NL	720	U	18,000	U	19,000	U	73,000	U	720	U	330	U	400	U	31	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
N-Nitrosodiphenylamine (1)	ug/kg	NL	720	U	18,000	U	19,000	U	73,000	U	720	U	330	U	400	U	750	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Phenol	ug/kg	330	**720**	U	**18,000**	U	**19,000**	U	**73,000**	U	24	J	330	U	**400**	U	**750**	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorobenzene	ug/kg	330	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Isophorone	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
bis(2-Ethylhexyl)phthalate	ug/kg	NL	720	U	18,000	U	19,000	U	73,000	U	720	U	330	U	400	UJ	750	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-Dinitrophenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-Dinitrotoluene	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,6-Dinitrotoluene	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Chloronaphthalene	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Chlorophenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Nitroaniline	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Nitrophenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
3-Methylphenol	ug/kg	330	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
3,3'-Dichlorobenzidine	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Bromophenyl phenyl ether	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Chloro-3-methylphenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Chlorophenyl phenyl ether	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Nitroaniline	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Nitrophenol	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Acetophenone	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Atrazine	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzaldehyde	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
bis(2-Chloroethoxy)methane	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
bis(2-Chloroethyl) ether	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Caprolactam	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dimethyl phthalate	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorocyclopentadiene	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachloroethane	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nitrobenzene	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
N-Nitrosodi-n-propylamine	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Pentachlorophenol	ug/kg	800	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-41		SB-41		SB-43		SB-43		SB-44		SB-44		TP-10		TP-10A		GP-01B		GP-01B		GP-02		GP-02		GP-03A		GP-3A (dup)		GP-03A		GP-04		GP-04		GP-05		GP-05	
Sample ID:			CF-SB-41		CF-SB-41		CF-SB-43		CF-SB-43		CF-SB-44		CF-SB-44		CF-TP10		CF-TP10A		GP-01		GP-01		GP-02		GP-02		GP-03		GP-033		GP-03		GP-04		GP-04		GP-05		GP-05	
Depth (ft):			(18-20)		(28-30)		(6-8)		(28-30)		(3-5)		(29-31)		(3)		(3)		(34-38)		(42-45)		(24-28)		(43-45)		(16-20)		(16-20)		(28-32)		(12-16)		(16-20')		(16-20)		(32-35)	
Constituent	**Date:**		07/28/1999		07/28/1999		07/28/1999		07/28/1999		07/26/1999		07/27/1999		02/24/1999		02/25/1999		11/13/2001		11/13/2001		11/12/2001		11/12/2001		11/12/2001		11/12/2001		11/13/2001		11/13/2001		11/13/2001		11/14/2001		11/14/2001	
Pesticides/Polychlorinated Biphenyls (ug/kg)																																								
4,4'-DDE	ug/kg	3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4,4'-DDT	ug/kg	3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dieldrin	ug/kg	5	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Endosulfan sulfate	ug/kg	2,400	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Heptachlor epoxide	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Heptachlor	ug/kg	42	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma-Chlordane	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Total Cyanide (mg/kg)																																								
Cyanide, Amenable	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cyanide, Total	mg/kg	NL	2	J	1	UJ	1	UJ	1	UJ	2	J	1	UJ	1	U	1	UJ	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cyanide, Free	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Available Cyanide	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Metals (mg/kg)																																								
Aluminum	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Antimony	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Arsenic	mg/kg	13	1.80	J	2.50	J	2.30	J	5.50	J	8.00		3.90	J	**16.80**		1.60	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Barium	mg/kg	350	60.60		81.40		77.30		95.30		158.00		67.80		208.00		42.20		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beryllium	mg/kg	7.2	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cadmium	mg/kg	2.5	**2.60**	U	**2.90**	J	**3.70**	J	**3.60**	J	**7.70**		**3.40**	J	1.30	J	0.26	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Calcium	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium	mg/kg	1	**41.10**	J	**15.60**	J	**33.50**	J	**29.80**	J	**36.70**	J	**46.20**	J	**28.00**		**14.80**	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cobalt	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Copper	mg/kg	50	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Iron	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Lead	mg/kg	63	10.0		10.8		11.7		13.7		**558.0**		12.8		**669.0**		6.5	J	7.5		7.1		8.2		11.8		8.6		11.6		7.6		**216.0**		NA		4.1		8.1	
Magnesium	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Manganese	mg/kg	1,600	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Mercury	mg/kg	0.18	0.01	B	0.01	U	0.01	U	0.01	U	0.10		0.01	U	**0.32**		0.02	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nickel	mg/kg	30	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Potassium	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Selenium	mg/kg	3.9	2.50	U	1.00	U	0.93	UJ	0.95	UJ	2.50	U	1.70	U	2.50		0.63	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Silver	mg/kg	2	0.20	U	0.15	U	0.19	U	0.19	U	0.16	U	0.14	U	0.38	U	0.26	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Sodium	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Thallium	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vanadium	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Zinc	mg/kg	109	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Total Organic Carbon (mg/kg)																																								
TOC	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

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(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
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T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-111	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66
Depth (ft):			(28-32)	(40-44)	(12-16)	(16-20)	(12-16)	(16-20)	(4-8)	(12-16)	(16-20)	(40-45)	(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)
Constituent Date:			11/16/2001	11/16/2001	11/19/2001	11/20/2001	11/16/2001	11/16/2001	11/16/2001	11/16/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/14/2001	11/14/2001	11/30/1999	11/30/1999	11/30/1999	11/30/1999
Location:			40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																					
Benzene	ug/kg	60	1,100,000	1,700	5,100	87,000	130,000	700,000	16,000	73,000	1,400	89	2,100	57 J	190 J	6	73,000	6 U	6 U	6 U	100
Toluene	ug/kg	700	1,100,000	3,300	100 U	77,000	170,000	670,000	24,000	13,000	1,100	33	830	35 J	87 J	1 U	150,000	6 U	6 U	0.30 J	0.30 J
Ethylbenzene	ug/kg	1,000	380,000	540 J	370 J	97,000	230,000	430,000	3,100 J	73,000	5,100	67	4,200	5 J	8	1 J	9,100	6 U	6 U	6 U	20
Xylene (total)	ug/kg	260	1,000,000	4,100	310 U	110,000	140,000	460,000	26,000	48,000	6,800	38	4,900	27	38	1 U	140,000	6 U	6 U	6 U	7 B
Volatile Organic Compounds (ug/kg)																					
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-111	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66
Depth (ft):			(28-32)	(40-44)	(12-16)	(16-20)	(12-16)	(16-20)	(4-8)	(12-16)	(16-20)	(40-45)	(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)
Constituent Date:			11/16/2001	11/16/2001	11/19/2001	11/20/2001	11/16/2001	11/16/2001	11/16/2001	11/16/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/14/2001	11/14/2001	11/30/1999	11/30/1999	11/30/1999	11/30/1999
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	8,200,000	50,000	1,800	17,000	15,000	7,000,000	22,000,000	1,600,000	1,400,000	110 J	510,000	790	1,200	49 J	2,000,000	370 U	380 U	170 J	79 J
2-Methylnaphthalene	ug/kg	NL	5,000,000	38,000	190 J	11,000	4,600	3,800,000	21,000,000	830,000	750,000	58 J	320,000	490	890	31 U	1,500,000	370 U	380 U	180 J	380 U
Acenaphthene	ug/kg	20,000	130,000 J	1,200 J	53 J	390 J	900 J	230,000 J	980,000 J	180,000 J	24,000 J	360 U	37,000 J	18 J	33 J	21 J	54,000 J	13 J	380 U	170 J	13 J
Acenaphthylene	ug/kg	100,000	970,000 J	9,700	380 U	1,900 J	1,300 J	730,000 J	1,100,000 J	28,000 J	57,000 J	360 U	10,000 J	68 J	160 J	23 J	230,000 J	370 U	380 U	940 J	10 J
Anthracene	ug/kg	100,000	380,000 J	4,100 J	380 U	770 J	1,000 J	380,000 J	2,000,000 J	85,000 J	16,000 J	360 U	18,000 J	18 J	54 J	13 U	63,000 J	22 J	380 U	1,800	9 J
Benzo(g,h,i)perylene	ug/kg	100,000	1,500,000 U	840 J	380 U	2,900 U	2,000 J	1,300,000 U	720,000 J	320,000 U	290,000 U	360 U	5,500 J	360 U	360 U	370 U	290,000 U	370 UJ	380 UJ	440 J	380 UJ
Fluoranthene	ug/kg	100,000	500,000 J	5,100 J	34 J	1,100 J	3,400 J	510,000 J	3,700,000	120,000 J	32,000 J	360 U	38,000 J	360 U	94 J	370 U	150,000 J	140 J	380 U	4,000	14 J
Fluorene	ug/kg	30,000	570,000 J	6,200 J	380 U	1,300 J	880 J	480,000 J	4,400,000	110,000 J	51,000 J	360 U	41,000 J	84 J	180 J	370 U	250,000 J	370 U	380 U	690 J	380 U
Phenanthrene	ug/kg	100,000	1,600,000	18,000	380 U	3,700	4,600	1,500,000	13,000,000	360,000	130,000 J	38 J	130,000	190 J	460 J	59 J	590,000	140 J	380 U	6,300	16 J
Pyrene	ug/kg	100,000	830,000 J	9,300	29 J	1,800 J	6,600	870,000 J	7,200,000	210,000 J	57,000 J	22 J	67,000 J	29 J	130 J	370 U	230,000 J	180 J	380 U	6,300 J	22 J
Benz(a)anthracene	ug/kg	1,000	310,000 J	3,100 J	20 J	660 J	2,500 J	300,000 J	2,300,000 J	70,000 J	21,000 J	360 U	23,000 J	360 U	36 J	370 U	74,000 J	70 J	380 U	2,400 J	380 U
Benzo(a)pyrene	ug/kg	1,000	240,000 J	2,400 J	380 U	500 J	2,200 J	240,000 J	1,900,000 J	58,000 J	290,000 U	360 U	21,000 J	360 U	25 J	370 U	49,000 J	69 J	380 U	2,000	380 U
Benzo(b)fluoranthene	ug/kg	1,000	1,500,000 U	1,000 J	380 U	2,900 U	1,500 J	1,300,000 U	790,000 J	320,000 U	290,000 U	360 U	74,000 U	360 U	360 U	370 U	290,000 U	43 J	380 U	920 J	380 U
Benzo(k)fluoranthene	ug/kg	800	1,500,000 U	1,400 J	380 U	2,900 U	1,900 J	1,300,000 U	1,100,000 J	320,000 U	34,000 J	360 U	12,000 J	360 U	360 U	370 U	290,000 U	49 J	380 U	1,400 J	380 U
Chrysene	ug/kg	1,000	320,000 J	3,100 J	380 U	710 J	3,300 J	310,000 J	2,500,000 J	76,000 J	23,000 J	360 U	26,000 J	360 U	41 J	370 U	83,000 J	110 J	380 U	3,000 J	380 U
Dibenz(a,h)anthracene	ug/kg	330	1,500,000 U	7,100 UJ	380 U	2,900 U	3,900 UJ	1,300,000 U	3,200,000 U	320,000 U	290,000 U	360 U	74,000 U	360 U	360 U	370 U	290,000 U	370 UJ	380 UJ	170 J	380 UJ
Indeno(1,2,3-cd)pyrene	ug/kg	500	1,500,000 U	600 J	380 U	2,900 U	1,400 J	1,300,000 U	480,000 J	320,000 U	290,000 U	360 U	4,300 J	360 U	360 U	370 U	290,000 U	370 UJ	380 UJ	520 J	380 UJ
Total PAHs			26,550,000	161,140	6,306	55,330	56,980	22,850,000	88,370,000	5,327,000	4,045,000	4,908	1,410,800	4,927	5,103	4,266	6,723,000	3,426	6,460	31,400	3,963
Other Semivolatile Organic Compounds (ug/kg)																					
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U
4-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,800 U	1,900 U	7,200 U	1,900 U
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 UJ	380 U	1,500 UJ	380 U
Carbazole	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19 J	380 U	120 J	380 U
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U
Dibenzofuran	ug/kg	7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	110 J	380 U
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	7 J	1,500 U	380 U
N-Nitrosodiphenylamine (1)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U
Phenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	16 J
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 UJ	380 U	1,500 UJ	380 U
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10	GP-11	GP-11	GP-111	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66
Depth (ft):			(28-32)	(40-44)	(12-16)	(16-20)	(12-16)	(16-20)	(4-8)	(12-16)	(16-20)	(40-45)	(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)
Constituent Date:			11/16/2001	11/16/2001	11/19/2001	11/20/2001	11/16/2001	11/16/2001	11/16/2001	11/16/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/15/2001	11/14/2001	11/14/2001	11/30/1999	11/30/1999	11/30/1999	11/30/1999
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 UJ	1 UJ	7 J	1 UJ
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.50	2.50 U	7.20	3.1U
Barium	mg/kg	350	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	41.20 B	43.40	89.40	29.20 B
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.21 UR	0.20 UR	0.21 UR	0.17 UR
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**50.60**	**22.00**	**37.00**	**47.10**
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	4.9 J	7.7 J	6.6	8.0	**342.0** J	**1,990** J	**88.3** J	**193.0** J	4.5	6.9	4.2	6.8	6.0	6.8	8.8	4.6 J	5.1 J	**198.0**	5.9 J
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U	0.01 U	**0.20** J	0.00 U
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.50	1.30	1.60	1.10
Silver	mg/kg	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.21 UJ	0.20 UJ	0.21 UJ	0.17 UJ
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,080 J	1,260 J	23,600 J	1,210 J

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Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			SB-67	SB-67	SB-58	SB-59	SB-59	SB-80	SB-80	SB-60	SB-87	SB-87	SB-61	SB-62	SB-77	SB-77	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-59	CF-SB-59	CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-62	SB-77	SB-77	CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-98
Depth (ft):			(0-4)	(4-6)	(4-6)	(0-4)	(8-10)	(0-4)	(52-56)	(4-8)	(48-52)	(60-64)	(4-8)	(4-6)	(24-28)	(37-39)	(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)
Constituent Date:			11/30/1999	11/30/1999	11/30/1999	11/29/1999	11/29/1999	06/03/2002	06/04/2002	11/30/1999	06/13/2002	06/13/2002	11/29/1999	11/29/1999	11/20/2001	11/20/2001	06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001
Location:			40 Willow Ave	40 Willow Ave	49 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	55 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave
BTEX (ug/kg)																						
Benzene	ug/kg	60	6 U	6 U	1 J	6 U	6 U	6 U	6 U	0.40 J	1,200	6	0.40 J	0.20 J	5,600 U	2,800 U	6 U	5 U	4,800 J	11,000 U	6 J	3 J
Toluene	ug/kg	700	6 U	6 U	1 J	1 J	6 U	6 U	6 U	6 U	5,000	1 J	1 J	1 J	5,600 U	2,800 U	1 J	1 J	60,000	15,000	6 U	6 U
Ethylbenzene	ug/kg	1,000	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	1,900	6 U	6 U	1 J	5,600 U	1,400 J	6 U	5 U	6,600 J	10,000 J	3 J	1 J
Xylene (total)	ug/kg	260	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	14,000	6 U	6 U	6 UJ	14,000	17,000	6 U	2 J	84,000	130,000	2 J	1 J
Volatile Organic Compounds (ug/kg)																						
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-67	SB-67	SB-58	SB-59	SB-59	SB-80	SB-80	SB-60	SB-87	SB-87	SB-61	SB-62	SB-77	SB-77	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-59	CF-SB-59	CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-62	SB-77	SB-77	CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-98
Depth (ft):			(0-4)	(4-6)	(4-6)	(0-4)	(8-10)	(0-4)	(52-56)	(4-8)	(48-52)	(60-64)	(4-8)	(4-6)	(24-28)	(37-39)	(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)
Constituent Date:			11/30/1999	11/30/1999	11/30/1999	11/29/1999	11/29/1999	06/03/2002	06/04/2002	11/30/1999	06/13/2002	06/13/2002	11/29/1999	11/29/1999	11/20/2001	11/20/2001	06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001
PAHs (ug/kg)																						
Naphthalene	ug/kg	12,000	18 J	390 U	370 U	59 J	11 J	380 U	360 U	390 U	**380,000**	65 J	400 U	380 U	9,900	**670,000**	150 J	100 J	**800,000** J	**2,100,000**	95 J	110 J
2-Methylnaphthalene	ug/kg	NL	400 U	390 U	370 U	44 J	390 U	380 U	360 U	390 U	310,000	370 U	400 U	380 U	12,000	450,000	360 U	360 U	520,000	1,400,000	360 U	59 J
Acenaphthene	ug/kg	20,000	400 U	390 U	370 U	110 J	390 U	46 J	360 UJ	390 U	10,000 J	370 U	400 U	380 U	570 J	17,000 J	28 J	360 U	15,000 J	**42,000** J	360 U	18 J
Acenaphthylene	ug/kg	100,000	84 J	390 U	15 J	240 J	22 J	110 J	360 U	390 U	95,000	370 U	400 U	380 U	3,700	**160,000**	360 U	360 U	**170,000** J	**420,000**	360 U	83 J
Anthracene	ug/kg	100,000	89 J	390 U	12 J	350 J	27 J	140 J	360 U	390 U	30,000 J	370 U	400 U	380 U	1,600	46,000 J	360 U	360 U	46,000 J	**120,000** J	360 U	48 J
Benzo(g,h,i)perylene	ug/kg	100,000	180 J	390 U	39 J	100 J	140 J	540	360 U	390 UJ	75,000 U	370 U	13 J	18 J	1,500 U	**150,000** U	360 U	360 U	**190,000** U	**360,000** U	360 U	390 U
Fluoranthene	ug/kg	100,000	460	20 J	76 J	1,300	270 J	1,200	360 U	27 J	29,000 J	370 U	28 J	37 J	1,500 J	52,000 J	360 U	360 U	43,000 J	**110,000** J	360 U	50 J
Fluorene	ug/kg	30,000	18 J	390 U	370 U	91 J	390 U	40 J	360 U	390 U	**47,000** J	370 U	400 U	380 U	2,000	**79,000** J	360 U	360 U	**70,000** J	**180,000** J	360 U	390 U
Phenanthrene	ug/kg	100,000	260 J	11 J	50 J	1,400	92 J	780	360 U	11 J	**120,000**	370 U	14 J	18 J	5,400	**190,000**	360 U	360 U	**180,000** J	**420,000**	360 U	170 J
Pyrene	ug/kg	100,000	470	16 J	110 J	1,800	320 J	1,300	360 U	40 J	43,000 J	370 U	27 J	35 J	2,300	74,000 J	360 U	360 U	65,000 J	**150,000** J	360 U	57 J
Benz(a)anthracene	ug/kg	1,000	280 J	390 U	41 J	900	200 J	580	360 U	15 J	**16,000** J	370 U	18 J	24 J	880 J	**27,000** J	360 U	360 U	**26,000** J	**54,000** J	360 U	390 U
Benzo(a)pyrene	ug/kg	1,000	260 J	390 U	39 J	920 J	210 J	560	360 U	390 U	**75,000** U	370 U	18 J	26 J	580 J	**18,000** J	360 U	360 U	**16,000** J	**360,000** U	360 U	390 U
Benzo(b)fluoranthene	ug/kg	1,000	200 J	390 U	41 J	**1,000** J	160 J	510	360 U	390 U	**75,000** U	370 U	16 J	18 J	230 J	**150,000** U	360 U	360 U	**190,000** U	**360,000** U	360 U	390 U
Benzo(k)fluoranthene	ug/kg	800	370 J	390 UJ	44 J	**1,800** J	160 J	550	360 U	390 U	**75,000** U	370 U	28 J	34 J	370 J	**150,000** U	360 U	360 U	**190,000** U	**360,000** U	360 U	390 U
Chrysene	ug/kg	1,000	300 J	390 U	64 J	**1,100**	230 J	730	360 U	17 J	**16,000** J	370 U	20 J	27 J	840 J	**27,000** J	360 U	360 U	**26,000** J	**57,000** J	360 U	390 U
Dibenz(a,h)anthracene	ug/kg	330	65 J	**390** U	**370** UJ	**390** UR	42 J	160 J	**360** U	**390** UJ	**75,000** U	**370** U	**400** U	**380** U	**1,500** U	**150,000** U	**360** U	**360** U	**190,000** U	**360,000** U	**360** U	**390** U
Indeno(1,2,3-cd)pyrene	ug/kg	500	200 J	390 U	29 J	120 J	120 J	440	360 U	390 UJ	**75,000** U	370 U	13 J	17 J	**1,500** U	**150,000** U	360 U	360 U	**190,000** U	**360,000** U	360 U	390 U
Total PAHs			4,054	5,507	2,410	11,724	3,174	8,446	6,120	4,790	1,546,000	5,985	2,995	2,914	46,370	2,560,000	5,578	5,860	2,927,000	7,213,000	5,855	4,105
Other Semivolatile Organic Compounds (ug/kg)																						
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	**400** U	**390** U	**370** U	**390** U	**390** U	NA	NA	**390** U	NA	NA	**400** U	**380** U	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	**400** U	**390** U	**370** U	**390** U	**390** U	NA	NA	**390** U	NA	NA	**400** U	**380** U	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	46 J	1,900 U	1,800 U	85 J	1,900 U	NA	NA	1,900 U	NA	NA	140 J	50 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	400 U	390 U	370 U	89 J	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	31 J	390 U	370 U	96 J	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	400 U	390 U	370 U	390 UR	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	400 U	390 U	370 U	37 J	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	400 U	390 U	370 U	390 U	390 U	NA	NA	7 J	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	**400** U	**390** U	**370** U	**390** U	**390** U	NA	NA	**390** U	NA	NA	**400** U	**380** U	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	400 U	390 U	370 U	650 B	180 JB	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Former Clifton MGP Site
Clifton, New York

Site ID:			SB-67	SB-67	SB-58	SB-59	SB-59	SB-80	SB-80	SB-60	SB-87	SB-87	SB-61	SB-62	SB-77	SB-77	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-59	CF-SB-59	CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-62	SB-77	SB-77	CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-98
Depth (ft):			(0-4)	(4-6)	(4-6)	(0-4)	(8-10)	(0-4)	(52-56)	(4-8)	(48-52)	(60-64)	(4-8)	(4-6)	(24-28)	(37-39)	(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)
Constituent Date:			11/30/1999	11/30/1999	11/30/1999	11/29/1999	11/29/1999	06/03/2002	06/04/2002	11/30/1999	06/13/2002	06/13/2002	11/29/1999	11/29/1999	11/20/2001	11/20/2001	06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001
Pesticides/Polychlorinated Biphenyls (ug/kg)																						
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																						
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	1 J	1 UJ	1 UJ	1 UJ	1 UJ	0 J	0 UJ	1 UJ	0 U	0 U	1 UJ	1 UJ	0 U	0 U	0 UJ	0 UJ	0 UJ	0 U	0 U	0 U
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																						
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	7.80	4.20	3.80 U	9.80	2.60 U	5.50	1.90	3.50 U	3.70	2.30	5.50	4.30	3.60	2.50	3.10	3.30	1.80 J	2.80	1.10 J	1.30 J
Barium	mg/kg	350	103.00	38.50 B	90.00	174.00	143.00	186.00	47.70	135.00	47.90 J	50.50 J	147.00	104.00	51.10	112.00	51.20	64.70	44.50	136.00	87.10 J	33.10 J
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	0.23 U	0.22 U	0.19 UR	0.68 B	0.22 UR	0.99 U	0.85 U	0.18 UR	1.00 U	0.99 U	0.26 U	0.21 U	0.21 U	0.25 U	1.00 U	0.89 U	0.98 U	0.31 J	0.72 J	2.80 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	29.10	31.10	31.40	21.80	21.70	26.60	13.20	32.20	12.20	12.00	54.80	29.50	33.70 J	14.00 J	17.80	27.20	11.40 J	13.30	40.60	12.30 J
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	406.0 J	6.8 J	42.2	555.0 J	12.1	436.0	7.3	9.2 J	8.8 J	7.5 J	26.2 J	32.9 J	8.3 J	7.6 J	7.2	6.9	6.8 J	7.6 J	91.4 J	2.4 B
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	1.20 J	0.02 J	0.31 J	0.56 J	0.09 J	1.30	0.09 U	0.03 J	0.07 U	0.10 U	0.19 J	0.03 J	0.00 J	0.00 J	0.09 U	0.09 U	0.08 U	0.07 U	0.07 U	0.08 J
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1.90	1.10 U	0.95 U	1.00 U	1.20	1.60 UJ	1.40 UJ	1.20	1.60 U	1.60 U	2.30	1.00 U	1.20 U	1.40 U	1.60 UJ	1.40 UJ	1.60 UJ	16.40 U	15.10 U	15.20 U
Silver	mg/kg	2	0.23 U	0.22 U	0.19 UJ	0.20 U	0.22 UJ	0.33 J	0.25 U	0.18 UJ	0.30 UJ	0.30 UJ	0.26 U	0.21 U	0.19 U	0.23 U	0.30 U	0.27 U	0.30 U	3.10 U	0.51	2.80 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																						
TOC	mg/kg	NL	7,390 J	630 J	3,810 J	65,600 J	3,280 J	NA	NA	3,660 J	NA	NA	3,180 J	2,720 J	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Constituent / Site ID:	Units	Unrestricted Use Standards (ug/kg)	SB-84	SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42
Sample ID:			CF-SB-84	CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42
Depth (ft):			(40-44)	(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)
Date:			06/21/2002	06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999
Location:			Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Sidewalk	25 Willow Ave	25 Willow Ave	Bay Street	Block 2822	North of SIRR	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Langere Place	Langere Place
BTEX (ug/kg)																					
Benzene	ug/kg	60	6 U	6 U	6 U	6 U	6 U	6 U	6 U	0.2 J	6 U	6 U	6 U	6 U	6 U	0.5 J	6 U	NA	0.5 J	6 U	6 U
Toluene	ug/kg	700	6 U	6 U	6 U	6 U	6 U	6 U	6 U	0.4 J	0.8 J	6 U	0.2 J	6 UJ	6 U	6 U	0.4 J	NA	0.5 J	6 UJ	0.3 J
Ethylbenzene	ug/kg	1,000	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 U	6 U	6 U	NA	6 U	6 UJ	6 U
Xylene (total)	ug/kg	260	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 U	6 U	6 U	NA	6 U	6 UJ	6 U
Volatile Organic Compounds (ug/kg)																					
1,2,4-Trimethylbenzene	ug/kg	3,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	1,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
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-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-84	SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB-84	CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42
Depth (ft):			(40-44)	(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)
Constituent	Date:		06/21/2002	06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999
PAHs (ug/kg)																					
Naphthalene	ug/kg	12,000	360 U	370 U	410 U	370 U	360 U	380 U	410 U	210 J	65 J	94 J	17 J	94 J	78 J	8,100 U	51 J	8,100 U	220 J	60 J	60 J
2-Methylnaphthalene	ug/kg	NL	360 U	370 U	410 U	370 U	360 U	380 U	410 U	160 J	53 J	64 J	19 J	93 J	83 J	8,200 U	42 J	8,100 U	190 J	90 J	47 J
Acenaphthene	ug/kg	20,000	37 J	370 U	410 U	370 U	360 U	380 U	410 U	250 J	110 J	60 J	46 J	120 J	43 J	8,100 U	810 UJ	8,100 U	280 J	23 J	62 J
Acenaphthylene	ug/kg	100,000	180 J	370 U	410 U	370 U	360 U	380 U	410 U	1,800 J	470	540	61 J	1,000	640 J	730 J	360 J	300 J	3,900	240 J	340 J
Anthracene	ug/kg	100,000	320 J	370 U	410 U	370 U	360 U	380 U	410 U	1,900 J	590	440	160 J	1,200	460 J	610 J	440 J	320 J	2,800	230 J	420
Benzo(g,h,i)perylene	ug/kg	100,000	360 U	370 U	410 U	370 U	360 U	380 U	410 U	3,100 J	240 J	160 J	110 J	320 J	200 J	1,200 J	71 J	8,100 UJ	840 J	61 J	89 J
Fluoranthene	ug/kg	100,000	350 J	370 U	410 U	370 U	360 U	380 U	410 U	12,000	1,900	1,400	640	3,800	1,100	2,500 J	1,800 J	1,200 J	6,300	540	1,100
Fluorene	ug/kg	30,000	260 J	370 U	410 U	370 U	360 U	380 U	410 U	320 J	130 J	74 J	60 J	170 J	42 J	8,200 U	56 J	8,100 U	380 J	28 J	70 J
Phenanthrene	ug/kg	100,000	1,200	370 U	410 U	370 U	360 U	380 U	410 U	5,200	1,200	900	520	1,700	460 J	1,400 J	1,100 J	930 J	5,000	390	680
Pyrene	ug/kg	100,000	540	370 U	410 U	370 U	360 U	380 U	410 U	13,000	2,100	1,400	870	4,300	1,300	2,600 J	1,100 J	2,000 J	6,700	600	1,100
Benz(a)anthracene	ug/kg	1,000	180 J	370 U	410 U	370 U	360 U	380 U	410 U	9,400	1,600	1,000	540	3,000	780 J	1,100 J	1,000 J	780 J	5,400	380 J	800
Benzo(a)pyrene	ug/kg	1,000	120 J	370 U	410 U	370 U	360 U	380 U	410 U	8,800	1,300	1,000	530	2,800	740 J	1,400 J	1,200	770 J	5,200	450 J	840 J
Benzo(b)fluoranthene	ug/kg	1,000	360 U	370 U	410 U	370 U	360 U	380 U	410 U	8,200	1,200	1,000	520	2,500	710 J	1,300 J	1,600	730 J	4,800	680 J	1,100 J
Benzo(k)fluoranthene	ug/kg	800	360 U	370 U	410 U	370 U	360 U	380 U	410 U	10,000 J	1,700 J	1,400 J	850 J	4,000 J	1,300 J	2,100 J	1,500	740 J	6,600 J	940 J	1,800 J
Chrysene	ug/kg	1,000	190 J	370 U	410 U	370 U	360 U	380 U	410 U	12,000	1,700	1,200	590	3,200	990	1,700 J	1,800 J	1,400 J	6,000	550	1,100
Dibenz(a,h)anthracene	ug/kg	330	360 U	370 U	410 U	370 U	360 U	380 U	410 U	1,600 J	140 J	80 J	46 J	170 J	95 J	490 J	810 UJ	8,100 UJ	500 J	390 UJ	56 J
Indeno(1,2,3-cd)pyrene	ug/kg	500	360 U	370 U	410 U	370 U	360 U	380 U	410 U	4,000	360 J	240 J	140 J	490 J	260 J	1,200 J	82 J	8,100 UJ	1,200 J	72 J	130 J
Total PAHs			5,897	6,290	6,970	6,290	6,120	6,460	6,970	91,940	14,858	11,052	5,719	28,957	9,281	18,330	12,202	9170	56,310	5,334	9,794
Other Semivolatile Organic Compounds (ug/kg)																					
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	16,000 U	260 J	2,000 U	1,800 U	3,900 U	4,000 U	40,000 U	4,000 UJ	40,000 U	7,300 U	1,900 U	2,000 U
2-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 UJ	800 U	840 U	8,100 U	810 U	8,100 U	1,500 U	38 J	410 U
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	16,000 U	120 J	310 J	37 J	310 J	1,400 J	40,000 U	150 J	40,000 U	180 J	170 J	160 J
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	130 J	4,200	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	210 J	61 J	65 J	1,300	150 J	62 J	510 J	610 J	8,100 UJ	1,500 U	1,000	100 J
Carbazole	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	710 J	160 J	120 J	69 J	170 J	87 J	220 J	150 J	8,100 U	660 J	71 J	140 J
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	820 U	8,100 U	1,500 U	390 U	410 U
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	NA	NA	NA	NA	NA	NA	NA	140 J	56 J	37 J	29 J	68 J	52 J	8,100 U	40 J	8,100 U	280 J	26 J	40 J
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	810 UJ	8,100 U	1,500 U	390 U	410 U
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	33 J	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	29,000 J	4,000 JB	4,400 JB	1,500 U	470 B	410 U
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			SB-84	SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	CF-SB-84	CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42
Depth (ft):			(40-44)	(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)
Constituent Date:			06/21/2002	06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999
Pesticides/Polychlorinated Biphenyls (ug/kg)																					
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	0 R	0 R	0 U	0 U	0 U	0 U	0 U	0.6 UJ	0.61 UJ	0.64 UJ	0.57 UJ	0.61 UJ	0.63 UJ	1.18 J	0.64 UJ	NA	0.59 UJ	0.6 UJ	2.74 J
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	2.80	1.90	2.00 J	3.70	2.60	3.50	5.20	7.9	9.3	8.4	6.7	10.3	10.1	5.6	7.1	NA	**26.4**	11.6	8.5
Barium	mg/kg	350	67.40	42.20	53.10	38.00	59.10	67.00	52.40	94.8	110	124	106	140	160	76	83.8	NA	59.9	131	126
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	0.98 U	0.85 U	1.10 U	0.81 U	0.90 U	0.88 U	1.00 U	0.63 B	0.32 B	0.53 B	0.21 UN	1.7	1.4	1.4	1.3 NJ	NA	0.23 B	1.1	0.35 B
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	**14.90**	**12.80**	**10.60**	**20.50**	**12.70**	**18.90**	**13.10**	**31.3**	**19.3**	**19.9**	**36**	**31.8**	**31.9**	**45.4**	**36.7**	NA	**19.6**	**18.8**	**66.1**
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	7.2	6.3	5.6	3.7	6.0	8.4	6.6	**225** J	**251** J	**382** J	**169** J	**744** J	**350** J	**283** J	**337**	NA	**352** J	**400** J	**226** J
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	0.10 UJ	0.09 UJ	0.10 U	0.07 U	0.08 U	0.10 U	0.10 U	**0.29** J	**0.64** J	**0.62** J	**0.23**	**0.63** J	**0.22** J	**0.2** J	**0.27** NJ	NA	**0.82** NJ	**0.18** NJ	**0.2** NJ
Nickel	mg/kg	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	1.60 U	1.40 U	1.80 U	1.30 U	1.40 U	1.40 U	1.60 U	2	2.2	1.5	1.6 J	1.3	2.2	1.6	1.2	NA	1.1	2.4	1.8
Silver	mg/kg	2	0.29 U	0.25 U	0.33 U	0.24 U	0.27 U	0.26 U	0.30 U	0.22 U	0.21 U	0.2 J	0.21 U	0.31 J	0.24 J	0.47 J	0.26 JB	NA	0.2 U	0.16 U	0.19 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	37,800 J	37,700 J	48,400 J	15,000 J	65,500 J	105,000 J	60,000 J	53,400 J	NA	36,700 J	73,800 J	32,500 J

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Former Clifton MGP Site
Clifton, New York

AECOM

Constituent	Units	Unrestricted Use Standards (ug/kg)	PRASB-1	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A
Sample ID:			PRASB-1 (13-14)	PRASB-1 (24-25)	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24)	PRASB-3A (3-4)	PRASB-4A(4.5-7.5	PRASB-5(6-8)	PRASB-5(16-17)	PRASB-5A(12-16	PRASB-5A(24-25	PRASB-5B(7-8)	PRASB-5B(13-15	PRASB-5B(19-20	PRASB-5C(7-8)	PRASB-5C(12-13	PRASB-7A(4-5)
Depth (ft):			13-14	24-25	3-4	6-7	23-24	3-4	4.5-7.5	6-8	16-17	12-16	24-25	7-8	13-15	19-20	7-8	12-13	4-5
Date:			4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009
Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
BTEX (ug/kg)																			
Benzene	ug/kg	60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	1,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (total)	ug/kg	260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (ug/kg)																			
1,2,4-Trimethylbenzene	ug/kg	3,600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	ug/kg	8,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ug/kg	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	50	23	35	29	17	**86**	ND	ND	ND	4	ND	21	ND	21	20	6	22	ND
Carbon Tetrachloride	ug/kg	760	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	42	14	10	ND
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	12,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/kg	3,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	ug/kg	5,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	680	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	1,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene(trans)	ug/kg	190	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	2,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	1,800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	ug/kg	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	1,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	370	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	250	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	ug/kg	930	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	ug/kg	NL	0	0	0	0	0	0.000	0.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	1,300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	470	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:	Units	Unrestricted Use Standards (ug/kg)	PRASB-1	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A
Sample ID:			PRASB-1 (13-14)	PRASB-1 (24-25)	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24)	PRASB-3A (3-4)	PRASB-4A(4.5-7.5	PRASB-5(6-8)	PRASB-5(16-17)	PRASB-5A(12-16	PRASB-5A(24-25	PRASB-5B(7-8)	PRASB-5B(13-15	PRASB-5B(19-20	PRASB-5C(7-8)	PRASB-5C(12-13	PRASB-7A(4-5)
Depth (ft):			13-14	24-25	3-4	6-7	23-24	3-4	4.5-7.5	6-8	16-17	12-16	24-25	7-8	13-15	19-20	7-8	12-13	4-5
Constituent Date:			4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009
PAHs (ug/kg)																			
Naphthalene	ug/kg	12,000	350	ND	ND	250	ND	150	ND	890	7800	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	20,000	ND	ND	ND	160	ND	ND	ND	680	440.00	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ug/kg	100,000	150	ND	ND	200	ND	ND	ND	240	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ug/kg	100,000	560	ND	ND	1200	ND	ND	ND	1,700	100	ND	ND	ND	97	ND	ND	ND	ND
Benzo(g,h,i)perylene	ug/kg	100,000	970	ND	120	910	ND	210	ND	820	200	ND	ND	ND	880	ND	ND	ND	ND
Fluoranthene	ug/kg	100,000	5400	ND	410	6300	ND	460	ND	5,700	450	300	ND	ND	1,000	ND	ND	220	ND
Fluorene	ug/kg	30,000	210	ND	ND	530	ND	ND	ND	790	140	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ug/kg	100,000	550	ND	210	2700	ND	130	ND	6,100	290	210	ND	ND	410	ND	ND	190	ND
Pyrene	ug/kg	100,000	4600	ND	370	5200	ND	450	ND	5,100	480	280	ND	ND	1,000	ND	ND	200	ND
Benz(a)anthracene	ug/kg	1,000	**2800**	ND	230	**2400**	ND	280	ND	**2,300**	280	140	ND	ND	790	ND	ND	110	ND
Benzo(a)pyrene	ug/kg	1,000	**3400**	250	200	**2300**	275	350	ND	**1,900**	310	120	ND	ND	**1,100**	ND	ND	78	ND
Benzo(b)fluoranthene	ug/kg	1,000	**4800**	ND	230	**3000**	ND	390	ND	**1,700**	260	ND	ND	ND	**1,000**	ND	ND	ND	ND
Benzo(k)fluoranthene	ug/kg	800	**1300**	ND	130	**820**	ND	210	ND	**1,500**	310	130	ND	ND	500	ND	ND	ND	ND
Chrysene	ug/kg	1,000	**2900**	ND	270	**2100**	ND	230	ND	**2,200**	300	160	ND	ND	690	ND	ND	110	ND
Dibenz(a,h)anthracene	ug/kg	330	300	ND	ND	210	ND	ND	ND	**360**	ND	ND	ND	ND	170	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ug/kg	500	**1200**	ND	100	**970**	ND	200	ND	**830**	180	ND	ND	ND	**760**	ND	ND	ND	ND
Total PAHs			29,490	250	2,270	29,250	275	3,060	0	32,810	11,540	1340.00	0.00	0.00	8397.00	0.00	0.00	908.00	0.000
Other Semivolatile Organic Compounds (ug/kg)																			
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	170	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	130	ND	ND	190	ND	ND	ND	590	220	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	120	ND	ND	350	ND	ND	ND	630	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ug/kg	330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
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Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			PRASB-1	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	PRASB-1 (13-14)	PRASB-1 (24-25)	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24)	PRASB-3A (3-4)	PRASB-4A(4.5-7.5	PRASB-5(6-8)	PRASB-5(16-17)	PRASB-5A(12-16	PRASB-5A(24-25	PRASB-5B(7-8)	PRASB-5B(13-15	PRASB-5B(19-20	PRASB-5C(7-8)	PRASB-5C(12-13	PRASB-7A(4-5)
Depth (ft):			13-14	24-25	3-4	6-7	23-24	3-4	4.5-7.5	6-8	16-17	12-16	24-25	7-8	13-15	19-20	7-8	12-13	4-5
Constituent Date:			4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009
Pesticides/Polychlorinated Biphenyls (ug/kg)																			
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																			
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	2.30	ND	ND	8.40	1.20	10.1	ND	ND	11.0	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Free	mg/kg	NL	0.80	ND	ND	ND	ND	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.50
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																			
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	13	6.1	5.8	5.90	4.00	10.10	3.5	2.6	2.2	7.6	2.9	2.5	5.10	11.30	7.10	1.80	3.10	3.6
Barium	mg/kg	350	106.0	144.0	123.00	43.10	170.00	62.7	102.0	33.1	61.8	38.9	**534.0**	97.20	59.10	210.00	32.10	52.40	56.7
Beryllium	mg/kg	7.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.00	ND	ND	ND	ND	ND	ND
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	1	**54.3**	**27.3**	**25.30**	**20.00**	**39.60**	**30.1**	**24.8**	**44.0**	**29.3**	**22.8**	**30.7**	**55.20**	**40.20**	**119.00**	**21.90**	**20.40**	**25**
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	63	**1,080**	14.7	**261**	**145**	11.50	**74.9**	18.2	13.0	**126.0**	29.6	5.6	15.80	**126**	52.20	9.70	**228**	30.3
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	0.18	**1.10**	ND	**0.45**	**1.70**	ND	**0.320**	0.049	ND	**0.19**	**0.22**	**0.23**	**0.29**	**0.67**	0.04	**0.22**	**0.62**	0.043
Nickel	mg/kg	30	**125.0**	**60.20**	**61.20**	**87.80**	**282.0**	**146.0**	**221.0**	**272.0**	**153.0**	**137.0**	**201.0**	**379**	**247**	**515**	**150**	**95.60**	**79.8**
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	3.9	0.52	ND	0.78	0.63	ND	ND	0.430	ND	0.770	ND	3.00	ND	ND	ND	ND	ND	ND
Silver	mg/kg	2	0.86	0.30	0.49	0.19	0.14	0.092	0.160	0.070	0.140	ND	0.22	0.18	0.18	0.22	0.08	0.18	0.079
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																			
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			PRASB-7B	PRASB-7D	PRASB-8	PRASB-9	PRASB-15	PRASB-15	PRASB-15	PRASB-16	PRASB-16	PRASB-16	PRASB-17	PRASB-17	PRASB-17	PRASB-18	PRASB-18	PRASB-18
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	PRASB-7B(5-7)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5)	PRASB-15(4-5)	PRASB-15(30-35)	PRASB-15(37.5-40)	PRASB-16(4-5)	PRASB-16(5-10)	PRASB-16(32.5-35)	PRASB-17(2-3)	PRASB-17(15.17.5)	PRASB-17(35-40)	PRASB-18(4-5)	PRASB-18(17.5-20)	PRASB-18(30-35)
Depth (ft):			5-7	5-7	5-6	3.5-4.5	4-5	30-35	37.5-40	4-5	5-10	32.5-35	2-3	15-17.5	35-40	4-5	17.5-20	30-35
Constituent Date:			4/23/2009	4/23/2009	4/22/2009	4/23/2009	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/11/2011	11/11/2011
Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822	Block 2822
BTEX (ug/kg)																		
Benzene	ug/kg	60	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	**460**	1 U	1.3 U	4.6	1.1 U
Toluene	ug/kg	700	ND	ND	ND	ND	0.6 J	0.97 U	1.1 U	0.4 J	1.2 U	0.84 J	0.5 J	**1,900**	0.68 J	0.92 J	1 U	1.3
Ethylbenzene	ug/kg	1,000	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	6.4	1.4 U	**2,300**	2.3	1.3 U	11	9.5
Xylene (total)	ug/kg	260	ND	ND	ND	ND	ND ND	ND ND	0.58	ND ND	ND ND	2.3	ND ND	**4,500**	1.2	ND ND	2.3	6.5
Volatile Organic Compounds (ug/kg)																		
1,2,4-Trimethylbenzene	ug/kg	3,600	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	8,400	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	120	ND	ND	ND	ND	R R	R R	R R	2.8 J	7 J	R R	R R	R R	10 U	5.5 J	2.6 J	1.2 J
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	11 UJ	9.7 UJ	11 UJ	12 UJ	12 UJ	11 UJ	14 UJ	1100 U	10 UJ	4.6 J	10 UJ	11 UJ
Acetone	ug/kg	50	ND	ND	ND	ND	30 J	15	**57** J	**71**	**72** J	14 J	13 J	R R	10 U	**95**	30 J	9 J
Carbon Tetrachloride	ug/kg	760	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	90 J	1 U	1.3 U	0.54 J	1.1 U
Methylene Chloride	ug/kg	50	13	10	ND	ND	**73**	33	35	16	41	28	39	**110** U	1 U	**110**	4.9	4.5
Styrene	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	2.1	1.4 U	640	0.66 J	1.3 U	1 U	0.63 J
n-Butylbenzene	ug/kg	12,000	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	3,900	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	11,000	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	5,900	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	680	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,1-Dichloroethane	ug/kg	270	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,1-Dichloroethene	ug/kg	330	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 UJ	1 U	1.3 U	1 U	1.1 U
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 UJ	1 U	1.3 U	1 U	1.1 U
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 UJ	1 U	1.3 U	1 U	1.1 U
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,2-Dichlorobenzene	ug/kg	1,100	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,2-Dichloroethane	ug/kg	20	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	**110** U	1 U	1.3 U	1 U	1.1 U
1,2-Dichloroethene(trans)	ug/kg	190	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,3-Dichlorobenzene	ug/kg	2,400	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,4-Dichlorobenzene	ug/kg	1,800	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
1,4-Dioxane	ug/kg	100	ND	ND	ND	ND	56 UJ	49 UJ	55 UJ	61 UJ	61 UJ	53 UJ	72 UJ	**5300** UJ	52 UJ	67 UJ	51 UJ	53 UJ
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	11 U	9.7 UJ	11 U	12 UJ	12 U	11 U	14 UJ	1100 UJ	10 U	13 UJ	10 U	11 U
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Bromoform	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Bromomethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	0.97 J	1.2 U	4.3	0.69 J	1.4 U	110 UJ	1 U	2.3	1 U	1.1 U
Chlorobenzene	ug/kg	1,100	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Chloroethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Chloroform	ug/kg	370	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Chloromethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
cis-1,2-Dichloroethene	ug/kg	250	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	210 U	1 U	1.3 U	1 U	1.1 U
Methyl tert-butyl ether	ug/kg	930	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Methylcyclohexane	ug/kg	NL	0.00	0.00	0	0.00	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Tetrachloroethene	ug/kg	1300	NA	NA	NA	NA	0.46 J	0.97 U	1.1 U	1.2 U	0.46 J	1.1 U	1.4 U	110 U	1 U	0.91 J	1 U	1.1 U
trans-1,2-Dichloroethene	ug/kg	190	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Trichloroethene	ug/kg	470	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	110 U	1 U	1.3 U	1 U	1.1 U
Tetrachloroethene	ug/kg	1,300	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	470	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	20	ND	ND	ND	ND	1.1 U	0.97 U	1.1 U	1.2 U	1.2 U	1.1 U	1.4 U	**110** U	1 U	1.3 U	1 U	1.1 U

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			PRASB-7B	PRASB-7D	PRASB-8	PRASB-9	PRASB-15	PRASB-15	PRASB-15	PRASB-16	PRASB-16	PRASB-16	PRASB-17	PRASB-17	PRASB-17	PRASB-18	PRASB-18	PRASB-18
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	PRASB-7B(5-7)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5)	PRASB-15(4-5)	PRASB-15(30-35)	PRASB-15(37.5-40)	PRASB-16(4-5)	PRASB-16(5-10)	PRASB-16(32.5-35)	PRASB-17(2-3)	PRASB-17(15.17.5)	PRASB-17(35-40)	PRASB-18(4-5)	PRASB-18(17.5-20)	PRASB-18(30-35)
Depth (ft):			5-7	5-7	5-6	3.5-4.5	4-5	30-35	37.5-40	4-5	5-10	32.5-35	2-3	15-17.5	35-40	4-5	17.5-20	30-35
Constituent Date:			4/23/2009	4/23/2009	4/22/2009	4/23/2009	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/11/2011	11/11/2011
PAHs (ug/kg)																		
Naphthalene	ug/kg	12,000	ND	ND	ND	860	390 U	370 U	380 U	2,100 U	440 U	190 J	520 U	1,700	500	200 J	380 U	170 J
2-Methylnaphthalene	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2,100 U	440 U	370 U	520 U	3,100	370 U	170 J	380 U	76 J
Acenaphthene	ug/kg	20,000	ND	ND	ND	160	390 U	370 U	380 U	620 J	440 U	370 U	520 U	460	370 U	190 J	380 U	370 U
Acenaphthylene	ug/kg	100,000	ND	ND	ND	1500	390 U	370 U	380 U	510 J	440 U	370 U	170 J	2,100	370 U	1,400	380 U	370 U
Anthracene	ug/kg	100,000	ND	ND	ND	580	390 U	370 U	380 U	2,200	440 U	370 U	520 U	2,100	370 U	1,100	380 U	370 U
Benzo(g,h,i)perylene	ug/kg	100,000	ND	ND	ND	910	390 U	370 U	380 U	6,500	440 U	370 U	220 J	850	370 U	3,300	380 U	370 U
Fluoranthene	ug/kg	100,000	ND	86	ND	2400	390 U	370 U	380 U	10,000	440 U	370 U	210 J	2,900	370 U	3,300	380 U	370 U
Fluorene	ug/kg	30,000	ND	ND	ND	360	390 U	370 U	380 U	1,100 J	440 U	370 U	520 U	2,400	370 U	380 J	380 U	370 U
Phenanthrene	ug/kg	100,000	ND	ND	ND	1700	390 U	370 U	380 U	12,000	440 U	370 U	150 J	8,500	370 U	3,500	380 U	370 U
Pyrene	ug/kg	100,000	ND	80	ND	3900	390 U	370 U	380 U	28,000	440 U	370 U	360 J	3,500	370 U	5,300	380 U	370 U
Benz(a)anthracene	ug/kg	1,000	ND	ND	ND	**2,800**	39 U	37 U	38 U	**8,400**	30 J	37 U	52 U	**1,700**	15 J	**3,900**	38 U	37 U
Benzo(a)pyrene	ug/kg	1,000	ND	ND	ND	**2,200**	39 U	37 U	38 U	**6,700**	18 J	37 U	410	**1,400**	12 J	**5,500**	38 U	37 U
Benzo(b)fluoranthene	ug/kg	1,000	ND	ND	ND	**3,100**	39 U	37 U	38 U	**7,300**	22 J	37 U	440	**1,400**	13 J	**6,900**	38 U	37 U
Benzo(k)fluoranthene	ug/kg	800	ND	ND	ND	**2,000**	39 U	37 U	38 U	**2,900**	11 J	37 U	52 U	450	37 U	**2,200**	38 U	37 U
Chrysene	ug/kg	1,000	ND	ND	ND	**3,300**	390 U	370 U	380 U	**11,000**	440 U	370 U	330 J	**1,600**	370 U	**5,700**	380 U	370 U
Dibenz(a,h)anthracene	ug/kg	330	ND	ND	ND	300	39 U	37 U	38 U	**1,600**	44 U	37 U	52 U	210	37 U	46 U	38 U	37 U
Indeno(1,2,3-cd)pyrene	ug/kg	500	ND	ND	ND	**950**	39 U	37 U	38 U	**4,600**	44 U	37 U	170	**1,100**	9.4 J	**2,800**	38 U	37 U
Total PAHs			0.00	166.00	0	27020.00	4524	4292	4408	107630	5009	4112	5216	35470	4323.4	45886	4408	3798
Other Semivolatile Organic Compounds (ug/kg)																		
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	710	370 U	460 U	380 U	370 U
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	390 U	370 UJ	380 UJ	2100 U	440 UJ	370 UJ	520 U	380 U	370 U	460 U	380 U	370 U
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	790 U	750 U	780 U	4200 U	890 U	760 U	1100 U	770 U	750 U	930 U	770 U	750 U
2-Methylphenol	ug/kg	330	ND	ND	ND	ND	**390** U	**370** U	**380** U	**2100** U	**440** U	**370** U	**520** U	**380** U	370 U	**460** U	**380** U	**370** U
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
4-Methylphenol	ug/kg	330	ND	ND	ND	ND	**390** U	**370** U	**380** U	**2100** U	**440** U	**370** U	**520** U	**380** U	370 U	**460** U	**380** U	**370** U
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
Carbazole	ug/kg	NL	ND	ND	ND	130	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	450	370 U	150 J	380 U	370 U
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
Dibenzofuran	ug/kg	7,000	ND	ND	ND	ND	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	790	370 U	150 J	380 U	370 U
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
N-Nitrosodiphenylamine (1)	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
Phenol	ug/kg	330	ND	ND	ND	ND	**390** U	**370** U	**380** U	**2100** U	**440** U	**370** U	**520** U	**380** U	370 U	**460** U	**380** U	**370** U
Hexachlorobenzene	ug/kg	330	ND	ND	ND	ND	39 U	37 U	38 U	210 U	44 U	37 U	52 U	38 U	37 U	46 U	38 U	37 U
Isophorone	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	390 U	140 J	380 U	2100 U	440 U	370 U	520 U	100 J	370 U	460 U	380 U	370 U
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	1200 U	1100 U	1200 U	6300 U	1300 U	1100 U	1600 U	1100 U	1100 U	1400 U	1200 U	1100 U
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	79 U	75 U	78 U	420 U	89 U	76 U	110 U	77 U	75 U	93 U	77 U	75 U
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	79 U	75 U	78 U	420 U	89 U	76 U	110 U	77 U	75 U	93 U	77 U	75 U
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	790 U	750 U	780 U	4200 U	890 U	760 U	1100 U	770 U	750 U	930 U	770 U	750 U
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
3-Methylphenol	ug/kg	330	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	790 U	750 U	780 U	4200 U	890 U	760 U	1100 U	770 U	750 U	930 U	770 U	750 U
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	1200 U	1100 U	1200 U	6300 U	1300 U	1100 U	1600 U	1100 U	1100 U	1400 U	1200 U	1100 U
4-Bromophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
4-Chlorophenyl phenyl ether	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	790 U	750 U	780 U	4200 UJ	890 U	760 U	1100 UJ	770 U	750 U	930 UJ	770 U	750 U
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	1200 U	1100 U	1200 U	6300 UJ	1300 U	1100 U	1600 UJ	1100 U	1100 U	1400 UJ	1200 U	1100 U
Acetophenone	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
Atrazine	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	390 UJ	370 UJ	380 UJ	2100 UJ	440 UJ	370 UJ	520 UJ	380 U	370 UJ	460 UJ	380 U	370 UJ
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
bis(2-Chloroethyl) ether	ug/kg	NL	NA	NA	NA	NA	39 U	37 U	38 U	210 UJ	44 U	37 U	52 UJ	38 U	37 U	46 UJ	38 U	37 U
Caprolactam	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	390 U	370 U	380 U	2100 U	440 U	370 U	520 U	380 U	370 U	460 U	380 U	370 U
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	79 U	75 U	78 U	420 U	89 U	76 U	110 U	77 U	75 U	93 U	77 U	75 U
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	390 UJ	370 U	380 U	2100 UJ	440 U	370 U	520 UJ	380 U	370 U	460 UJ	380 U	370 U
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	39 U	37 U	38 U	210 U	44 U	37 U	52 U	38 U	37 U	46 U	38 U	37 U
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	39 U	37 U	38 U	210 U	44 U	37 U	52 U	38 U	37 U	46 U	38 U	37 U
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	39 U	37 U	38 U	210 UJ	44 U	37 U	52 UJ	38 U	37 U	46 UJ	38 U	37 U
Pentachlorophenol	ug/kg	800	ND	ND	ND	ND	**1200** U	**1100** U	**1200** U	**6300** U	**1300** U	1100 U	1600 U	1100 U	1100 U	1400 U	1200 U	1100 U

Notes:
Green highlight indicates exceedance is above the Unrestricted Use Standards.
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			PRASB-7B	PRASB-7D	PRASB-8	PRASB-9	PRASB-15	PRASB-15	PRASB-15	PRASB-16	PRASB-16	PRASB-16	PRASB-17	PRASB-17	PRASB-17	PRASB-18	PRASB-18	PRASB-18
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	PRASB-7B(5-7)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5)	PRASB-15(4-5)	PRASB-15(30-35)	PRASB-15(37.5-40)	PRASB-16(4-5)	PRASB-16(5-10)	PRASB-16(32.5-35)	PRASB-17(2-3)	PRASB-17(15.17.5)	PRASB-17(35-40)	PRASB-18(4-5)	PRASB-18(17.5-20)	PRASB-18(30-35)
Depth (ft):			5-7	5-7	5-6	3.5-4.5	4-5	30-35	37.5-40	4-5	5-10	32.5-35	2-3	15-17.5	35-40	4-5	17.5-20	30-35
Constituent Date:			4/23/2009	4/23/2009	4/22/2009	4/23/2009	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/11/2011	11/11/2011
Pesticides/Polychlorinated Biphenyls (ug/kg)																		
4,4'-DDE	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	2,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																		
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	NL	ND	ND	ND	17.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free	mg/kg	NL	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	0.047 U	0.044 U	0.046 U	0.051 U	0.053 U	0.045 U	0.063 U	0.046 U	0.044 U	0.056 U	0.046 U	0.045 U
Metals (mg/kg)																		
Aluminum	mg/kg	NL	NA	NA	NA	NA	8,000	3,890	4,450	5,460	5,960	5,050	2,280	4,170	4,580	6,170	6,150	3,710
Antimony	mg/kg	NL	NA	NA	NA	NA	2.2 U	2.2 U	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	4.2	2.3 U	2.1 U
Arsenic	mg/kg	13	4.40	3.90	4.6	**15**	3.2	3.1	2.5	11.2	3.1	6.4	5	1.5	3.6	**19.7**	3.8	2.3
Barium	mg/kg	350	44.20	42.10	43.7	223	83.7	49.6	56.9	221	101	65.1	**1,350**	58.1	56.8	**4,900**	149	50.3
Beryllium	mg/kg	7.2	NA	NA	NA	NA	0.43 U	0.3 J	0.38 J	0.31 J	0.29 J	0.34 J	0.61 U	0.26 J	0.4 J	0.29 J	0.42 J	0.35 J
Cadmium	mg/kg	2.5	ND	ND	ND	ND	0.2 J	1.1 U	1.1 U	1.4	1.3 U	1.1 U	**2.5**	1.1 U	1.1 U	1.5	1.2 U	1.1 U
Calcium	mg/kg	NL	NA	NA	NA	NA	10,300	8,320	12,600	30,900	3,960	11,300	42,400	2,120	12,900	21,000	2,390	5,250
Chromium	mg/kg	1	**40.10**	**50.20**	**23.2**	**65.4**	**25.2**	**23.1**	**12.4**	**24.4**	**28.5**	**113**	**59.6**	**31.8**	**48.5**	**25.5**	**40**	**105**
Cobalt	mg/kg	NL	NA	NA	NA	NA	15.5	8.3 J	5.1 J	12.1 J	12.4 J	35.9	8 J	23.4	21.7	11.6 J	26.7	34
Copper	mg/kg	50	NA	NA	NA	NA	**59.1**	9.7	22.4	**65.6**	11.4	19.6	37.6	15.1	30.1	**302**	21	49
Iron	mg/kg	NL	NA	NA	NA	NA	18,400	12,900	12,200	32,200	12,600	25,500	16,300	18,800	19,500	30,300	24,800	24,100
Lead	mg/kg	63	41.60	48.30	17.7	**489**	**181**	5.1	8.8	**1,050**	24.6	5.9	**1,530**	9.3	8.8	**3,380**	14.3	4.2
Magnesium	mg/kg	NL	NA	NA	NA	NA	5,820	5,870	3,840	5,140	5,430	14,900	16,900	30,900	8,680	7,550	8,620	24,200
Manganese	mg/kg	1,600	NA	NA	NA	NA	261	317	370	515	191	492	206	226	454	265	510	348
Mercury	mg/kg	0.18	ND	0.08	0.18	**1.30**	**0.34**	0.036 U	0.038 U	**0.76**	0.041 U	0.036 U	**0.47**	0.036 U	0.033 U	**0.7**	0.036 U	0.032 U
Nickel	mg/kg	30	**333**	**622**	**199**	**291**	**337**	**108**	12.6	**94.6**	**191**	**715**	**128**	**450**	**388**	**105**	**476**	**673**
Potassium	mg/kg	NL	NA	NA	NA	NA	713 J	879 J	1,290	598 J	632 J	1070 J	292 J	984 J	1,030 J	820 J	849 J	834 J
Selenium	mg/kg	3.9	ND	ND	ND	0.82	2.2 U	2.2 U	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	1.7 J	2.3 U	2.1 U
Silver	mg/kg	2	0.20	0.16	0.10	0.37	**2.2** U	**2.2** U	**2.2** U	0.59 J	0.23 J	**2.2** U	0.37 J	**2.2** U	2.1 U	0.94 J	2.3 U	2.1 U
Sodium	mg/kg	NL	NA	NA	NA	NA	586 J	71.8 J	101 J	149 J	152 J	69.2 J	117 J	127 J	74.3 J	633 J	85.7 J	66.8 J
Thallium	mg/kg	NL	NA	NA	NA	NA	2.2 U	2.2 U	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	2.7 U	2.3 U	2.1 U
Vanadium	mg/kg	NL	NA	NA	NA	NA	19.7	12.9	16.4	23.6	15.8	15.4	10.9 J	15.1	19	27.1	24.6	13.8
Zinc	mg/kg	109	NA	NA	NA	NA	**132**	22	24.4	**552**	32.7	30.3	**1,820**	29.2	29.1	**1,450**	28.5	25.2
Total Organic Carbon (mg/kg)																		
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:		Units	Unrestricted Use Standards (ug/kg)	PRASB-19		PRASB-19		PRASB-19		PRASB-20-B	PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24C
Sample ID:				PRASB-19(4-5)		PRASB-19(20-22.5)		PRASB-19(35-40)		PRASB-20-B	PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Depth (ft):				4-5		20-22.5		35-40		0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7
Constituent	Date:			11/9/2011		11/11/2011		11/11/2011		12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
	Location:			Block 2822		Block 2822		Block 2822		89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
BTEX (ug/kg)																			
Benzene		ug/kg	60	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene		ug/kg	700	0.56	J	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene		ug/kg	1,000	1.2	U	0.62	J	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene (total)		ug/kg	260	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds (ug/kg)																			
1,2,4-Trimethylbenzene		ug/kg	3,600	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene		ug/kg	8,400	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone		ug/kg	120	R	R	11	U	1.5	J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone		ug/kg	NL	12	UJ	11	UJ	10	UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone		ug/kg	50	12	U	11	U	12	J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride		ug/kg	760	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride		ug/kg	50	61		2.1	U	6.8		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene		ug/kg	12,000	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene		ug/kg	3,900	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene		ug/kg	NL	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene		ug/kg	11,000	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene		ug/kg	5,900	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane		ug/kg	680	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		ug/kg	270	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		ug/kg	330	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		ug/kg	1,100	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		ug/kg	20	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans)		ug/kg	190	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		ug/kg	2,400	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		ug/kg	1,800	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane		ug/kg	100	62	UJ	56	UJ	50	UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		ug/kg	NL	12	UJ	11	U	10	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		ug/kg	NL	1.2	U	1.1	U	0.47	J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		ug/kg	1,100	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		ug/kg	370	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene		ug/kg	250	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether		ug/kg	930	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	1300	0.59	J	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene		ug/kg	190	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	470	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane		ug/kg	NL	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	1,300	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	470	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		ug/kg	20	1.2	U	1.1	U	1	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
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Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			PRASB-19		PRASB-19		PRASB-19		PRASB-20-B	PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24C
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	PRASB-19(4-5)		PRASB-19(20-22.5)		PRASB-19(35-40)		PRASB-20-B	PRASB-20-C	PRASB-21-B	PRASB-21-C	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Depth (ft):			4-5		20-22.5		35-40		0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7	0-7
Constituent Date:			11/9/2011		11/11/2011		11/11/2011		12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
PAHs (ug/kg)																		
Naphthalene	ug/kg	12,000	68	J	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	20,000	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/kg	100,000	220	J	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	100,000	160	J	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/kg	100,000	700		400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg	100,000	890		400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/kg	30,000	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/kg	100,000	520		400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/kg	100,000	1100		400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	ug/kg	1,000	980		40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/kg	1,000	960		40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/kg	1,000	1,700		40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/kg	800	560		40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg	1,000	1,200		400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/kg	330	42	U	40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/kg	500	670		40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PAHs			11030		4640		4292		0	0	0	0	0	0	0	0	0	0
Other Semivolatile Organic Compounds (ug/kg)																		
1,1'-Biphenyl	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane)	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	850	U	810	U	740	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	330	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	330	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	7,000	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1)	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	330	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	330	42	U	40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	1300	U	1200	U	1100	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	85	U	81	U	74	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	85	U	81	U	74	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	850	U	810	U	740	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	330	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	850	U	810	U	740	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	1300	U	1200	U	1100	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	850	UJ	810	U	740	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	1300	UJ	1200	U	1100	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	420	UJ	400	UJ	370	UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ether	ug/kg	NL	42	UJ	40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	420	U	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	85	U	81	U	74	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	420	UJ	400	U	370	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	42	U	40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	42	U	40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	42	UJ	40	U	37	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	800	1300	U	1200	U	1100	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standard.
Pink highlight indicates that the material was detected at the standard
NE - not established
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyzed
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilution factor
R - the reported results or detection limits are estimated or rejected based upon the recovery
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte (organics; or indicates analyte result was between IDL and contract required detection limit (metals)
T - indicates total concentration detected
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reported.
mg/kg - milligrams/kilogram or parts per million (ppm)
ug/kg - micrograms/kilogram or parts per billion (ppb)
JB - estimated detection limit/analyte was found within laboratory method blank
N - spiked sample recovery was not within control limits (metals)

Table 1-5
Comparison of Remaining Soil Analytical Data to Unrestricted Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

Site ID:			PRASB-19		PRASB-19		PRASB-19		PRASB-20-B		PRASB-20-C		PRASB-21-B		PRASB-21-C		PRASB-22-B		PRASB-22-C		PRASB-23-B		PRASB-23-C		PRASB-24-B		PRASB-24C	
Sample ID:	Units	Unrestricted Use Standards (ug/kg)	PRASB-19(4-5)		PRASB-19(20-22.5)		PRASB-19(35-40)		PRASB-20-B		PRASB-20-C		PRASB-21-B		PRASB-21-C		PRASB-22-B		PRASB-22-C		PRASB-23-B		PRASB-23-C		PRASB-24-B		PRASB-24-C	
Depth (ft):			4-5		20-22.5		35-40		0-7		0-7		0-7		0-7		0-7		0-7		0-7		0-7		0-7		0-7	
Constituent Date:			11/9/2011		11/11/2011		11/11/2011		12/28/2011		12/28/2011		12/28/2011		12/28/2011		12/28/2011		12/28/2011		12/28/2011		12/28/2011		12/28/2011		12/28/2011	
Pesticides/Polychlorinated Biphenyls (ug/kg)																												
4,4'-DDE	ug/kg	3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4,4'-DDT	ug/kg	3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dieldrin	ug/kg	5	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Endosulfan sulfate	ug/kg	2,400	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Heptachlor epoxide	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Heptachlor	ug/kg	42	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
gamma-Chlordane	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Total Cyanide (mg/kg)																												
Cyanide, Amenable	mg/kg	NL	NA		NA		NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	
Cyanide, Total	mg/kg	NL	NA		NA		NA		9.1		8.7		0.55	U	0.95		26.5		13.2		0.56	U	0.56	U	1		1.2	
Cyanide, Free	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Available Cyanide	mg/kg	NL	0.051	U	0.048	U	0.044	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Metals (mg/kg)																												
Aluminum	mg/kg	NL	6,410		2,170		4,190		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Antimony	mg/kg	NL	2.4	U	2.3	U	2.2	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Arsenic	mg/kg	13	**13.6**		2.1		2.8		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Barium	mg/kg	350	332		118		54.4		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beryllium	mg/kg	7.2	0.32	J	0.21	J	0.41	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cadmium	mg/kg	2.5	1.5		1.2	U	1.1	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Calcium	mg/kg	NL	12,700		1,240		8,130		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium	mg/kg	1	**30.4**		**31.7**		**137**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cobalt	mg/kg	NL	10	J	20.7		26.9		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Copper	mg/kg	50	**137**		11.1		15.6		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Iron	mg/kg	NL	20,000		17,800		23,600		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Lead	mg/kg	63	**1,860**		2.8		6		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Magnesium	mg/kg	NL	8,280		33,600		23,100		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Manganese	mg/kg	1,600	164		690		407		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Mercury	mg/kg	0.18	**1.1**		0.035	U	0.034	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nickel	mg/kg	30	**99.5**		**483**		**494**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Potassium	mg/kg	NL	547	J	358	J	891	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Selenium	mg/kg	3.9	1.5	J	2.3	U	1.2	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Silver	mg/kg	2	0.55	J	2.3	U	2.2	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Sodium	mg/kg	NL	671	J	1,160	U	70.6	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Thallium	mg/kg	NL	2.4	U	2.3	U	2.2	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vanadium	mg/kg	NL	35.7		10.1	J	16.9		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Zinc	mg/kg	109	655		17.5		29.6		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Total Organic Carbon (mg/kg)																												
TOC	mg/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Units	Comercial Use Standards (ug/kg)	RW-01	RW-02	RW-03	RW-06	RW-13			RW-13	RW-13 (dup)	RW-15	RW-16 (dup)	RW-16		RW-16		SB-09		SB-11	SB-13	SB-13 (dup)	SB-14 (dup)	SB-14	SB-16
Sample ID:				CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB11	CF-SB13	CF-DUP-1	CF-DUP-2	CF-SB14	CF-SB16
Depth (ft):				(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)	(39-41)		(123-125)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(24-26)	(33-34)	(21-23)	(18-20)			(24-28)	(5-7)
Constituent	Date			02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/22/1999
Location:				25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																										
Benzene		ug/kg	44,000	16 U	NA	2 J	6 U	1,000 J	940 J	74 J	6 U	6 U	6 U	6,300	660 J	84,000	5 U	6 U	4,500	6 U	6,600	16,000 J	11,000	58,000 J	150	6 U
Toluene		ug/kg	500,000	16 U	NA	6 U	6 U	230 J	180 J	2 J	6 U	6 U	6 U	87 J	45	130,000	5 U	6 U	1,300 J	6 U	11,000	19,000 J	24,000	33,000 U	5 U	6 U
Ethylbenzene		ug/kg	390,000	16 U	NA	6 U	6 U	3,500	24,000	360 J	6 U	6 U	6 U	2,300	370 J	380,000	5 UJ	6 U	33,000	6 U	10,000	92,000	79,000	420,000 J	200	2 J
Xylene (total)		ug/kg	500,000	16 U	NA	6 U	6 U	3,800	5,500	310 J	6 U	6 U	6 U	460 J	320	540,000	5 UJ	6 U	26,000	6 U	14,000	81,000	61,000	130,000 J	100	2 J
Volatile Organic Compounds (ug/kg)																										
1,2,4-Trimethylbenzene		ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene		ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 UJ	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400 J	NA	NA	NA	NA	NA	NA	NA
Acetone		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride		ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA	NA	NA	NA
Styrene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,500 U	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane		ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane		ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:	Units	Comercial Use Standards (ug/kg)	RW-01	RW-02	RW-03	RW-06	RW-13			RW-13	RW-13 (dup)	RW-15	RW-16 (dup)	RW-16		RW-16		SB-09		SB-11	SB-13	SB-13 (dup)	SB-14 (dup)	SB-14	SB-16
Sample ID:			CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB11	CF-SB13	CF-DUP-1	CF-DUP-2	CF-SB14	CF-SB16
Depth (ft):			(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)	(39-41)		(123-125)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(24-26)	(33-34)	(21-23)	(18-20)			(24-28)	(5-7)
Constituent	**Date**		02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/22/1999
PAHs (ug/kg)																									
Non-Carcinogenic PAHs																									
Naphthalene	ug/kg	500,000	160 J	NA	7 J	9 J	NA	160,000 J	3,800 J	370 U	360 U	380 U	120,000	1,900	**3,700,000**	14 J	350 U	**630,000**	370 U	190,000	110,000 J	30,000 J	**1,500,000**	1,100	100 J
2-Methylnaphthalene	ug/kg	NL	940 U	NA	380 U	370 U	NA	81,000 J	610 J	370 U	360 U	380 U	12,000 J	1,400	2,000,000	370 U	350 U	350,000	370 U	160,000 J	56,000 J	18,000 J	1,900,000 J	510	380 U
Acenaphthene	ug/kg	500,000	48 J	NA	380 U	370 U	NA	49,000 J	360 J	370 U	360 U	380 U	92,000	320 J	**650,000** J	370 U	350 U	90,000 J	370 U	38,000 U	28,000 J	8,000 J	400,000 U	200 J	30 J
Acenaphthylene	ug/kg	500,000	71 J	NA	380 U	370 U	NA	16,000 J	170 J	370 U	360 U	380 U	8,300 J	240 J	100,000 J	370 U	350 U	99,000	370 U	11,000 J	3,500 J	7,300 U	400,000 U	21 J	37 J
Anthracene	ug/kg	500,000	940 UJ	NA	380 U	370 U	NA	45,000 J	290 J	370 U	4 J	380 U	41,000 J	140 J	280,000 J	370 U	350 U	16,000 J	370 U	38,000 U	19,000 U	7,300 U	400,000 U	370 U	380 U
Benzo(g,h,i)perylene	ug/kg	500,000	850 J	NA	380 U	370 U	NA	15,000 J	2,900 UJ	370 U	360 U	380 UJ	3,900 J	400 UJ	37,000 J	370 U	350 UJ	76,000 J	370 U	4,000 J	17,000 J	1,100 J	79,000 J	290 J	290 J
Fluoranthene	ug/kg	500,000	940 UJ	NA	380 U	370 U	NA	61,000 J	450 J	7 J	8 J	380 U	44,000	160 J	350,000 J	370 U	350 U	15,000 J	370 U	38,000 U	19,000 U	7,300 U	400,000 U	370 U	380 U
Fluorene	ug/kg	500,000	940 U	NA	380 U	370 U	NA	44,000 J	320 J	370 U	360 U	380 U	84,000	350 J	450,000 J	370 U	350 U	30,000 J	370 U	38,000 U	6,300 J	7,300 U	86,000 J	370 U	380 U
Phenanthrene	ug/kg	500,000	440 J	NA	24 J	8 J	NA	130,000 J	1,000 J	12 J	13 J	380 U	180,000	610	**1,200,000**	370 U	350 U	310,000	370 U	92,000 J	62,000 J	24,000 J	**1,400,000** J	380	230 J
Pyrene	ug/kg	500,000	450 J	NA	12 J	8 J	NA	70,000 J	760 J	13 J	8 J	380 U	67,000	230 J	470,000 J	370 U	350 U	90,000 J	13 J	38,000	18,000 J	8,600	**580,000**	94 J	82 J
Total Non-Carcinogenic PAHs			2,019	-- -	43	25		671,000	7,760	32	33		652,200	5,350	9,237,000	14	0	1,706,000	13	495,000	300,800	89,700	5,545,000	2,595	769
Carcinogenic PAHs																									
Benz(a)anthracene	ug/kg	5,600	230 J	NA	380 U	6 J	NA	**37,000** J	290 J	370 U	5 J	380 U	**24,000** J	86 J	**170,000** J	370 U	350 U	**43,000** J	6 J	**14,000** J	**7,900** J	3,000 J	**180,000** J	40 J	41 J
Benzo(a)pyrene	ug/kg	1,000	340 J	NA	380 U	370 U	NA	**22,000** J	160 J	370 U	360 U	380 U	**15,000** J	64 J	**120,000** J	370 U	350 U	**33,000** J	370 U	**10,000** J	**6,600** J	**2,500** J	**140,000** J	36 J	32 J
Benzo(b)fluoranthene	ug/kg	5,600	200 J	NA	380 U	370 U	NA	**20,000** J	160 J	370 U	360 U	380 U	**6,300** J	27 J	**50,000** J	370 U	350 U	**13,000** J	370 U	4,700 J	2,700 J	1,100 J	**56,000** J	13 J	15 J
Benzo(k)fluoranthene	ug/kg	56,000	250 J	NA	380 U	370 U	NA	20,000 J	150 J	370 U	360 U	380 U	11,000 J	50 J	**88,000** J	370 UJ	350 U	24,000 J	370 U	38,000 U	3,800 J	7,300 U	**400,000** U	22 J	25 J
Chrysene	ug/kg	56,000	370 J	NA	380 UJ	370 UJ	NA	38,000 J	310 J	370 U	4 J	380 U	23,000 J	90 J	**160,000** J	370 UJ	350 U	45,000 J	370 U	14,000 J	8,200 J	3,200 J	**200,000** J	49 J	40 J
Dibenz(a,h)anthracene	ug/kg	560	**940** U	NA	380 U	370 U	NA	**4,800** J	**2,900** UJ	370 U	360 U	380 U	**1,400** J	400 U	**740,000** U	370 U	350 U	**88,000** U	370 U	**38,000** U	**19,000** U	**7,300** U	**400,000** U	370 U	380 U
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	780 J	NA	380 U	370 U	NA	**13,000** J	2,900 UJ	370 U	360 U	380 U	3,700 J	12 J	**33,000** J	370 U	350 U	**67,000** J	370 U	3,100 J	**15,000** J	940 J	**60,000**	260 J	270 J
Total Carcinogenic PAHs			2,170	-- -	0	6	-- -	154,800	1,070	0	9	0	84,400	329	621,000	0	0	225,000	6	45,800	44,200	10,740	636,000	420	423
Total PAHs			4,189	-- -	43	31	-- -	825,800	8,830	32	42	0	736,600	5,679	9,858,000	14	0	1,931,000	19	540,800	345,000	100,440	6,181,000	3,015	1,192
Other Semivolatile Organic Compounds (ug/kg)																									
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	500,000	940 U	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	**740,000** U	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U	400,000 U	370 U	380 U
Benzoic acid	ug/kg	NL	250 J	NA	1,800 U	1,800 U	NA	130,000 UJ	14,000 UJ	1,800 U	1,800 U	1,900 U	210,000 U	2,000 U	3,600,000 U	1,800 U	1,700 U	430,000 U	1,800 U	190,000 U	91,000 U	36,000 U	2,000,000 U	1,800 U	1,800 U
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	940 UJ	NA	380 U	370 U	NA	1,700 J	2,900 UJ	370 U	360 U	380 U	43,000 J	77 J	16,000 J	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U	400,000 U	370 U	380 U
Di-n-butylphthalate	ug/kg	NL	940 UJ	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	740,000 U	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U	400,000 U	370 U	380 U
Di-n-octylphthalate	ug/kg	NL	940 U	NA	380 U	5 J	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	740,000 U	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U	400,000 U	370 U	380 U
Dibenzofuran	ug/kg	350,000	25 J	NA	380 U	370 U	NA	7,700 J	41 J	370 U	360 U	380 U	43,000 J	47 J	65,000 J	370 U	350 U	4,500 J	370 U	38,000 U	1,200 J	7,300 U	400,000 U	67 J	380 U
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1	ug/kg	NL	940 UJ	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	740,000 U	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U	400,000 U	370 U	380 U
Phenol	ug/kg	500,000	940 U	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	82 J	**740,000** U	370 U	350 U	88,000 U	370 U	38,000 U	19,000 U	7,300 U	400,000 U	46 J	380 U
Hexachlorobenzene	ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	440 J	NA	380 U	370 U	NA	27,000 UJ	2,900 UJ	370 U	360 U	380 U	43,000 U	400 U	740,000 U	370 U	350 U	88,000 UJ	370 U	38,000 U	19,000 UJ	7,300 U	400,000 U	370 U	380 U
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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NE - not establishec
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mg/kg - milligrams/kilogram or parts per million (ppm
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Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:	Units	Comercial Use Standards (ug/kg)	RW-01	RW-02	RW-03	RW-06	RW-13			RW-13	RW-13 (dup)	RW-15	RW-16 (dup)	RW-16		RW-16		SB-09		SB-11	SB-13	SB-13 (dup)	SB-14 (dup)	SB-14	SB-16
Sample ID:			CF-RW1	CF-RW2	CF-RW3	CF-SB20	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-50	CF-SB-1000	CFSB55A 123-125	CF-SB	CF-SB-56	CF-SB-56	CF-SB-56	CF-SB56	CF-SB9	CF-SB9	CF-SB11	CF-SB13	CF-DUP-1	CF-DUP-2	CF-SB14	CF-SB16
Depth (ft):			(17)	(9-11)	(8-10)	(5-7)	(3-5)	(9-11)	(17-19)	(39-41)		(123-125)	081899	(28-30)	(43-44)	(63-63.5)	(122-123)	(24-26)	(33-34)	(21-23)	(18-20)			(24-28)	(5-7)
Constituent Date			02/22/1999	02/21/1999	02/24/1999	02/22/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/02/1999	08/16/1999	08/18/1999	08/18/1999	08/18/1999	08/19/1999	08/20/1999	02/23/1999	02/23/1999	02/23/1999	02/24/1999	02/24/1999	02/24/1999	02/24/1999	02/22/1999
Pesticides/Polychlorinated Biphenyls (ug/kg)																									
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9 J	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15 J	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99 U	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	51 U	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 J	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6 J	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																									
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	24 J	NA	1 UJ	1 UJ	NA	27	2 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	2	1 UJ	1 U	1 U	1 UJ	1 U	1	1 UJ	1 UJ
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																									
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,990	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.40 U	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	5.20 J	NA	1.90	3.40	NA	2.00 UJ	10.60 UJ	3.2 J	1.20 UJ	1.50 UJ	6.30 J	5.40 J	3.60 J	2.10 J	1.20 UJ	8.60	1.20 J	3.00 J	2.10	1.00 UJ	1.40 J	2.20	1.90 B
Barium	mg/kg	400	180 J	NA	47	52.70	NA	98.80	168.00 UJ	82.4	26.80 B	15.20 B	44.20 B	45.60	74.90	41.60	43.90	39	66.70	61.80	46.40	39.10	16.80 U	44.00	51.30
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.18 B	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	1.10 J	NA	0.17 U	0.38 U	NA	0.50 B	0.61 UJ	0.16 UJ	0.23 B	0.19 U	0.22 U	0.17 U	0.12 U	0.15 U	<1.0 B	0.21 U	0.28 J	0.63 J	0.36 U	0.60 J	0.19 U	0.41 U	0.20 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,110	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	38.60 J	NA	37.4	79.20	NA	12.30	32.60 UJ	15.80 J	5.10 J	8.30 J	44.80 J	61 J	39.50 J	27.50 J	21.90 J	28.90	26.60	50.00	172.00 J	52.40 J	26.80	35.70	15.20
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.90	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.00	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21,500	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	8.10 J	NA	4.2	22.80	NA	13.20	11.50 UJ	10.10 J	3.60 J	11.10 J	12.90 J	10.90 J	10.30 J	5.30 J	6.80 J	4.80	6.40 J	7.10 J	8.40	5.30 U	20.70 J	4.80	7.90
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29,400	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	222	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	0.10 UJ	NA	0.03 U	0.03 U	NA	0.05 B	0.20 UJ	0.03 U	0.03 U	0.02 U	0.01 U	0.01 U	0.02 U	0.02 U	0.01 U	0.02 U	0.02 U	0.02 U	0.03 U	0.03 U	0.07 B	0.03 U	0.02 U
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**383**	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	671.00 J	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	2.60 UJ	NA	0.69 UJ	1.40 J	NA	1.20 UJ	5.00 UJ	1.40 U	0.76 UJ	2.30 UJ	1.10 UJ	0.85 UJ	1.30 UJ	0.76 UJ	5 UJ	1.60 J	0.64 B	0.90	1.10 J	0.85 B	2.30	0.70 J	0.80 UJ
Silver	mg/kg	1,500	1.30 UJ	NA	0.34 U	0.33 U	NA	0.25 UJ	0.61 UJ	0.16 UJ	0.15 UJ	0.19 UJ	0.22 UJ	0.17 UJ	0.12 UJ	0.15 UJ	0.15 UJ	0.28 U	0.28 U	0.35 U	0.40 U	0.34 U	0.39 U	0.25 U	0.40 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	142.00 U	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.00 UJ	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.50 J	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31.00	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																									
TOC	mg/kg	NL	NA	516	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,380	NA	NA	3,000	402

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Standard
Blue highlight indicates that the material was not detected at or above the reporting limit but it is above the standar
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzec
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analy
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilution fact
R - the reported results or detection limits are estimated or rejected based upon the recove
B - analyte was found within the laboratory method blank as well as the sample; it indicates possible sample contamination a
warns the data user to use caution when applying the results of this analyte (organics); or indicates analyte res
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC analyses. The higher concentration is reporte
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method blar
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-19		SB-19 (dup)	SB-51		SB-52		SB-54	SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17		RW-18		SB-71		SB-72	
Sample ID:	Units		CF-SB19	CF-SB19	CF-SB19	CF-SB-51	CF-SB-51	CFSB-52	CFSB-52	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69	SB-70A	SB-70A	SB-71	SB-71	SB-72	SB-72
Depth (ft):			(5-7)	(34-36)	(34-36)	(5-7)	(39-41)	(11-13)	(39-41)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)	(31.5-32)	(54.5-55)	(30-30.5)	(44-45)	(24.5-25)	(48-49)
Constituent Date			02/24/1999	02/25/1999	02/25/1999	08/04/1999	08/04/1999	07/29/1999	07/29/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001	12/07/2001	12/07/2001	12/11/2001	12/11/2001	12/12/2001	12/12/2001
Location:			25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave
BTEX (ug/kg)																										
Benzene	ug/kg	44,000	3 J	1 J	NA	150 J	11 J	7 U	6 U	**80,000**	41,000 J	1 J	5 U	1 J	140	4 J	12 J	6 U	52,000 U	6 U	**140,000**	6 U	2 J	6 U	2 J	2 J
Toluene	ug/kg	500,000	6 U	5 U	NA	120 J	6 J	0 J	6 U	120,000	120,000 J	6 U	5 U	6 U	110	3 J	23 U	6 U	52,000 U	6 U	120,000	6 U	6 U	6 U	6 U	6 U
Ethylbenzene	ug/kg	390,000	6 U	5 U	NA	210 J	2 J	5 J	6 U	100,000	23,000 J	6 U	5 U	6 U	780	2 J	5 J	6 U	95,000	3 J	390,000	2 J	6 U	1 J	1 J	1 J
Xylene (total)	ug/kg	500,000	6 U	2 J	NA	470 J	1 J	7	6 U	160,000	170,000 J	6 U	5 U	6 U	570	4 J	18 J	6 U	97,000	2 J	490,000	2 J	1 J	2 J	2 J	2 J
Volatile Organic Compounds (ug/kg)																										
1,2,4-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
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warns the data user to use caution when applying the results of this ar
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- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Units	Comercial Use Standards (ug/kg)	SB-19		SB-19 (dup)	SB-51		SB-52		SB-54	SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17		RW-18		SB-71		SB-72	
Sample ID:				CF-SB19	CF-SB19	CF-SB19	CF-SB-51	CF-SB-51	CFSB-52	CFSB-52	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69	SB-70A	SB-70A	SB-71	SB-71	SB-72	SB-72
Depth (ft):				(5-7)	(34-36)	(34-36)	(5-7)	(39-41)	(11-13)	(39-41)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)	(31.5-32)	(54.5-55)	(30-30.5)	(44-45)	(24.5-25)	(48-49)
Constituent	**Date**			02/24/1999	02/25/1999	02/25/1999	08/04/1999	08/04/1999	07/29/1999	07/29/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001	12/07/2001	12/07/2001	12/11/2001	12/11/2001	12/12/2001	12/12/2001
PAHs (ug/kg)																											
Non-Carcinogenic PAHs																											
Naphthalene		ug/kg	500,000	51 J	230 J	NA	9,000 B	170 JB	890 U	370 U	3,000,000 B	700,000 B	400 U	360 U	370 U	18,000	240 J	870	370 U	290,000	330 J	7,100,000	530	380 U	360 U	370 U	1,600
2-Methylnaphthalene		ug/kg	NL	400 U	380 U	NA	7,700 J	99 J	890 U	370 U	2,300,000	360,000	400 U	360 U	6 J	1,000 J	68 J	310 J	370 U	240,000	200 J	5,300,000	360 U	380 U	360 U	370 U	1,200
Acenaphthene		ug/kg	500,000	400 U	380 U	NA	13,000	370 U	890 U	370 U	480,000	23,000 J	400 U	360 U	370 U	1,900 J	370 U	370 U	370 U	97,000	51 J	1,700,000	360 U	380 U	360 U	370 U	20 J
Acenaphthylene		ug/kg	500,000	400 U	380 U	NA	5,500 J	6 J	890 U	370 U	520,000	140,000	400 U	2 J	370 U	1,800 J	16 J	60 J	370 U	9,000 J	370 U	250,000 J	360 U	380 U	360 U	370 U	120 J
Anthracene		ug/kg	500,000	400 U	380 U	NA	14,000	3 J	890 U	370 U	360,000 J	64,000 J	2 J	3 J	370 U	5,000 J	370 U	370 U	370 U	39,000 J	370 U	690,000 J	360 U	380 U	360 U	370 U	390 U
Benzo(g,h,i)perylene		ug/kg	500,000	400 U	380 U	NA	11,000	370 U	890 U	370 U	28,000 J	14,000 J	400 U	360 U	370 U	18,000 J	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 UJ	360 UJ	370 UJ	390 UJ
Fluoranthene		ug/kg	500,000	400 U	380 U	NA	22,000	9 J	890 U	370 U	320,000 J	64,000 J	400 U	5 J	370 U	39,000	370 U	370 U	370 U	33,000 J	370 U	670,000 J	360 U	380 U	360 U	370 U	390 U
Fluorene		ug/kg	500,000	400 U	380 U	NA	13,000	370 U	890 U	370 U	520,000	98,000 J	400 U	360 U	370 U	1,800 J	370 U	370 U	370 U	49,000 J	370 U	1,000,000 J	360 U	380 U	360 U	370 U	390 U
Phenanthrene		ug/kg	500,000	45 J	380 U	NA	41,000	19 J	890 U	370 U	1,200,000	240,000	4 J	10 J	370 U	10,000	370 U	370 U	370 U	140,000	370 U	2,400,000	360 U	380 U	360 U	370 U	390 U
Pyrene		ug/kg	500,000	15 J	9 J	NA	30,000	11 J	890 U	370 U	360,000 J	130,000	3 J	6 J	370 U	41,000	370 U	370 U	370 U	52,000 J	370 U	920,000 J	360 U	380 U	360 U	370 U	390 U
Total Non-Carcinogenic PAHs				111	239	-- -	166,200	317	0	0	9,088,000	1,833,000	9	26	6	137,500	324	1,240	0	949,000	581	20,030,000	530	0	0	0	2,940
Carcinogenic PAHs																											
Benz(a)anthracene		ug/kg	5,600	400 U	380 U	NA	11,000	370 U	890 U	370 U	150,000 J	36,000 J	400 U	4 J	370 U	20,000	370 U	370 U	370 U	18,000 J	370 U	360,000 J	360 U	380 U	360 U	370 U	390 U
Benzo(a)pyrene		ug/kg	1,000	400 U	380 U	NA	13,000	370 U	890 U	370 U	100,000 J	27,000 J	400 U	360 U	370 U	26,000	370 U	370 U	370 U	71,000 U	370 U	210,000 J	360 U	380 U	360 U	370 U	390 U
Benzo(b)fluoranthene		ug/kg	5,600	400 U	380 U	NA	8,500	370 U	890 U	370 U	50,000 J	11,000 J	400 U	360 U	370 U	17,000	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	360 U	370 U	390 U
Benzo(k)fluoranthene		ug/kg	56,000	400 U	380 U	NA	8,500	370 U	890 U	370 U	77,000 J	19,000 J	400 U	360 U	370 U	29,000	370 U	370 U	370 U	71,000 U	370 U	150,000 J	360 U	380 U	360 U	370 U	390 U
Chrysene		ug/kg	56,000	400 UJ	380 U	NA	14,000	370 U	890 U	370 U	170,000 J	36,000 J	400 U	3 J	370 U	21,000	370 U	370 U	370 U	18,000 J	370 U	390,000 J	360 U	380 U	360 U	370 U	390 U
Dibenz(a,h)anthracene		ug/kg	560	400 U	380 U	NA	4,300 J	370 U	890 U	370 U	12,000 J	130,000 U	400 U	360 U	370 U	6,300 J	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	360 U	370 U	390 U
Indeno(1,2,3-cd)pyrene		ug/kg	5,600	400 U	380 U	NA	9,000	370 U	890 U	370 U	26,000 J	9,400 J	400 U	360 U	370 U	16,000 J	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 UJ	360 UJ	370 UJ	390 UJ
Total Carcinogenic PAHs				0	0	-- -	68,300	0	0	0	585,000	138,400	0	7	0	135,300	0	0	0	36,000	0	1,110,000	0	0	0	0	0
Total PAHs				111	239	-- -	234,500	317	0	0	9,673,000	1,971,400	9	33	6	272,800	324	1,240	0	985,000	581	21,140,000	530	0	0	0	2,940
Other Semivolatile Organic Compounds (ug/kg)																											
1,1'-Biphenyl		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol		ug/kg	500,000	400 U	380 U	NA	8,000 U	370 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	360 U	NA	NA
Benzoic acid		ug/kg	NL	2,000 U	1,900 U	NA	39,000 U	1,800 U	4,300 U	1,800 U	1,900,000 U	640,000 U	2,000 U	1,800 U	1,800 U	41,000 U	1,800 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcoho		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		ug/kg	NL	400 U	380 U	NA	2,900 J	370 U	890 U	370 UJ	16,000 J	130,000 U	400 U	360 U	370 U	2,000 J	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	360 U	NA	NA
Di-n-butylphthalate		ug/kg	NL	400 U	380 U	NA	8,000 U	370 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	360 U	NA	NA
Di-n-octylphthalate		ug/kg	NL	400 U	380 U	NA	8,000 U	0 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	360 U	NA	NA
Dibenzofuran		ug/kg	350,000	400 U	380 U	NA	4,400 J	370 U	890 U	370 U	58,000 J	12,000 J	400 U	360 UJ	370 U	650 J	370 U	370 U	370 U	6,000 J	370 U	120,000 J	360 U	380 U	360 U	NA	NA
Diethylphthalate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1		ug/kg	NL	400 U	380 U	NA	8,000 U	370 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	470 J	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	360 U	NA	NA
Phenol		ug/kg	500,000	400 U	380 U	NA	8,000 U	370 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	360 U	NA	NA
Hexachlorobenzene		ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate		ug/kg	NL	400 U	380 U	NA	8,000 U	0 U	890 U	370 U	400,000 U	130,000 U	400 U	360 U	370 U	8,500 U	370 U	370 U	370 U	71,000 U	370 U	1,100,000 U	360 U	380 U	260 J	NA	NA
2,4-Dinitrophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limit
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
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warns the data user to use caution when applying the results of this ar
was between IDL and contract required detection limit (metals
T - indicates total concentration detectec
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mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:	Units	Comercial Use Standards (ug/kg)	SB-19		SB-19 (dup)	SB-51		SB-52		SB-54	SB-55		SB-55	SB-55 (dup)	SB-57		SB-68		RW-17		RW-18		SB-71		SB-72	
Sample ID:			CF-SB19	CF-SB19	CF-SB19	CF-SB-51	CF-SB-51	CFSB-52	CFSB-52	CF-SB-54	CFSB55	CFSB55	CFSB55	CF081099	CFSB-57	CFSB-57	SB-68	SB-68	SB-69	SB-69	SB-70A	SB-70A	SB-71	SB-71	SB-72	SB-72
Depth (ft):			(5-7)	(34-36)	(34-36)	(5-7)	(39-41)	(11-13)	(39-41)	(23-25)	(18-20)	(56-58)	(73-75)		(5-7)	(29-31)	(33-33.5)	(54.5-55)	(33-33.5)	(44.5-45)	(31.5-32)	(54.5-55)	(30-30.5)	(44-45)	(24.5-25)	(48-49)
Constituent Date			02/24/1999	02/25/1999	02/25/1999	08/04/1999	08/04/1999	07/29/1999	07/29/1999	08/03/1999	08/10/1999	08/10/1999	08/10/1999	08/10/1999	07/30/1999	07/30/1999	12/04/2001	12/05/2001	12/05/2001	12/05/2001	12/07/2001	12/07/2001	12/11/2001	12/11/2001	12/12/2001	12/12/2001
Pesticides/Polychlorinated Biphenyls (ug/kg																										
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																										
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	1 UJ	1 U	NA	**34** J	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	**31**	1 U	0 UJ	0 U	0 U	0 UJ	0 U	0 UJ	0 UJ	0 UJ	0 U	0 U
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																										
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	4.40	2.80 J	NA	7.10 J	**61.30**	7.30 J	3.80 J	2.20 J	2.00 J	1.30 UJ	1.30 UJ	1.40 UJ	5.70 J	4.00 J	1.10 J	2.50	2.30	2.00	4.10	2.60	3.10	4.40	6.80	2.00
Barium	mg/kg	400	44.60 B	54.50	NA	105	282	96.90	88.10	25.40 B	61.20	51.20	69.20	49.80	67.00	66.60	36.60	72.50	33.80	75.50	83.60	69.90	66.00	65.00	52.70	56.20
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	0.23 U	0.21 J	NA	0.65 J	**63.70**	3.10 J	3.50 J	0.22 B	0.46 J	0.29 B	0.16 B	0.17 U	3.50 J	2.50 UJ	0.30 U	0.33 J	0.30 J	0.30 J	0.58 J	0.28 J	0.34 J	0.30 J	0.35 J	0.25 UJ
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	70.00	18.60	NA	31.80	44.10	57.70 J	35.50 J	31.00	192.00	8.80	12	8.60	41.70 J	21.00 J	20.50	15.30	39.70	16.20	72.00	17.80	41.60	20.30	75.80	11.10
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	13.80	8.10	NA	103.00	92.20	15.40	14.10	3.50	6.20	5.20	7.00	5.40	79.30	9.10	3.80 J	7.40 J	3.80 J	7.30 J	9.50 J	6.90 J	8.40 J	8.30 J	6.80 J	6.40 J
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	0.03 U	0.02 U	NA	0.79	0.04 U	0.01 B	0.00 U	0.04 U	0.03 U	0.03 U	0.03 U	0.05 U	0.38	0.01 U	0.00 J	0.00 J	0.00 J	0.00 J	0.00 U	0.00 J	0.01 U	0.01 U	0.06 U	0.07 U
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	2.30 J	0.63 U	NA	0.88 UJ	59.60 J	1.60 UJ	0.84 UJ	1.40 UJ	0.86 UJ	1.10 UJ	0.97 UJ	0.86 UJ	1.60 U	0.92 UJ	1.70 U	1.20 U	1.50 U	1.30 U	1.70 U	1.30 U	1.30 U	1.50 U	1.60 U	1.40 U
Silver	mg/kg	1,500	0.47 U	0.31 U	NA	0.18 UJ	58.10 J	0.20 U	0.17 U	0.19 UJ	0.17 UJ	0.17 UJ	0.16 UJ	0.17 UJ	0.19 U	0.18 U	0.27 U	0.20 U	0.24 U	0.21 U	0.27 U	0.21 U	0.20 U	0.24 U	0.26 U	0.23 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																										
TOC	mg/kg	NL	NA	2,230	2,460	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-73		SB-74		SB-75		SB-76		FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12		SB-30		SB-31		SB-32	
Sample ID:	Units		SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12	CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32
Depth (ft):			(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)	(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)
Constituent Date			12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999
Location:			25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave
BTEX (ug/kg)																								
Benzene	ug/kg	44,000	2 J	3 J	3,800 J	13	8,800 J	4 J	870,000	6 U	18,125 U	8,500	1,700	2,975 U	2 U	2 U	110 J	600 U	6 U	7 U	6 U	3 J	31 U	6 U
Toluene	ug/kg	500,000	6 U	6 U	6,400	13	33,000	6 U	2,100,000	6 U	43,000	5,875 U	600 U	2,975 U	2 U	2 U	76 J	230 J	1 J	1 J	6 U	1 J	31 U	6 U
Ethylbenzene	ug/kg	390,000	6 U	6 U	30,000	35	26,000	1 J	1,300,000	1 J	640,000	66,000	2,900	2,975 U	2 U	2 U	510	1,000	1 J	1 J	6 U	6 U	150	1 J
Xylene (total)	ug/kg	500,000	6 U	6 U	36,000	27	56,000	3 J	1,700,000	6 U	1,000,000	45,000	690	2,975 U	2 U	2 U	530 J	1,630	3 J	3 J	6 U	6 U	340	2 J
Volatile Organic Compounds (ug/kg)																								
1,2,4-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	470,000	40,000	2,600	8,000	1 U	1 U	2,000	1,900	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	180,000	13,000	810	3,000	1 U	1 U	170	670	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62 UJ	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62 UJ	NA
Acetone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62 UJ	NA
Carbon Tetrachloride	ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31 UJ	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	87,000	7,700	530	1,500	1 U	1 U	440	190 J	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47 U	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31 U	NA
n-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	8,700 U	2,820 U	290 U	1,428 U	1 U	1 U	1,100	300 U	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	24,000	2,500 J	290 U	1,428 U	1 U	1 U	350	300 U	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	10,000	4,700	240 J	2,000	1 U	1 U	250	300 U	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	8,700 U	2,820 U	290 U	1,428 U	1 U	1 U	130 J	300 U	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-73		SB-74		SB-75		SB-76		FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12		SB-30		SB-31		SB-32	
Sample ID:	Units		SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12	CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32
Depth (ft):			(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)	(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)
Constituent Date			12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999
PAHs (ug/kg)																								
Non-Carcinogenic PAHs																								
Naphthalene	ug/kg	500,000	360 U	390 U	180,000	530	950,000	360 J	13,000,000	3,900	1,400,000 #	420,000 #	37,000 #	560,000 #	180 #J	35 #J	2,900 #J	48,000 #	380 U	490 U	380 U	400 U	880	37 J
2-Methylnaphthalene	ug/kg	NL	360 U	390 U	190,000	360 U	690,000	320 J	3,400,000	2,700	NA	NA	NA	NA	NA	NA	NA	NA	380 U	49 J	380 U	400 U	200 J	380 U
Acenaphthene	ug/kg	500,000	360 U	390 U	27,000 J	360 U	31,000 J	390 U	330,000 J	360 J	84 J	100 J	4,350 U	140,000	110 J	390 U	5,000	390 J	380 U	490 U	380 UJ	29 J	25 J	67 J
Acenaphthylene	ug/kg	500,000	360 U	390 U	8,100 J	360 U	240,000	80 J	1,300,000 J	920	NA	NA	NA	NA	NA	NA	NA	NA	380 U	58 J	380 U	400 U	16 J	25 J
Anthracene	ug/kg	500,000	360 U	390 U	21,000 J	360 U	92,000 J	50 J	780,000 J	670 J	320 J	290 J	2,900 J	44,000 J	170 J	14 J	5,300	840	380 U	19 J	380 U	400 U	14 J	380 U
Benzo(g,h,i)perylene	ug/kg	500,000	360 UJ	390 UJ	41,000 U	360 UJ	150,000 U	390 UJ	1,800,000 U	140 J	4,400	1,400 U	9,300	81,500 U	460	79 J	720 J	110 J	380 U	490 U	380 U	400 U	380 U	380 U
Fluoranthene	ug/kg	500,000	360 U	390 U	27,000 J	360 U	95,000 J	390 U	1,600,000 J	1,100	1,700	1,700	16,000	32,000 J	1,400	46 J	3,700 J	700 J	18 J	490 U	380 U	400 U	19 J	380 U
Fluorene	ug/kg	500,000	360 U	390 U	41,000 J	360 U	150,000	57 J	1,200,000 J	1,100	67 J	110 J	4,350 U	56,000 J	42 J	390 U	6,500	1,100	380 U	490 U	380 U	400 U	18 J	380 U
Phenanthrene	ug/kg	500,000	360 U	390 U	100,000	360 U	350,000	230 J	4,100,000	3,000	880	1,300	7,600	130,000	150 J	41 J	16,000	2,700	16 J	70 J	380 U	400 U	66 J	380 U
Pyrene	ug/kg	500,000	360 U	390 U	47,000	360 U	120,000 J	390 U	2,000,000	1,400	2,700	2,200	23,000	46,000 J	2,100	85 J	6,500	1,100	22 J	29 J	380 U	400 U	31 J	380 U
Total Non-Carcinogenic PAHs			0	0	641,100	530	2,718,000	1,097	27,710,000	15,290	1,410,151	427,100	95,800	1,008,000	4,612	300	46,620	54,940	56	225	0	29	1,269	129
Carcinogenic PAHs																								
Benz(a)anthracene	ug/kg	5,600	360 U	390 U	17,000 J	360 U	45,000 J	390 U	690,000 J	550 J	1,500	1,100	14,000	19,000 J	870	37 J	2,400 J	500 J	16 J	490 U	380 U	400 UJ	11 J	380 U
Benzo(a)pyrene	ug/kg	1,000	360 U	390 U	13,000 J	360 UJ	27,000 J	390 U	550,000 J	420 J	2,900	1,100	11,000	12,000 J	1,000	75 J	1,600 J	300 J	24 J	490 U	380 U	400 U	380 U	380 U
Benzo(b)fluoranthene	ug/kg	5,600	360 U	390 U	6,100 J	360 U	150,000 U	390 U	250,000 J	190 J	1,700	870	6,300	7,100 J	540	58 J	680 J	120 J	180 J	490 U	380 U	400 U	380 U	380 U
Benzo(k)fluoranthene	ug/kg	56,000	360 U	390 U	7,000 J	360 U	150,000 U	390 U	400,000 J	300 J	1,800	820	7,300	7,900 J	680	57 J	1,200 J	190 J	26 J	490 U	380 U	400 U	380 U	380 U
Chrysene	ug/kg	56,000	360 U	390 U	18,000 J	360 U	48,000 J	390 U	650,000 J	570 J	1,900	1,200	14,000	18,000 J	870	52 J	2,500 J	510 J	17 J	490 U	380 U	400 U	380 U	380 U
Dibenz(a,h)anthracene	ug/kg	560	360 U	390 U	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	1,200	385 U	2,900 J	81,500 U	370 U	390 U	3,795 U	815 U	380 U	490 U	380 U	400 U	380 U	380 U
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	360 UJ	390 UJ	3,100 J	360 U	150,000 U	390 UJ	1,800,000 U	120 J	3,400	1,000	7,100	81,500 U	380	57 J	570 J	92 J	17 J	490 U	380 U	400 U	380 U	380 U
Total Carcinogenic PAHs			0	0	64,200	0	120,000	0	2,540,000	2,150	14,400	6,090	62,600	64,000	4,340	336	8,950	1,712	280	0	0	0	11	0
Total PAHs			0	0	705,300	530	2,838,000	1,097	30,250,000	17,440	1,424,551	433,190	158,400	1,072,000	8,952	636	55,570	56,652	336	225	0	29	1,280	129
Other Semivolatile Organic Compounds (ug/kg)																								
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylpheno	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylpheno	ug/kg	500,000	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,800 U	2,400 U	1,900 U	2,000 U	1,900 U	1,800 U
Benzyl alcoho	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U
Di-n-butylphthalate	ug/kg	NL	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	18 JB
Di-n-octylphthalate	ug/kg	NL	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U
Dibenzofuran	ug/kg	350,000	NA	NA	6,500 J	360 U	18,000 J	390 U	160,000 J	130 J	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1	ug/kg	NL	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U
Phenol	ug/kg	500,000	NA	NA	41,000 U	360 U	150,000 U	160 J	1,800,000 U	95 J	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	380 U
Hexachlorobenzene	ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	41,000 U	360 U	150,000 U	390 U	1,800,000 U	740 U	NA	NA	NA	NA	NA	NA	NA	NA	380 U	490 U	380 U	400 U	380 U	11 JB
2,4-Dinitropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylpheno	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylpheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylpheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this ar
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:	Units	Comercial Use Standards (ug/kg)	SB-73		SB-74		SB-75		SB-76		FPM-SB-09			FPM-SB-10	FPM-SB-11		FPM-SB-12		SB-30		SB-31		SB-32	
Sample ID:			SB-73	SB-73	SB-74	SB-74	SB-75	SB-75	SB-76	SB-76	SB-9	SB-9	SB-9	SB-10	SB-11	SB-11	SB-12	SB-12	CF-SB30	CF-SB30	CF-SB31	CF-SB31	CF-SB32	CF-SB32
Depth (ft):			(30-31)	(54-55)	(21-21.5)	(34.5-35)	(52-52.5)	(70-72)	(44-44.5)	(58-58.5)	(0.5-4)	(12)	(16)	(8-9)	(4)	(8)	(4)	(8-12)	(7-11)	(19-23)	(7-11)	(15-19)	(11-15)	(20-23)
Constituent Date			12/12/2001	12/12/2001	12/10/2001	12/10/2001	12/11/2001	12/11/2001	12/07/2001	12/07/2001	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	01/10/1998	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999	03/01/1999
Pesticides/Polychlorinated Biphenyls (ug/kg																								
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4 U	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0 J	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4 U	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4 U	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2 U	NA
Total Cyanide (mg/kg)																								
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Tota	mg/kg	27	0 U	0 U	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	NA	NA	NA	NA	NA	NA	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																								
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,420	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.80 UJ	NA
Arsenic	mg/kg	16	3.00	3.20	2.60	3.00	2.10	1.60 J	6.10	2.40	NA	NA	NA	NA	NA	NA	NA	NA	2.50 J	5.20 J	1.40 J	1.20 J	1.50 J	2.70 J
Barium	mg/kg	400	61.30	33.00	36.00	82.70	57.70	62.70	36.70	89.40	NA	NA	NA	NA	NA	NA	NA	NA	50.30	95.30	44.70	23.10	42.10	31.20
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.25	NA
Cadmium	mg/kg	9.3	0.34 J	0.29 UJ	0.39 J	0.29 J	0.22 U	0.30 U	0.42	0.35 J	NA	NA	NA	NA	NA	NA	NA	NA	0.22 U	0.34 U	0.51 U	0.32 U	0.50 U	0.64 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,850.00	NA
Chromium	mg/kg	400	82.20	9.90	46.10	15.70	12.20	10.40	46.70	40.60	NA	NA	NA	NA	NA	NA	NA	NA	49.70 J	33.50 J	50.00 J	50.80 J	44.20 J	36.60 J
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28.10	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.80	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	22,400	NA
Lead	mg/kg	1,000	6.60 J	5.40 J	5.20 J	8.20 J	6.70 J	5.50 J	3.70 J	6.70 J	NA	NA	NA	NA	NA	NA	NA	NA	11.90 J	11.50 J	7.80 J	4.00 J	6.10 J	5.50 J
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	44,200	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	396	NA
Mercury	mg/kg	2.80	0.06 U	0.07 U	0.01 U	0.01 U	0.01 U	0.01 U	0.00 J	0.00 J	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U	0.03 U	0.03 U	0.03 U	0.03 U	0.02 U
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**541**	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	997.00	NA
Selenium	mg/kg	1,500	1.50 U	1.60 U	1.30 U	1.30 U	1.20 U	1.70 U	1.10 U	1.60 U	NA	NA	NA	NA	NA	NA	NA	NA	1.10 J	1.50 J	1.80 J	1.60 J	2 J	1.20 J
Silver	mg/kg	1,500	0.24 U	0.27 U	0.20 U	0.21 U	0.20 U	0.28 U	0.18 U	0.26 U	NA	NA	NA	NA	NA	NA	NA	NA	0.35	0.50	0.29	0.38	0.36	0.36
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	154 U	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.20	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.80	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30.40	NA
Total Organic Carbon (mg/kg)																								
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,410	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-33		SB-34		SB-35		RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)	RW-10		RW-11		RW-12		SB-81		SB-82	
Sample ID:	Units		CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB	CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82
Depth (ft):			(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)	(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99	(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)
Constituent Date			03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999	09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002
Location:			Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	North of SIRR	Block 2822	Block 2822	Bay Street	Bay Street
BTEX (ug/kg)																									
Benzene	ug/kg	44,000	3,900 J	1,000 J	4 J	6 U	6 U	6 U	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U	6 U	6 U	47 J	6 U	6 U	6 U	2,700	6 U	6 U	6 U
Toluene	ug/kg	500,000	11,000 U	730 J	6 U	6 U	6 U	6 U	5 U	12 UJ	NA	7 U	6 UJ	1 J	1 J	6 U	6 U	78 J	2 J	6 U	6 U	27,000	6 U	6 U	6 U
Ethylbenzene	ug/kg	390,000	43,000	4,900 J	6 U	1 J	6 U	6 U	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U	6 U	6 U	160 J	6 U	6 U	6 U	40,000	6	6 U	6 U
Xylene (total)	ug/kg	500,000	47,000	6,600 B	62	3 J	6 U	6 U	5 U	12 UJ	NA	7 U	6 UJ	9 U	10 U	6 U	6 U	1,500 U	6 U	6 U	6 U	72,000	3 J	6 U	6 U
Volatile Organic Compounds (ug/kg)																									
1,2,4-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
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-- unable to calculate because it was non-detected or not analyze
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D - identifies all compounds in the analysis completed at secondary dilutic
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warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-33		SB-34		SB-35		RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)	RW-10		RW-11		RW-12		SB-81		SB-82	
Sample ID:	Units		CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB	CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82
Depth (ft):			(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)	(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99	(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)
Constituent Date			03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999	09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002
PAHs (ug/kg)																									
Non-Carcinogenic PAHs																									
Naphthalene	ug/kg	500,000	150,000 B	210,000 B	590 JB	63 J	400 U	380 U	110 J	1,800 UJ	NA	450 U	18 J	1,200 U	1,300 U	250 J	380 U	14,000 J	380 U	400 U	370 U	1,400,000	160 J	400 U	360 U
2-Methylnaphthalene	ug/kg	NL	120,000 J	260,000 J	740 U	420 U	400 U	380 U	72 J	1,800 UJ	NA	450 U	22 J	1,200 U	1,300 U	300 J	380 U	130,000	380 U	400 U	370 U	800,000	360 U	400 U	360 U
Acenaphthene	ug/kg	500,000	26,000 J	41,000	320 J	420 U	400 U	380 U	44 J	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	110 J	380 U	27,000 J	380 U	400 U	370 U	58,000 J	360 U	35 J	360 U
Acenaphthylene	ug/kg	500,000	3,200 J	46,000	160 J	420 U	400 U	380 U	150 J	64 J	NA	450 U	27 J	1,200 U	1,300 U	1,700	380 U	95,000	380 U	400 U	370 U	240,000	360 U	400 U	360 U
Anthracene	ug/kg	500,000	39,000 U	7,400 J	210 J	420 U	400 U	380 U	200 J	1,800 UJ	NA	450 U	26 J	1,200 U	1,300 U	660 J	380 U	89,000	380 U	400 U	370 U	130,000 J	360 U	400 U	360 U
Benzo(g,h,i)perylene	ug/kg	500,000	39,000 U	26,000 J	1,500	420 U	400 U	180 J	340 J	1,800 UJ	NA	450 U	98 J	1,200 U	1,300 U	1,600 J	380 U	120,000	380 U	400 U	370 U	16,000 J	360 U	400 U	360 U
Fluoranthene	ug/kg	500,000	39,000 U	36,000 U	1,700	420 U	400 U	380 U	710	27 J	NA	450 U	200 J	1,200 U	1,300 U	4,200	380 U	260,000	380 U	400 U	370 U	150,000 J	360 U	400 U	360 U
Fluorene	ug/kg	500,000	39,000 U	36,000	740 U	420 U	400 U	380 U	120 J	42 J	NA	450 U	390 U	1,200 U	1,300 U	160 J	380 U	83,000	380 U	400 U	370 U	160,000 J	360 U	400 U	360 U
Phenanthrene	ug/kg	500,000	17,000 J	110,000	1,300	420 U	400 U	8 J	650	1,800 UJ	NA	450 U	130 J	1,200 U	1,300 U	1,500 J	380 U	330,000	380 U	400 U	370 U	440,000	360 U	400 U	360 U
Pyrene	ug/kg	500,000	9,200 J	35,000 J	2,100	420 U	400 U	6 J	760	34 J	NA	450 U	230 J	1,200 U	1,300 U	7,600	380 U	240,000	380 U	4 J	370 U	170,000 J	360 U	400 U	360 U
Total Non-Carcinogenic PAHs			325,400	771,400	7,880	63	0	194	3,156	167	-- -	0	751	0	0	18,080	0	1,388,000	0	4	0	3,564,000	160	35	0
Carcinogenic PAHs																									
Benz(a)anthracene	ug/kg	5,600	3,900 J	13,000 J	1,800	420 U	400 U	8 J	480	1,800 UJ	NA	450 U	140 J	1,200 U	1,300 U	4,300	380 U	190,000	380 U	400 U	370 U	68,000 J	360 U	400 U	360 U
Benzo(a)pyrene	ug/kg	1,000	2,800 J	8,600 J	2,000	420 U	400 U	14 J	460	1,800 UJ	NA	450 U	120 J	1,200 U	1,300 U	2,700	380 U	130,000	380 U	400 U	370 U	46,000 J	360 U	400 U	360 U
Benzo(b)fluoranthene	ug/kg	5,600	1,200 J	3,400 J	1,500	420 U	400 U	380 U	300 J	1,800 UJ	NA	450 U	110 J	1,200 U	1,300 U	1,600 J	380 U	130,000	380 U	400 U	370 U	24,000 J	360 U	400 U	360 U
Benzo(k)fluoranthene	ug/kg	56,000	39,000 U	36,000 U	1,400 J	420 U	400 U	380 U	500 J	1,800 UJ	NA	450 U	150 J	1,200 U	1,300 U	2,700 J	380 U	130,000 J	380 U	400 U	370 U	39,000 J	360 U	400 U	360 U
Chrysene	ug/kg	56,000	3,300 J	11,000 J	1,700	420 U	400 U	8 J	490	1,800 UJ	NA	450 U	160 J	1,200 U	1,300 U	3,600	380 U	180,000	380 U	400 U	370 U	66,000 J	360 U	400 U	360 U
Dibenz(a,h)anthracene	ug/kg	560	39,000 U	36,000 U	840	420 U	400 U	380 U	120 J	1,800 UJ	NA	450 U	33 J	1,200 U	1,300 U	730 J	380 U	51,000 J	380 U	400 U	370 U	180,000 U	360 U	400 U	360 U
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	39,000 U	22,000 J	1,600	420 U	400 U	380 U	360 J	1,800 UJ	NA	450 U	83 J	1,200 U	1,300 U	1,600 J	380 U	120,000	380 U	400 U	370 U	16,000 J	360 U	400 U	360 U
Total Carcinogenic PAHs			11,200	58,000	10,840	0	0	30	2,710	0	-- -	0	796	0	0	17,230	0	931,000	0	0	0	259,000	0	0	0
Total PAHs			336,600	829,400	18,720	63	0	224	5,866	167	-- -	0	1,547	0	0	35,310	0	2,319,000	0	4	0	3,823,000	160	35	0
Other Semivolatile Organic Compounds (ug/kg)																									
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	500,000	39,000 U	36,000 U	740 U	420 U	400 U	380 U	78 J	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	190,000 U	180,000 U	3,600 U	2,000 U	2,000 U	1,800 U	140 J	560 J	NA	71 J	76 J	160 J	6,200 J	8,100 UJ	91 J	270,000 UJ	1,800 UJ	1,900 U	1,800 U	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	39,000 U	36,000 U	740 U	420 U	400 U	380 U	62 J	1,800 UJ	NA	450 U	9 J	1,200 U	1,300 U	160 J	380 U	11,000 J	380 U	400 U	370 U	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	39,000 U	36,000 U	740 U	420 U	400 U	380 U	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	39,000 U	36,000 U	740 U	420 U	400 U	380 U	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA
Dibenzofuran	ug/kg	350,000	1,800 J	6,000 J	220 J	420 U	400 U	380 U	76 J	1,800 UJ	NA	14 J	12 J	1,200 U	1,300 U	130 J	380 U	33,000 J	380 U	400 U	370 U	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1	ug/kg	NL	39,000 U	36,000 U	740 U	420 U	400 U	380 U	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA
Phenol	ug/kg	500,000	39,000 U	36,000 U	740 U	420 U	400 U	380 U	17 J	1,800 UJ	NA	34 J	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	39,000 U	36,000 U	740 U	420 U	400 U	380 U	410 U	1,800 UJ	NA	450 U	390 U	1,200 U	1,300 U	1,700 U	380 U	56,000 U	380 U	400 U	370 U	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-33		SB-34		SB-35		RW-08		RW-08 (dup)	RW-08	RW-09		RW-09 (dup)	RW-10		RW-11		RW-12		SB-81		SB-82	
Sample ID:	Units		CF-SB33	CF-SB33	CF-SB34	CF-SB34	CF-SB35	CF-SB35	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-45	CF-SB-46	CF-SB-46	CF-SB	CF-SB-47	CF-SB-47	CF-SB-48	CF-SB-48	CF-SB-49	CF-SB-49	CF-SB-81	CF-SB-81	CF-SB-82	CF-SB-82
Depth (ft):			(7-9)	(23-25)	(5-9)	(9-13)	(6-10)	(18-22)	(13-15)	(19-21)	(19-21)	(37-39)	(15-17)	(39-41)	09/14/99	(5-7)	(39-41)	(3-5)	(39-41)	(9-11)	(39-41)	(17-21)	(41-45)	(5-9)	(25-29)
Constituent Date			03/01/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	03/02/1999	09/13/1999	09/13/1999	09/13/1999	09/13/1999	09/14/1999	09/14/1999	09/14/1999	09/15/1999	09/15/1999	09/20/1999	09/20/1999	09/16/1999	09/16/1999	05/22/2002	05/22/2002	05/23/2002	05/23/2002
Pesticides/Polychlorinated Biphenyls (ug/kg																									
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																									
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UR	1 UR	1 U	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	1 UR	0 UJ	0 UJ	0 UJ	0 UJ
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																									
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	6.30 J	1.40 J	2.80 J	1.20 J	1.30 U	3.50	5.00	2.90 J	2.60 B	4.50	7.40	10.30	11.40	8.80	2.00	5.60	3.50	4.00	1.70	3.20	4.00	3.50	3.70
Barium	mg/kg	400	72.80	35.80	43.10	319	74	54.20	95.90	**611** J	**535**	138.00	50.20	143.00	149.00	105.00	43.80	45.30	63.60	112.00	65.70	48.50	53.50	43.60	65.20
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	0.19 U	0.41 U	0.20 U	0.20 U	0.21N N	0.17 U	0.22 J	0.41 J	0.37 U	0.19N N	0.19N N	0.32N N	0.32N N	0.19N N	0.18N N	0.19N N	0.19N N	0.20N N	0.13N N	1.00 U	0.76 U	0.97 U	0.93 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	69.80 J	41.50 J	52.80 J	22.90 J	64.50 J	47.00	42.10	88.90 J	78.30	79.90	13.10	33.30	35.90	27.00	113.00	8.60	97.70	62.60	13.50	37.50	73.60	56.90	99.50
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	9.30 J	6.30 J	18.80 J	9.80 J	10.60 J	6.00 J	93.70	12.10 J	9.60	12.70 J	203.00 J	13.60 J	11.20 J	**1,380** J	5.80 J	21.40 J	6.50 J	10.40 J	5.80 J	13.00	5.10	24.20	5.00
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	0.04 U	0.02 U	0.06 B	0.04 U	0.03 U	0.03 U	0.69 J	0.20 J	0.21	0.02 J	0.34 J	0.03 J	0.02 J	0.09 J	0.00 UR	0.07 J	0.01 J	0.01 UR	0.00 UR	0.09 U	0.09 U	0.10 U	0.10 U
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	2.40 J	0.85 J	0.96 J	1.20	2.30 J	0.67 UJ	0.92 UJ	4.20 J	3.40	0.97 UJ	0.97 UJ	1.60 UJ	1.60 UJ	1.40 J	0.90 UJ	1.40 J	0.94 UJ	0.98 UJ	0.66 UJ	1.60 U	1.20 U	1.50 U	1.50 U
Silver	mg/kg	1,500	0.33	0.29	0.40	0.40	0.43 U	0.33 UJ	0.18 U	0.35 UJ	0.37 U	0.19 U	0.19 U	0.32 U	0.32 U	0.19 U	0.18 U	0.19 U	0.19 U	0.20 U	0.13 U	0.30 U	0.23 U	0.29 U	0.28 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																									
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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-- unable to calculate because it was non-detected or not analyze
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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Units	Comercial Use Standards (ug/kg)	SB-88			SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92		SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03
Sample ID:				CF-SB-88	CF-SB-88	CF-SB-88	CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92	CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3
Depth (ft):				(28-32)	(44-48)	(44-48 DUP)	(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)	(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(6-8)
Constituent	**Date**			06/11/2002	06/11/2002	06/11/2002	06/19/2002	06/21/2002	11/14/2002	11/14/2002	11/15/2002	11/15/2002	11/12/2002	11/12/2002	11/12/2002	11/13/2002	11/13/2002	11/14/2002	11/14/2002	04/01/1993	04/01/1993	04/01/1993	04/01/1993	04/05/1993
	Location:			25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	25 Willow Ave	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Edgewater St	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																								
Benzene		ug/kg	44,000	1 J	6 U	6 U	410 J	1 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U	6,200 U	6 U	5,800 U	6 U	11 U	11 U	11 U	11 U	13 U
Toluene		ug/kg	500,000	6 U	6 U	6 U	3,100 U	1 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U	6,200 U	6 U	4,900 J	6 U	11 U	11 U	11 U	11 U	13 U
Ethylbenzene		ug/kg	390,000	2 J	6 U	6 U	30,000	7	6 U	6 U	6 U	6 U	29 U	6 U	6 U	28,000	4 J	9,400	3 J	11 U	11 U	11 U	11 U	13 U
Xylene (total)		ug/kg	500,000	1 J	6 U	6 U	30,000	4 J	6 U	6 U	6 U	6 U	29 U	6 U	6 U	16,000	6 U	16,000	1 J	11 U	11 U	11 U	11 U	13
Volatile Organic Compounds (ug/kg)																								
1,2,4-Trimethylbenzene		ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene		ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
4-Methyl-2-Pentanone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
Acetone		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	24
Carbon Tetrachloride		ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
Isopropylbenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
Styrene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	11 U	11 U	11 U	13 U
n-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane		ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane		ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standa
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected based
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this ar
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-88			SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92		SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03
Sample ID:	Units		CF-SB-88	CF-SB-88	CF-SB-88	CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92	CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3
Depth (ft):			(28-32)	(44-48)	(44-48 DUP)	(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)	(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(6-8)
Constituent	**Date**		**06/11/2002**	**06/11/2002**	**06/11/2002**	**06/19/2002**	**06/21/2002**	**11/14/2002**	**11/14/2002**	**11/15/2002**	**11/15/2002**	**11/12/2002**	**11/12/2002**	**11/12/2002**	**11/13/2002**	**11/13/2002**	**11/14/2002**	**11/14/2002**	**04/01/1993**	**04/01/1993**	**04/01/1993**	**04/01/1993**	**04/05/1993**
PAHs (ug/kg)																							
Non-Carcinogenic PAHs																							
Naphthalene	ug/kg	500,000	240 J	340 U	360 U	24,000	390	380 U	370 U	370 U	370 U	380 U	360 U	360 U	**1,600,000**	320 J	62,000	390	370 U	370 U	390 U	370 U	6,900 D
2-Methylnaphthalene	ug/kg	NL	360 U	340 U	360 U	2,600 J	270 J	380 U	370 U	370 U	370 U	380 U	360 U	360 U	80,000 J	360 U	30,000	140 J	370 U	370 U	390 U	370 U	4,800 D
Acenaphthene	ug/kg	500,000	360 UJ	340 U	360 U	4,100 U	360 U	380 U	370 U	370 U	370 U	58 J	360 U	360 U	**1,200,000**	56 J	2,800 J	21 J	370 U	370 U	390 U	370 U	460
Acenaphthylene	ug/kg	500,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 UJ	100 J	370 U	260 J	360 U	360 U	190,000 J	18 J	14,000 J	25 J	370 U	370 U	390 U	370 U	2,000
Anthracene	ug/kg	500,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	53 J	370 U	87 J	360 U	360 U	**810,000**	360 U	7,400 J	370 U	370 U	370 U	390 U	370 U	660
Benzo(g,h,i)perylene	ug/kg	500,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	140 J	370 U	170 J	360 U	360 U	260,000 J	360 U	1,200 J	370 U	370 U	370 U	390 U	370 U	430 U
Fluoranthene	ug/kg	500,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	270 J	370 U	140 J	360 U	360 U	**1,900,000**	360 U	9,500 J	370 U	370 U	370 U	390 U	370 U	600
Fluorene	ug/kg	500,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	370 U	370 U	34 J	360 U	360 U	**890,000**	360 U	9,500 J	370 U	370 U	370 U	390 U	370 U	1,300
Phenanthrene	ug/kg	500,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	52 J	370 U	61 J	360 U	360 U	**3,800,000**	28 J	25,000	370 U	370 U	370 U	390 U	370 U	2,500
Pyrene	ug/kg	500,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	320 J	370 U	170 J	360 U	360 U	**1,500,000**	360 U	10,000 J	370 U	370 U	370 U	390 U	370 U	1,500
Total Non-Carcinogenic PAHs			240	0	0	26,600	660	0	0	935	0	980	0	0	12,230,000	422	171,400	576	0	0	0	0	20,720
Carcinogenic PAHs																							
Benz(a)anthracene	ug/kg	5,600	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	170 J	370 U	120 J	360 U	360 U	**640,000** J	360 U	3,700 J	370 U	370 U	370 U	390 U	370 U	430
Benzo(a)pyrene	ug/kg	1,000	360 U	340 U	360 U	**4,100** U	360 U	380 U	370 U	250 J	370 U	170 J	360 U	360 U	**540,000** J	360 U	**2,900** J	370 U	370 U	370 U	390 U	370 U	350 J
Benzo(b)fluoranthene	ug/kg	5,600	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	160 J	370 U	120 J	360 U	360 U	**460,000** J	360 U	**15,000** U	370 U	370 U	370 U	390 U	370 U	190 J
Benzo(k)fluoranthene	ug/kg	56,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	370 J	370 U	130 J	360 U	360 U	**390,000** J	360 U	3,200 J	370 U	370 U	370 U	390 U	370 U	290 J
Chrysene	ug/kg	56,000	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	180 J	370 U	140 J	360 U	360 U	**450,000** J	360 U	3,500 J	370 U	370 U	370 U	390 U	370 U	420 J
Dibenz(a,h)anthracene	ug/kg	560	360 U	340 U	360 U	**4,100** U	360 U	380 U	370 U	53 J	370 U	49 J	360 U	360 U	**800,000** U	360 U	**15,000** U	370 U	370 U	370 U	390 U	370 U	430 U
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	360 U	340 U	360 U	4,100 U	360 U	380 U	370 U	140 J	370 U	110 J	360 U	360 U	**240,000** J	360 U	1,000 J	370 U	370 U	370 U	390 U	370 U	430 U
Total Carcinogenic PAHs			0	0	0	0	0	0	0	1,323	0	839	0	0	2,720,000	0	14,300	0	0	0	0	0	1,680
Total PAHs			240	0	0	26,600	660	0	0	2,258	0	1,819	0	0	14,950,000	422	185,700	576	ND	ND	ND	ND	22,400
Other Semivolatile Organic Compounds (ug/kg)																							
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
4-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcoho	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
Carbazole	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
Dibenzofuran	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
N-Nitrosodiphenylamine (1	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
Phenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	370 U	430 U
Hexachlorobenzene	ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370 U	370 U	390 U	180 JB	230 JB
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Blue highlight indicates that the material was not detected at or above the r
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T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:	Units	Comercial Use Standards (ug/kg)	SB-88			SB-89		SB-90C		SB-91	SB-91A	SB-92	SB-92		SB-93	SB-93	SB-94	SB-94	FPM-MW-01	FPM-MW-01	FPM-MW-02	FPM-MW-02	FPM-MW-03
Sample ID:			CF-SB-88	CF-SB-88	CF-SB-88	CF-SB-89	CF-SB-89	CF-SB-90C	CF-SB-90C	CF-SB-91	CF-SB-91A	CF-SB-92	CF-SB-92	CF-SB-92	CF-SB-93	CF-SB-93	CF-SB-94	CF-SB-94	MW-1	MW-1	MW-2	MW-2	MW-3
Depth (ft):			(28-32)	(44-48)	(44-48 DUP)	(8-12)	(35-39)	(20-24)	(32-36)	(8-12)	(36-40)	(5-9)	(37-41)	(37-41 DUP)	(8-12)	(36-40)	(20-24)	(36-40)	(10-12)	(16-18)	(5-7)	(20-22)	(6-8)
Constituent Date			06/11/2002	06/11/2002	06/11/2002	06/19/2002	06/21/2002	11/14/2002	11/14/2002	11/15/2002	11/15/2002	11/12/2002	11/12/2002	11/12/2002	11/13/2002	11/13/2002	11/14/2002	11/14/2002	04/01/1993	04/01/1993	04/01/1993	04/01/1993	04/05/1993
Pesticides/Polychlorinated Biphenyls (ug/kg)																							
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																							
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	0 UJ	0 UJ	0 UJ	0 U	0 U	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	0 UJ	NA	NA	NA	NA	NA
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																							
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N N	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N N	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	6.00 J	1.90 J	2.50 J	**19.40**	2.20	2.60 J	7.00 J	2.00 J	2.80 J	2.70 J	7.20 J	6.80 J	2.60 J	6.60 J	2.50 J	7.70 J	NA	NA	NA	NA	NA
Barium	mg/kg	400	71.20	72.30	71.30	**1430**	69.00	43.60	66.50	11.00	48.00	22.50	62.70	47.80	8.70	71.30	48.90	81.60	NA	NA	NA	NA	NA
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	0.86 U	0.89 U	0.83 U	2.6 U	0.83 U	1.00 U	0.96 U	0.90 U	1.00 U	0.83 U	0.99 U	0.94 U	1.00 U	0.90 U	0.82 U	1.10 U	NA	NA	NA	NA	NA
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	99.90 J	17.90 J	20.50 J	65.90	20.00	33.60	94.80	10.60	84.60	20.20	82.20	72.00	14.00	83.80	27.30	91.30	NA	NA	NA	NA	NA
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	6.70 J	6.70 J	10.20 J	11.60	6.60	4.00	7.00	12.80	4.70	35.20	6.20	5.30	3.80	7.60	4.60	7.30	NA	NA	NA	NA	NA
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	0.09 U	0.08 U	0.09 U	0.27 U	0.09 U	0.04 U	0.06 U	0.05 U	0.05 U	0.04 U	0.05 U	0.05 U	0.06 U	0.04 U	0.05 U	0.05 U	NA	NA	NA	NA	NA
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	1.40 UJ	1.40 UJ	1.30 UJ	4.20 U	1.30 U	1.60 U	1.50 U	1.40 U	1.60 U	1.30 U	1.60 U	1.50 U	1.60 U	1.40 U	1.30 U	1.70 U	NA	NA	NA	NA	NA
Silver	mg/kg	1,500	0.26 U	0.27 U	0.25 U	0.79 U	0.25 U	0.30 U	0.29 U	0.27 U	0.30 U	0.25 U	0.30 U	0.28 U	0.31 U	0.27 U	0.25 U	0.32 U	NA	NA	NA	NA	NA
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																							
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07	RW-14	RW-14	RW-14	RW-14	RW-14	SB-18	SB-18	SB-18 (dup)	SB-21	SB-22	SB-22
Sample ID:	Units		MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB18	CF-SB18	CF-DUP3	CF-SB2I	CF-SB22	CF-SB22
Depth (ft):			(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)	(24-25)	(58-61)	(78-78.5)	(119-119.5)	(126-126.5)	(4-7.5)	(73-76)	(73-76)	(5-7)	(2-3)	(20-21)
Constituent Date			04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999	08/23/1999	08/24/1999	08/24/1999	08/26/1999	08/26/1999	03/02/1999	03/09/1999	03/09/1999	02/25/1999	02/25/1999	02/26/1999
Location:			40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																						
Benzene	ug/kg	44,000	44	3 U	2 U	2 U	3 U	6 U	6 U	3,500 J	80,000	62,000	570 J	90,000	72	6 U	4 J	1,100 U	100 J	1,500	2,600 J	2,000 J
Toluene	ug/kg	500,000	200	3 U	2 U	2 U	3 U	6 U	6 U	9,200 J	170,000	110,000	340 J	190,000	320	6 U	2 J	720 J	560 J	110 J	32,000	860 J
Ethylbenzene	ug/kg	390,000	45	3 U	4	2 U	2 J	6 U	6 U	22,000	21,000 J	68,000	32	28,000	120	6 U	6 U	590 J	470 J	5,800	150,000	390 J
Xylene (total)	ug/kg	500,000	380	3 U	27	6	8	6 U	6 U	25,000	210,000	110,000	210	200,000	870	6 U	6 U	7,200	5,500	1,900	150,000	580 J
Volatile Organic Compounds (ug/kg)																						
1,2,4-Trimethylbenzene	ug/kg	190,000	NA	2 U	31	3	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA	2	23	2	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	500,000	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	500,000	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	22,000	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	2 U	3	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	960 D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	2 U	1	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA	2 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07	RW-14	RW-14	RW-14	RW-14	RW-14	SB-18	SB-18	SB-18 (dup)	SB-21	SB-22	SB-22
Sample ID:	Units		MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB18	CF-SB18	CF-DUP3	CF-SB2I	CF-SB22	CF-SB22
Depth (ft):			(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)	(24-25)	(58-61)	(78-78.5)	(119-119.5)	(126-126.5)	(4-7.5)	(73-76)	(73-76)	(5-7)	(2-3)	(20-21)
Constituent Date			04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999	08/23/1999	08/24/1999	08/24/1999	08/26/1999	08/26/1999	03/02/1999	03/09/1999	03/09/1999	02/25/1999	02/25/1999	02/26/1999
PAHs (ug/kg)																						
Non-Carcinogenic PAHs																						
Naphthalene	ug/kg	500,000	2,000	33 #	2,400 #	500 #	1,400 #	29 JB	29 JB	420,000 B	**3,500,000**	290,000	8,800	**880,000**	8,900	100 J	170 J	58,000 J	120,000 J	430,000 B	NA	16,000 B
2-Methylnaphthalene	ug/kg	NL	1,600	NA	NA	NA	NA	330 U	370 U	440,000 J	2,600,000	200,000	6,700	600,000	9,300	130 J	380 U	69,000 J	140,000 J	420,000 J	NA	19,000 J
Acenaphthene	ug/kg	500,000	130 J	2,900	470 U	410 U	420 U	330 U	370 U	11,000 J	96,000 J	5,400 J	310 J	29,000 J	550 J	26 J	230 J	4,000 J	7,500 J	73,000 J	NA	500 J
Acenaphthylene	ug/kg	500,000	820	NA	NA	NA	NA	8 JB	8 J	64,000 J	**780,000**	49,000	2,400	220,000	3,800	430 U	190 J	29,000	54,000	9,600 J	NA	4,000
Anthracene	ug/kg	500,000	390 U	500 U	810	770	610	330 U	370 U	78,000 U	**580,000** U	19,000 J	770 J	58,000 J	1,300 J	41 J	330 J	7,500 J	15,000 J	76,000 U	NA	3,700 U
Benzo(g,h,i)perylene	ug/kg	500,000	390 U	500 U	740	1,000	970	330 U	370 U	54,000 J	22,000 J	4,800 J	100 J	8,400 J	200 J	430 U	1,000	1,100 JB	2,400 JB	57,000 J	NA	2,600 J
Fluoranthene	ug/kg	500,000	390 U	500 U	2,400	3,300 D	2,400	330 U	370 U	78,000 U	**580,000** U	20,000 J	850 J	63,000 J	1,300 J	74 J	2,900 J	12,000 B	23,000 B	76,000 U	NA	3,700 U
Fluorene	ug/kg	500,000	510	2,100	1,000	410 U	420 U	7 JB	7 J	3,600 J	230,000 J	30,000 J	1,500	180,000	2,600	72 J	220 J	19,000	32,000	13,000 J	NA	140 J
Phenanthrene	ug/kg	500,000	390 U	500 U	2,800	2,500	2,000	27 JB	27 JB	69,000 J	**960,000**	65,000	3,000	230,000	4,700	240 J	500	33,000 B	66,000 B	120,000	NA	3,800
Pyrene	ug/kg	500,000	390 U	500 U	2,900	3,400 D	3,100	330 U	370 U	37,000 J	400,000 J	42,000	1,300 J	110,000 J	2,500	110 J	2,400	15,000 B	30,000 B	61,000 J	NA	1,800 J
Total Non-Carcinogenic PAHs			5,060	5,033	13,050	11,470	10,480	71	71	1,098,600	8,588,000	725,200	25,730	2,378,400	35,150	793	7,940	247,600	489,900	1,183,600	0	47,840
Carcinogenic PAHs																						
Benz(a)anthracene	ug/kg	5,600	390 U	500 U	1,400	2,500	1,400	330 U	370 U	**16,000** J	**580,000** U	**14,000** J	450 J	**38,000** J	780 J	40 J	1,900	**6,900** JB	**14,000** JB	**24,000** J	NA	670 J
Benzo(a)pyrene	ug/kg	1,000	390 U	500 U	**1,500**	**2,700**	**2,000**	330 U	370 U	**14,000** J	**130,000** J	**10,000** J	350 J	**25,000** J	600 J	26 J	**1,800**	**4,500** JB	**9,400** JB	**24,000** J	NA	570 J
Benzo(b)fluoranthene	ug/kg	5,600	390 U	500 U	1,300	1,900	1,900	330 U	370 U	4,700 J	**580,000** U	4,100 J	150 J	**22,000** J	220 J	12 J	1,000 J	2,000 JB	3,600 JB	**10,000** J	NA	270 J
Benzo(k)fluoranthene	ug/kg	56,000	390 U	500 U	1,500	2,800	1,800	330 U	370 U	**78,000** U	**580,000** U	6,300 J	240 J	20,000 J	470 J	26 J	1,600 J	3,200 JB	7,000 JB	**76,000** U	NA	3,700 U
Chrysene	ug/kg	56,000	390 U	500 U	1,600	2,600	1,800	330 U	370 U	15,000 J	**580,000** U	14,000 J	440 J	37,000 J	830 J	430 U	1,700	6,100 JB	12,000 JB	25,000 J	NA	640 J
Dibenz(a,h)anthracene	ug/kg	560	390 U	500 U	470 U	410 U	420 U	330 U	370 U	**78,000** U	**580,000** U	**38,000** U	**1,500** U	**150,000** U	**1,600** U	430 U	400	480 JB	**900** JB	**34,000** J	NA	**3,700** U
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	390 U	500 U	770	1,100	1,100	330 U	370 U	**47,000** J	**27,000** J	3,000 J	100 J	**7,800** J	190 J	430 U	1,200	1,200 JB	2,400 JB	**49,000** J	NA	2,200 J
Total Carcinogenic PAHs			0	0	8,070	13,600	10,000	0	0	96,700	157,000	51,400	1,730	149,800	3,090	104	9,600	24,380	49,300	166,000	0	4,350
Total PAHs			5,060	5,033	21,120	25,070	20,480	71	71	1,195,300	8,745,000	776,600	27,460	2,528,200	38,240	897	17,540	271,980	539,200	1,349,600	ND	52,190
Other Semivolatile Organic Compounds (ug/kg)																						
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylpheno	ug/kg	NL	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 UR	9,100 U	18,000 U	76,000 U	NA	240 J
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylpheno	ug/kg	500,000	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	**580,000** U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	220 J
4-Chloroaniline	ug/kg	NL	530	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
4-Methylpheno	ug/kg	500,000	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	**580,000** U	38,000 U	78 J	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	1,600 UJ	1,800 U	380,000 U	2,800,000 U	180,000 U	7,100 U	710,000 U	7,700 U	2,100 U	1,900 U	44,000 UJ	89,000 UJ	370,000 U	NA	18,000 U
Benzyl alcoho	ug/kg	NL	NA	NA	NA	NA	NA	330 U	370 UJ	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Butylbenzylphthalate	ug/kg	NL	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Carbazole	ug/kg	NL	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	1,000 J	56 J	5,000 J	95 J	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Di-n-butylphthalate	ug/kg	NL	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Di-n-octylphthalate	ug/kg	NL	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Dibenzofuran	ug/kg	350,000	60 J	NA	NA	NA	NA	330 U	1,800 U	7,000 J	**580,000** U	6,000 J	200 J	17,000 J	340 J	430 U	380 U	2,800 J	5,500 J	8,500 J	NA	460 J
Diethylphthalate	ug/kg	NL	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
N-Nitrosodiphenylamine (1	ug/kg	NL	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
Phenol	ug/kg	500,000	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	**580,000** U	38,000 U	120 J	150,000 U	1,600 U	430 U	380 U	9,100 U	18,000 U	76,000 U	NA	510 J
Hexachlorobenzene	ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	390 U	NA	NA	NA	NA	330 U	370 U	78,000 U	580,000 U	38,000 U	1,500 U	150,000 U	1,600 U	29 J	380 U	9,100 U	18,000 U	76,000 U	NA	3,700 U
2,4-Dinitropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylpheno	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylpheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylpheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachloropheno	ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	FPM-MW-03	FPM-BS-01	FPM-SS-01	FPM-SS-02	FPM-SS-03	RW-04	RW-04	RW-07	RW-07	RW-14	RW-14	RW-14	RW-14	RW-14	SB-18	SB-18	SB-18 (dup)	SB-21	SB-22	SB-22
Sample ID:	Units		MW-3	BS-1	SS-1	SS-2	SS-3	CF-RW4	CF-RW4	CF-SB17	CF-SB17	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB-42	CF-SB18	CF-SB18	CF-DUP3	CF-SB2I	CF-SB22	CF-SB22
Depth (ft):			(20-22)	-	-	-	-	(88-90)	(88-92)	(13-16)	(76-78)	(24-25)	(58-61)	(78-78.5)	(119-119.5)	(126-126.5)	(4-7.5)	(73-76)	(73-76)	(5-7)	(2-3)	(20-21)
Constituent Date			04/05/1993	06/15/1994	06/15/1994	06/15/1994	06/15/1994	03/11/1999	03/11/1999	02/26/1999	03/03/1999	08/23/1999	08/24/1999	08/24/1999	08/26/1999	08/26/1999	03/02/1999	03/09/1999	03/09/1999	02/25/1999	02/25/1999	02/26/1999
Pesticides/Polychlorinated Biphenyls (ug/kg)																						
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																						
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	NA	NA	NA	NA	NA	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 UJ	NA	1 UJ
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																						
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	NA	NA	NA	NA	NA	2.50	2.50	2.80 J	2.00	3.60 J	2.50 J	2.10 J	2.20 J	2.70 J	6.10	3.60	6.40	3.00 J	NA	4.20 J
Barium	mg/kg	400	NA	NA	NA	NA	NA	43.60 J	43.60 J	105.00	42.00	61.40	61.70	50.40	23.80 B	37.00	50.50	57.60 J	51.90 J	43.70	NA	70.10
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	NA	NA	NA	NA	NA	0.29 U	0.17 U	0.34 U	0.15 U	0.14 UJ	0.18 UJ	0.14 UJ	0.23 UJ	0.15 UJ	0.21 U	0.17 J	0.18 U	0.16 U	NA	0.69 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	NA	NA	NA	NA	NA	14.70	14.70	28.90 J	11.50	37.40 J	14.40 J	16.80 J	7.40 J	60.20 J	38.20	18.80	16.70	13.40 J	NA	26.90 J
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	NA	NA	NA	NA	NA	7.8 J	7.8J	9.2 J	5.1	10.6	9.2	8.3	4.9	6.9	56.6	8.8 J	12.5 J	34.5 J	NA	5.8 J
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	NA	NA	NA	NA	NA	0.06 U	0.02 U	0.03 U	0.02 U	0.01 U	0.01 U	0.00 U	0.11	0.01 U	0.05 B	0.02 U	0.03 U	0.03 U	NA	0.02 U
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	NA	NA	NA	NA	NA	1.20 UJ	0.69 UJ	1.50 J	0.61 UJ	1.10 UJ	0.93 UJ	0.71 UJ	1.10 UJ	0.78 UJ	0.83 UJ	0.69 UJ	0.72 UJ	0.68 J	NA	0.77 J
Silver	mg/kg	1,500	NA	NA	NA	NA	NA	0.58 UJ	0.34 UJ	0.42 U	0.31 UJ	1.70 J	0.18 UJ	0.14 UJ	0.23 UJ	0.15 UJ	0.41 UJ	0.34 UJ	0.36 UJ	0.26 U	NA	0.26 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																						
TOC	mg/kg	NL	NA	NA	NA	NA	NA	581	581	NA	NA	NA	NA	NA	NA	NA	NA	4,980	3,450	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
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-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this ar
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

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Site ID:		Comercial Use Standards (ug/kg)	SB-23	SB-23	SB-23	SB-23	SB-36	SB-36	SB-40	SB-40	SB-40	SB-41	SB-41	SB-41	SB-43	SB-43	SB-44	SB-44	TP-10	TP-10A	GP-01B	GP-01B	GP-02	GP-02
Sample ID:			CF-SB23	CF-SB23	CF-23	CF-SB23	CF-RW4	CF-RW4	CF-SB-40	CF-SB-40	CF-SB-40	CF-SB-41	CF-SB-41	CF-SB-41	CF-SB-43	CF-SB-43	CF-SB-44	CF-SB-44	CF-TP10	CF-TP10A	GP-01	GP-01	GP-02	GP-02
Depth (ft):			(4-8)	(29-31)	(92-94)	(109-111)	(4-8)	(16-20)	(4-6)	(16-18)	(18-20)	(10-12)	(18-20)	(28-30)	(6-8)	(28-30)	(3-5)	(29-31)	(3)	(3)	(34-38)	(42-45)	(24-28)	(43-45)
Constituent	Date		03/02/1999	03/04/1999	03/10/1999	03/11/1999	03/02/1999	03/02/1999	07/27/1999	07/27/1999	07/27/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/26/1999	07/27/1999	02/24/1999	02/25/1999	11/13/2001	11/13/2001	11/12/2001	11/12/2001
Location:			0 Willow Av	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																								
Benzene	ug/kg	44,000	6 J	NA	23 J	18	2 J	10	10,000	63,000	5,400,000	6 U	1 J	88 J	90	7,300 J	6 U	1 J	6 U	5 U	9,700	650 J	240 U	100 J
Toluene	ug/kg	500,000	1 J	NA	16 JB	11 U	1 J	3 J	18,000	26,000	3,700,000	6 U	6 U	260 J	31	12,000	6 U	6 U	6 U	5 U	170,000	3,400	3,500	270 J
Ethylbenzene	ug/kg	390,000	4 J	NA	6 J	2 J	3 J	2 J	22,000	42,000	170,000 J	6 U	0 J	400 J	210	7,000 J	6 U	6 U	6 U	2 J	13,000	300 J	7,500	550 UJ
Xylene (total)	ug/kg	500,000	16	NA	41	6 J	12	4 J	24,000	26,000	1,400,000	6 U	1 J	2,100	210	13,000	6 U	6 U	6 U	3 J	170,000	4,100	12,000	430 J
Volatile Organic Compounds (ug/kg)																								
1,2,4-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	NA	NA	NA	NA
Acetone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 U	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
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NA - not analyzed
J - estimated value
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-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
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warns the data user to use caution when applying the results of this ar
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ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-23	SB-23	SB-23	SB-23	SB-36	SB-36	SB-40	SB-40	SB-40	SB-41	SB-41	SB-41	SB-43	SB-43	SB-44	SB-44	TP-10	TP-10A	GP-01B	GP-01B	GP-02	GP-02
Sample ID:	Units		CF-SB23	CF-SB23	CF-23	CF-SB23	CF-RW4	CF-RW4	CF-SB-40	CF-SB-40	CF-SB-40	CF-SB-41	CF-SB-41	CF-SB-41	CF-SB-43	CF-SB-43	CF-SB-44	CF-SB-44	CF-TP10	CF-TP10A	GP-01	GP-01	GP-02	GP-02
Depth (ft):			(4-8)	(29-31)	(92-94)	(109-111)	(4-8)	(16-20)	(4-6)	(16-18)	(18-20)	(10-12)	(18-20)	(28-30)	(6-8)	(28-30)	(3-5)	(29-31)	(3)	(3)	(34-38)	(42-45)	(24-28)	(43-45)
Constituent Date			03/02/1999	03/04/1999	03/10/1999	03/11/1999	03/02/1999	03/02/1999	07/27/1999	07/27/1999	07/27/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/26/1999	07/27/1999	02/24/1999	02/25/1999	11/13/2001	11/13/2001	11/12/2001	11/12/2001
PAHs (ug/kg)																								
Non-Carcinogenic PAHs																								
Naphthalene	ug/kg	500,000	410 U	NA	19,000 B	190 JB	65 J	370 U	240,000 B	120,000 B	NA	370 U	520 JB	130,000 B	91,000 B	430,000 B	190 JB	330 U	740	750 U	480,000	39,000	97,000	2,600
2-Methylnaphthalene	ug/kg	NL	410 U	NA	25,000	380 U	380 U	370 U	120,000	65,000	NA	7 J	26 J	92,000	21,000	250,000	130 J	330 U	1,300	750 U	370,000	34,000	75,000	2,000
Acenaphthene	ug/kg	500,000	410 U	NA	2,000 J	8 J	380 U	370 U	3,600 J	12,000 J	NA	370 U	110 J	3,000 J	12,000 J	8,400 J	32 J	330 U	5 J	750 U	13,000 J	1,400 J	3,700 J	59 J
Acenaphthylene	ug/kg	500,000	46 J	NA	12,000	49 J	58 J	8 J	30,000 J	6,500 J	NA	6 J	1,300	24,000	10,000 J	46,000 J	870	330 U	400 U	75 J	120,000	14,000	16,000	570
Anthracene	ug/kg	500,000	410 U	NA	3,800	380 U	380 U	370 U	13,000 J	8,100 J	NA	370 U	1,300	6,200 J	5,600 J	17,000 J	440 J	330 U	220 J	750 U	32,000 J	4,200 J	6,600 J	110 J
Benzo(g,h,i)perylene	ug/kg	500,000	30 J	NA	1,000 JB	380 U	200 J	370 U	6,200 J	4,300 J	NA	370 U	340 J	1,500 J	19,000 U	5,900 J	3,700	330 U	580	680 J	72,000 U	7,400 U	15,000 U	360 U
Fluoranthene	ug/kg	500,000	410 U	NA	5,200 B	380 U	380 U	370 U	18,000 J	9,400 J	NA	8 J	2,500	9,200 J	4,500 J	26,000 J	2,500	330 U	840 J	750 U	36,000 J	4,100 J	6,600 J	87 J
Fluorene	ug/kg	500,000	410 U	NA	7,800	20 J	380 U	370 U	15,000 J	14,000 J	NA	370 U	120 J	13,000 J	7,700 J	35,000 J	88 J	330 U	35 J	750 U	61,000 J	6,700 J	10,000 J	190 J
Phenanthrene	ug/kg	500,000	410 U	NA	15,000 B	380 U	120 J	18 J	56,000	32,000	NA	20 J	4,200	37,000	23,000	100,000	1,200	330 U	2,000	750 U	140,000	16,000	25,000	420
Pyrene	ug/kg	500,000	250 J	NA	7,800 B	380 U	63 J	7 J	38,000	19,000 J	NA	15 J	4,100	15,000 J	7,700 J	54,000 J	3,700	330 U	1,700 J	490 J	51,000 J	6,000 J	9,400 J	120 J
Total Non-Carcinogenic PAHs			326	0	98,600	267	506	33	539,800	290,300	0	56	14,516	330,900	182,500	972,300	12,850	0	7,420	1,245	1,303,000	125,400	249,300	6,156
Carcinogenic PAHs																								
Benz(a)anthracene	ug/kg	5,600	410 U	NA	3,400 JB	380 U	33 J	370 U	**13,000** J	5,200 J	NA	6 J	1,400	4,400 J	2,800 J	**16,000** J	1,900	330	860 J	250 J	**19,000** J	2,100 J	3,500 J	37 J
Benzo(a)pyrene	ug/kg	1,000	130 J	NA	**2,400** JB	380 U	43 J	370 U	**10,000** J	**5,400** J	NA	370 U	**1,200**	**3,300** J	**1,400** J	**13,000** J	**2,800**	330 U	**1,100**	300 J	**11,000** J	**1,300** J	**2,200** J	22 J
Benzo(b)fluoranthene	ug/kg	5,600	410 U	NA	880 JB	380 U	380 U	370 U	4,400 J	2,600 J	NA	370 U	530 J	880 J	560 J	3,800 J	2,100	330 U	860	250 J	**72,000** U	**7,400** U	**15,000** U	360 U
Benzo(k)fluoranthene	ug/kg	56,000	410 U	NA	1,400 JB	380 U	380 U	370 U	4,200 J	2,900 J	NA	370 UJ	890	2,200 J	820 J	8,400 J	1,800	330 UJ	580	750 U	**72,000** U	920 J	1,800 U	360 U
Chrysene	ug/kg	56,000	410 U	NA	2,900 JB	380 U	46 J	370 U	12,000 J	5,300 J	NA	370 U	1,700	4,800 J	3,200 J	18,000 J	2,300	330 U	1,200 J	320 J	20,000 J	2,200 J	3,800 J	360 J
Dibenz(a,h)anthracene	ug/kg	560	14 J	NA	**3,800** U	380 U	380 U	370 U	**38,000** U	**1,000** J	NA	370 U	190 J	**18,000** U	**19,000** U	**73,000** U	**1,000**	330 U	300 J	390 J	**72,000** U	**7,400** U	**15,000** U	360 U
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	33 J	NA	1,000 JB	380 U	24 J	370 U	4,000 J	3,000 J	NA	370 U	320 J	1,300 J	**19,000** U	4,500 J	3,200	330 U	670	640 J	**72,000** U	**7,400** U	**15,000** U	360 U
Total Carcinogenic PAHs			177	0	11,980	0	146	0	47,600	25,400	0	376	6,230	16,880	8,780	63,700	15,100	660	5,570	2,150	50,000	6,520	9,500	419
Total PAHs			503	ND	110,580	267	652	33	587,400	315,700	ND	432	20,746	347,780	191,280	1,036,000	27,950	660	12,990	3,395	1,353,000	131,920	258,800	6,575
Other Semivolatile Organic Compounds (ug/kg)																								
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylpheno	ug/kg	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	22 J	330 U	400 U	750 U	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylpheno	ug/kg	500,000	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U	750 U	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U	750 U	NA	NA	NA	NA
4-Methylpheno	ug/kg	500,000	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	860 J	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	63 J	330 U	400 U	750 U	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	2,000 U	NA	18,000 U	1,900 U	1,800 U	1,800 U	180,000 U	100,000 U	NA	1,800 U	3,500 U	89,000 U	92,000 U	360,000 U	3,500 U	1,600 U	37 J	2,500 J	NA	NA	NA	NA
Benzyl alcoho	ug/kg	NL	410 U	NA	3,800 UJ	380 UJ	380 U	370 U	38,000 UJ	21,000 U	NA	370 U	720 U	18,000 UJ	19,000 UJ	73,000 U	720 U	330 U	400 U	430 J	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 UJ	750 U	NA	NA	NA	NA
Carbazole	ug/kg	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	590 J	NA	370 UJ	720 U	440 J	19,000 U	1,200 J	230 J	330 UJ	400 U	750 U	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	24 J	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U	750 U	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U	750 U	NA	NA	NA	NA
Dibenzofuran	ug/kg	350,000	410 U	NA	1,200 J	380 U	380 U	370 U	2,700 J	1,700 J	NA	370 U	46 J	1,400 J	1,100 J	6,200 J	56 J	330 U	400 U	22 J	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U	31 J	NA	NA	NA	NA
N-Nitrosodiphenylamine (1	ug/kg	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 U	750 U	NA	NA	NA	NA
Phenol	ug/kg	500,000	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	710 J	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	24 J	330 U	400 U	750 U	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	410 U	NA	3,800 U	380 U	380 U	370 U	38,000 U	21,000 U	NA	370 U	720 U	18,000 U	19,000 U	73,000 U	720 U	330 U	400 UJ	750 U	NA	NA	NA	NA
2,4-Dinitropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloropheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylpheno	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylpheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylpheno	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachloropheno	ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:	Units	Comercial Use Standards (ug/kg)	SB-23	SB-23	SB-23	SB-23	SB-36	SB-36	SB-40	SB-40	SB-40	SB-41	SB-41	SB-41	SB-43	SB-43	SB-44	SB-44	TP-10	TP-10A	GP-01B	GP-01B	GP-02	GP-02
Sample ID:			CF-SB23	CF-SB23	CF-23	CF-SB23	CF-RW4	CF-RW4	CF-SB-40	CF-SB-40	CF-SB-40	CF-SB-41	CF-SB-41	CF-SB-41	CF-SB-43	CF-SB-43	CF-SB-44	CF-SB-44	CF-TP10	CF-TP10A	GP-01	GP-01	GP-02	GP-02
Depth (ft):			(4-8)	(29-31)	(92-94)	(109-111)	(4-8)	(16-20)	(4-6)	(16-18)	(18-20)	(10-12)	(18-20)	(18-20)	(6-8)	(28-30)	(3-5)	(29-31)	(3)	(3)	(34-38)	(42-45)	(24-28)	(43-45)
Constituent Date			03/02/1999	03/04/1999	03/10/1999	03/11/1999	03/02/1999	03/02/1999	07/27/1999	07/27/1999	07/27/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/28/1999	07/26/1999	07/27/1999	02/24/1999	02/25/1999	11/13/2001	11/13/2001	11/12/2001	11/12/2001
Pesticides/Polychlorinated Biphenyls (ug/kg)																								
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																								
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	1 UJ	NA	1 U	1 U	1 UJ	1 UJ	1 U	2 J	NA	1 U	2 J		1 UJ		1 UJ	1 UJ	2 J	1 UJ	1 U	1 UJ	NA	NA	NA	NA
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																								
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	3.20	NA	1.30	1.20	3.30	3.10	5.00 J	5.10 J	NA	3.50 J	1.80 J		2.50 J	2.30 J	5.50 J	8.00	3.90 J	**16.80**	1.60 J	NA	NA	NA	NA
Barium	mg/kg	400	89.00	NA	35.80 J	26.80 J	61.40	56.30	41.30	128.00	NA	39.40	60.60		81.40	77.30	95.30	158.00	67.80	208.00	42.20	NA	NA	NA	NA
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	0.18 U	NA	0.12 U	0.13 J	0.20 U	0.16 U	2.80 UJ	4.40 J	NA	3.70 J	2.60 U		2.90 J	3.70 J	3.60 J	7.70	3.40 J	1.30 J	0.26 U	NA	NA	NA	NA
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	25.70	NA	19.00	9.70	53.70	67.50	18.80 J	33.70 J	NA	58.00 J	41.10 J		15.60 J	33.50 J	29.80 J	36.70 J	46.20 J	28.00	14.80 J	NA	NA	NA	NA
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	162.0	NA	3.6 J	2.4 U	27.9	6.0 J	23.2	370.0	NA	8.3	10.0		3.6	10.8	11.7	13.7	558.0	12.8	669.0	6.5 J	7.5	7.1	8.2	11.8
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	0.24	NA	0.02 U	0.02 U	0.04 B	0.02 U	0.01 B	0.45	NA	0.01 B	0.01 B		0.01 U	0.01 U	0.01 U	0.10	0.01 U	0.32	0.02 U	NA	NA	NA	NA
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	1.60 J	NA	0.48 UJ	0.53 UJ	0.82 UJ	1.00 J	2.20 UJ	0.73 UJ	NA	3.10 UJ	2.50 U		1.00 U	0.93 UJ	0.95 UJ	2.50 U	1.70 U	2.50	0.63 J	NA	NA	NA	NA
Silver	mg/kg	1,500	0.36 UJ	NA	0.24 UJ	0.26 UJ	0.41 UJ	0.33 UJ	0.20 U	0.15 U	NA	0.17 U	0.20 U		0.15 U	0.19 U	0.19 U	0.16 U	0.14 U	0.38 U	0.26 U	NA	NA	NA	NA
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																								
TOC	mg/kg	NL	NA	1,730	279	100 U	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
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mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	GP-03A	GP-3A (dup)	GP-03A	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10
Sample ID:	Units		GP-03	GP-033	GP-03	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10
Depth (ft):			(16-20)	(16-20)	(28-32)	(12-16)	(16-20')	(16-20)	(32-35)	(28-32)	(40-44)	(12-16)	(16-20)	(12-16)	(16-20)	(4-8)	(12-16)	(16-20)	(40-45)
Constituent Date			11/12/2001	11/12/2001	11/13/2001	11/13/2001	11/13/2001	11/14/2001	11/14/2001	11/16/2001	11/16/2001	11/19/2001	11/20/2001	11/16/2001	11/16/2001	11/16/2001	11/16/2001	11/15/2001	11/15/2001
Location:			40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave
BTEX (ug/kg)																			
Benzene	ug/kg	44,000	9,000	8,400	4,300 J	2,200,000	3,700,000	23,000	8,900	1,100,000	1,700	5,100	87,000	130,000	700,000	16,000	73,000	1,400	89
Toluene	ug/kg	500,000	34,000	38,000	18,000	1,700,000	3,000,000	31,000	49,000	1,100,000	3,300	100 U	77,000	170,000	670,000	24,000	13,000	1,100	33
Ethylbenzene	ug/kg	390,000	49,000	51,000	18,000	780,000	1,000,000	150,000	38,000	380,000	540 J	370 J	97,000	230,000	430,000	3,100 J	73,000	5,100	67
Xylene (total)	ug/kg	500,000	81,000	88,000	60,000	940,000	1,600,000	190,000	78,000	1,000,000	4,100	310 U	110,000	140,000	460,000	26,000	48,000	6,800	38
Volatile Organic Compounds (ug/kg)																			
1,2,4-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Units	Comercial Use Standards (ug/kg)	GP-03A		GP-3A (dup)		GP-03A		GP-04		GP-04		GP-05		GP-05		GP-06		GP-06		GP-07		GP-07		GP-08		GP-08		GP-09		GP-09		GP-10		GP-10	
Sample ID:				GP-03		GP-033		GP-03		GP-04		GP-04		GP-05		GP-05		GP-06		GP-06		GP-07		GP-07		GP-08		GP-08		GP-09		GP-09		GP-10		GP-10	
Depth (ft):				(16-20)		(16-20)		(28-32)		(12-16)		(16-20')		(16-20)		(32-35)		(28-32)		(40-44)		(12-16)		(16-20)		(12-16)		(16-20)		(4-8)		(12-16)		(16-20)		(40-45)	
Constituent	Date			11/12/2001		11/12/2001		11/13/2001		11/13/2001		11/13/2001		11/14/2001		11/14/2001		11/16/2001		11/16/2001		11/19/2001		11/20/2001		11/16/2001		11/16/2001		11/16/2001		11/16/2001		11/15/2001		11/15/2001	
PAHs (ug/kg)																																					
Non-Carcinogenic PAHs																																					
Naphthalene		ug/kg	500,000	**870,000**		**1,100,000**		45,000		**16,000,000**		NA		**1,200,000**		**880,000**		**8,200,000**		50,000		1,800		17,000		15,000		**7,000,000**		**22,000,000**		**1,600,000**		**1,400,000**		110	J
2-Methylnaphthalene		ug/kg	NL	600,000		730,000		42,000		10,000,000		NA		780,000		600,000		5,000,000		38,000		190	J	11,000		4,600		3,800,000		21,000,000		830,000		750,000		58	J
Acenaphthene		ug/kg	500,000	15,000	J	18,000	J	1,800	J	**670,000**	J	NA		79,000	J	13,000	J	130,000	J	1,200	J	53	J	390	J	900	J	230,000	J	**980,000**	J	180,000	J	24,000	J	360	U
Acenaphthylene		ug/kg	500,000	100,000	J	120,000	J	11,000		**2,000,000**		NA		72,000	J	120,000	J	**970,000**	J	9,700		380	U	1,900	J	1,300	J	**730,000**	J	**1,100,000**	J	28,000	J	57,000	J	360	U
Anthracene		ug/kg	500,000	31,000	J	36,000	J	4,700	J	**1,100,000**	J	NA		41,000	J	32,000	J	380,000	J	4,100	J	380	U	770	J	1,000	J	380,000	J	**2,000,000**	J	85,000	J	16,000	J	360	U
Benzo(g,h,i)perylene		ug/kg	500,000	15,000	U	16,000	U	7,300	U	320,000	J	NA		150,000	U	150,000	U	**1,500,000**	U	840	J	380	U	2,900	U	2,000	J	**1,300,000**	U	**720,000**	J	320,000	U	290,000	U	360	U
Fluoranthene		ug/kg	500,000	34,000	J	44,000	J	4,600	J	**1,400,000**	J	NA		45,000	J	36,000	J	500,000	J	5,100	J	34	J	1,100	J	3,400	J	**510,000**	J	**3,700,000**		120,000	J	32,000	J	360	U
Fluorene		ug/kg	500,000	55,000	J	70,000	J	6,700	J	**1,400,000**	J	NA		66,000	J	54,000	J	**570,000**	J	6,200	J	380	U	1,300	J	880	J	480,000	J	**4,400,000**		110,000	J	51,000	J	360	U
Phenanthrene		ug/kg	500,000	140,000	J	160,000		17,000		**4,300,000**		NA		160,000		140,000	J	**1,600,000**		18,000		380	U	3,700		4,600		**1,500,000**		**13,000,000**		360,000		130,000	J	38	J
Pyrene		ug/kg	500,000	56,000	J	70,000	J	6,400	J	**2,400,000**		NA		79,000	J	59,000	J	**830,000**	J	9,300		29	J	1,800	J	6,600		**870,000**	J	**7,200,000**		210,000	J	57,000	J	22	J
Total Non-Carcinogenic PAHs				1,901,000		2,348,000		139,200		39,590,000		0		2,522,000		1,934,000		18,180,000		142,440		2,106		38,960		40,280		15,500,000		76,100,000		3,523,000		2,517,000		228	
Carcinogenic PAHs																																					
Benz(a)anthracene		ug/kg	5,600	**20,000**	J	**25,000**	J	2,400	J	**900,000**	J	NA		**27,000**	J	**21,000**	J	**310,000**	J	3,100	J	20	J	660	J	2,500	J	**300,000**	J	**2,300,000**	J	**70,000**	J	**21,000**	J	360	U
Benzo(a)pyrene		ug/kg	1,000	**12,000**	J	**16,000**	J	**1,600**	J	**740,000**	J	NA		**19,000**	J	**13,000**	J	**240,000**	J	**2,400**	J	380	U	500	J	**2,200**	J	**240,000**	J	**1,900,000**	J	**58,000**	J	**290,000**	U	360	U
Benzo(b)fluoranthene		ug/kg	5,600	**15,000**	U	**16,000**	U	**7,300**	U	**310,000**	J	NA		**150,000**	U	**150,000**	U	**1,500,000**	U	**1,000**	J	380	U	2,900	U	1,500	J	**1,300,000**	U	**790,000**	J	**320,000**	U	**290,000**	U	360	U
Benzo(k)fluoranthene		ug/kg	56,000	15,000	U	16,000	U	1,100	J	**470,000**	J	NA		**150,000**	U	**150,000**	U	**1,500,000**	U	1,400	J	380	U	2,900	U	1,900	J	**1,300,000**	U	**1,100,000**	J	**320,000**	U	34,000	J	360	U
Chrysene		ug/kg	56,000	21,000	J	28,000	J	2,600	J	**1,000,000**	J	NA		30,000	J	23,000	J	**320,000**	J	3,100	J	380	U	710	J	3,300	J	**310,000**	J	**2,500,000**	J	**76,000**	J	23,000	J	360	U
Dibenz(a,h)anthracene		ug/kg	560	**15,000**	U	**16,000**	U	**7,300**	U	**2,000,000**	U	NA		**150,000**	U	**150,000**	U	**1,500,000**	U	**7,100**	UJ	380	U	**2,900**	U	**3,900**	UJ	**1,300,000**	U	**3,200,000**	U	**320,000**	U	**290,000**	U	360	U
Indeno(1,2,3-cd)pyrene		ug/kg	5,600	**15,000**	U	**16,000**	U	**7,300**	U	**200,000**	J	NA		**150,000**	U	**150,000**	U	**1,500,000**	U	600	J	380	U	2,900	U	1,400	J	**1,300,000**	U	**480,000**	J	**320,000**	U	**290,000**	U	360	U
Total Carcinogenic PAHs				53,000		69,000		7,700		3,620,000		0		76,000		57,000		870,000		18,700		20		1,870		16,700		850,000		9,070,000		204,000		78,000		0	
Total PAHs				1,954,000		2,417,000		146,900		43,210,000		ND		2,598,000		1,991,000		19,050,000		161,140		2,126		40,830		56,980		16,350,000		85,170,000		3,727,000		2,595,000		228	
Other Semivolatile Organic Compounds (ug/kg																																					
1,1'-Biphenyl		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4,5-Tetrachlorobenzene		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,2'-oxybis(1-Chloropropane		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,3,4,6-Tetrachloropheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4,5-Trichloropheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4,6-Trichloropheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-Dichloropheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-Dimethylpheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
3-Nitroaniline		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Methylpheno		ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Chloroaniline		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Methylpheno		ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzoic acid		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzyl alcoho		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Butylbenzylphthalate		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Carbazole		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Di-n-butylphthalate		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Di-n-octylphthalate		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibenzofuran		ug/kg	350,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Diethylphthalate		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
N-Nitrosodiphenylamine (1		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Phenol		ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorobenzene		ug/kg	6,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Isophorone		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
bis(2-Ethylhexyl)phthalate		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-Dinitropheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-Dinitrotoluene		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,6-Dinitrotoluene		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Chloronaphthalene		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Chloropheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Nitroaniline		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Nitrophenol		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
3-Methylpheno		ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
3,3'-Dichlorobenzidine		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4,6-Dinitro-2-methylpheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Bromophenyl phenyl ethe		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Chloro-3-methylpheno		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Chlorophenyl phenyl ethe		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Nitroaniline		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4-Nitrophenol		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Acetophenone		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Atrazine		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzaldehyde		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
bis(2-Chloroethoxy)methane		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
bis(2-Chloroethyl) ethe		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Caprolactam		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dimethyl phthalate		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorobutadiene		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachlorocyclopentadiene		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Hexachloroethane		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nitrobenzene		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
N-Nitrosodi-n-propylamine		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Pentachlorophenol		ug/kg	6700	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	GP-03A	GP-3A (dup)	GP-03A	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10
Sample ID:	Units		GP-03	GP-033	GP-03	GP-04	GP-04	GP-05	GP-05	GP-06	GP-06	GP-07	GP-07	GP-08	GP-08	GP-09	GP-09	GP-10	GP-10
Depth (ft):			(16-20)	(16-20)	(28-32)	(12-16)	(16-20')	(16-20)	(32-35)	(28-32)	(40-44)	(12-16)	(16-20)	(12-16)	(16-20)	(4-8)	(12-16)	(16-20)	(40-45)
Constituent Date			11/12/2001	11/12/2001	11/13/2001	11/13/2001	11/13/2001	11/14/2001	11/14/2001	11/16/2001	11/16/2001	11/19/2001	11/20/2001	11/16/2001	11/16/2001	11/16/2001	11/16/2001	11/15/2001	11/15/2001
Pesticides/Polychlorinated Biphenyls (ug/kg																			
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																			
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																			
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	8.6	11.6	7.6	216.0	NA	4.1	8.1	4.9 J	7.7 J	6.6	8.0	342.0 J	1,990 J	88.3 J	193.0 J	4.5	6.9
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	1,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																			
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
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- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66	SB-67	SB-67	SB-58	SB-59	SB-59	SB-80	SB-80	SB-60	SB-87	SB-87	SB-61	SB-62	SB-77	SB-77
Sample ID:	Units	Comercial Use Standards (ug/kg)	GP-11	GP-11	GP-11	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-59	CF-SB-59	CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-62	SB-77	SB-77
Depth (ft):			(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)	(0-4)	(4-6)	(4-6)	(0-4)	(8-10)	(0-4)	(52-56)	(4-8)	(48-52)	(60-64)	(4-8)	(4-6)	(24-28)	(37-39)
Constituent Date			11/15/2001	11/15/2001	11/15/2001	11/14/2001	11/14/2001	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/29/1999	11/29/1999	06/03/2002	06/04/2002	11/30/1999	06/13/2002	06/13/2002	11/29/1999	11/29/1999	11/20/2001	11/20/2001
Location:			40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	40 Willow Ave	49 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave	51 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	53 Lynhurst Ave	55 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave	59 Lynhurst Ave
BTEX (ug/kg)																									
Benzene	ug/kg	44,000	2,100	57 J	190 J	6	**73,000**	6 U	6 U	6 U	100	6 U	6 U	1 J	6 U	6 U	6 U	6 U	0.40 J	1,200	6	0.40 J	0.20 J	5,600 U	2,800 U
Toluene	ug/kg	500,000	830	35 J	87 J	1 U	150,000	6 U	6 U	0.30 J	0.30 J	6 U	6 U	1 J	1 J	6 U	6 U	6 U	6 U	5,000	1 J	1 J	1 J	5,600 U	2,800 U
Ethylbenzene	ug/kg	390,000	4,200	5 J	8	1 J	9,100	6 U	6 U	6 U	20	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	1,900	6 U	6 U	1 J	5,600 U	1,400 J
Xylene (total)	ug/kg	500,000	4,900	27	38	1 U	140,000	6 U	6 U	6 U	7 B	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	14,000	6 U	6 U	6 UJ	14,000	17,000
Volatile Organic Compounds (ug/kg)																									
1,2,4-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzec
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this ar
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Units	Comercial Use Standards (ug/kg)	GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66	SB-67	SB-67	SB-58	SB-59	SB-59	SB-80	SB-80	SB-60	SB-87	SB-87	SB-61	SB-62	SB-77	SB-77
Sample ID:				GP-11	GP-11	GP-11	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-59	CF-SB-59	CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-62	SB-77	SB-77
Depth (ft):				(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)	(0-4)	(4-6)	(4-6)	(0-4)	(8-10)	(0-4)	(52-56)	(4-8)	(48-52)	(60-64)	(4-8)	(4-6)	(24-28)	(37-39)
Constituent	**Date**			**11/15/2001**	**11/15/2001**	**11/15/2001**	**11/14/2001**	**11/14/2001**	**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/29/1999**	**11/29/1999**	**06/03/2002**	**06/04/2002**	**11/30/1999**	**06/13/2002**	**06/13/2002**	**11/29/1999**	**11/29/1999**	**11/20/2001**	**11/20/2001**
PAHs (ug/kg)																										
Non-Carcinogenic PAHs																										
Naphthalene		ug/kg	500,000	**510,000**	790	1,200	49 J	**2,000,000**	370 U	380 U	170 J	79 J	18 J	390 U	370 U	59 J	11 J	380 U	360 U	390 U	380,000	65 J	400 U	380 U	9,900	**670,000**
2-Methylnaphthalene		ug/kg	NL	320,000	490	890	31 U	1,500,000	370 U	380 U	180 J	380 U	400 U	390 U	370 U	44 J	390 U	380 U	360 U	390 U	310,000	370 U	400 U	380 U	12,000	450,000
Acenaphthene		ug/kg	500,000	37,000 J	18 J	33 J	21 J	54,000 J	13 J	380 U	170 J	13 J	400 U	390 U	370 U	110 J	390 U	46 J	360 UJ	390 U	10,000 J	370 U	400 U	380 U	570 J	17,000 J
Acenaphthylene		ug/kg	500,000	10,000 J	68 J	160 J	23 J	230,000 J	370 U	380 U	940 J	10 J	84 J	390 U	15 J	240 J	22 J	110 J	360 U	390 U	95,000	370 U	400 U	380 U	3,700	160,000
Anthracene		ug/kg	500,000	18,000 J	18 J	54 J	13 U	63,000 J	22 J	380 U	1,800	9 J	89 J	390 U	12 J	350 J	27 J	140 J	360 U	390 U	30,000 J	370 U	400 U	380 U	1,600	46,000 J
Benzo(g,h,i)perylene		ug/kg	500,000	5,500 J	360 U	360 U	370 U	290,000 U	370 UJ	380 UJ	440 J	380 UJ	180 J	390 U	39 J	100 J	140 J	540	360 U	390 UJ	75,000 U	370 U	13 J	18 J	1,500 U	150,000 U
Fluoranthene		ug/kg	500,000	38,000 J	360 U	94 J	370 U	150,000 J	140 J	380 U	4,000	14 J	460	20 J	76 J	1,300	270 J	1,200	360 U	27 J	29,000 J	370 U	28 J	37 J	1,500 J	52,000 J
Fluorene		ug/kg	500,000	41,000 J	84 J	180 J	370 U	250,000 J	370 U	380 U	690 J	380 U	18 J	390 U	370 U	91 J	390 U	40 J	360 U	390 U	47,000 J	370 U	400 U	380 U	2,000	79,000 J
Phenanthrene		ug/kg	500,000	130,000	190 J	460 J	59 J	**590,000**	140 J	380 U	6,300	16 J	260 J	11 J	50 J	1,400	92 J	780	360 U	11 J	120,000	370 U	14 J	18 J	5,400	190,000
Pyrene		ug/kg	500,000	67,000 J	29 J	130 J	370 U	230,000 J	180 J	380 U	6,300 J	22 J	470	16 J	110 J	1,800	320 J	1,300	360 U	40 J	43,000 J	370 U	27 J	35 J	2,300	74,000 J
Total Non-Carcinogenic PAHs				1,176,500	1,687	3,201	152	5,067,000	865	380	20,990	543	1,579	47	302	5,494	882	4,156	360	468	1,064,000	65	82	108	38,970	1,738,000
Carcinogenic PAHs																										
Benz(a)anthracene		ug/kg	5,600	**23,000** J	360 U	36 J	370 U	**74,000** J	70 J	380 U	2,400 J	380 U	280 J	390 U	41 J	900	200 J	580	360 U	15 J	**16,000** J	370 U	18 J	24 J	880 J	**27,000** J
Benzo(a)pyrene		ug/kg	1,000	**21,000** J	360 U	25 J	370 U	**49,000** J	69 J	380 U	**2,000**	380 U	260 J	390 U	39 J	920 J	210 J	560	360 U	390 U	**75,000** U	370 U	18 J	26 J	580 J	**18,000** J
Benzo(b)fluoranthene		ug/kg	5,600	**74,000** U	360 U	360 U	370 U	**290,000** U	43 J	380 U	920 J	380 U	200 J	390 U	41 J	1,000 J	160 J	510	360 U	390 U	**75,000** U	370 U	16 J	18 J	230 J	**150,000** U
Benzo(k)fluoranthene		ug/kg	56,000	12,000 J	360 U	360 U	370 U	**290,000** U	49 J	380 U	1,400 J	380 U	370 J	390 UJ	44 J	1,800 J	160 J	550	360 U	390 U	**75,000** U	370 U	28 J	34 J	370 J	**150,000** U
Chrysene		ug/kg	56,000	26,000 J	360 U	41 J	370 U	**83,000** J	110 J	380 U	3,000 J	380 U	300 J	390 U	64 J	1,100	230 J	730	360 U	17 J	16,000 J	370 U	20 J	27 J	840 J	27,000 J
Dibenz(a,h)anthracene		ug/kg	560	**74,000** U	360 U	360 U	370 U	**290,000** U	370 UJ	380 UJ	170 J	380 UJ	65 J	390 U	370 UJ	390 UR	42 J	160 J	360 U	390 UJ	**75,000** U	370 U	400 U	380 U	**1,500** U	**150,000** U
Indeno(1,2,3-cd)pyrene		ug/kg	5,600	4,300 J	360 U	360 U	370 U	**290,000** U	370 UJ	380 UJ	520 J	380 UJ	200 J	390 U	29 J	120 J	120 J	440	360 U	390 UJ	**75,000** U	370 U	13 J	17 J	1,500 U	**150,000** U
Total Carcinogenic PAHs				86,300	0	102	0	206,000	1,081	760	10,410	760	1,675	390	628	6,230	1,122	3,530	0	812	32,000	0	113	146	2,900	72,000
Total PAHs				1,262,800	1,687	3,303	152	5,273,000	1,946	1,140	31,400	1,303	3,254	437	930	11,724	2,004	7,686	360	1,280	1,096,000	65	195	254	41,870	1,810,000
Other Semivolatile Organic Compounds (ug/kg)																										
1,1'-Biphenyl		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachloropheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichloropheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichloropheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichloropheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylpheno		ug/kg	NL	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
3-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylpheno		ug/kg	500,000	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
4-Chloroaniline		ug/kg	NL	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
4-Methylpheno		ug/kg	500,000	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Benzoic acid		ug/kg	NL	NA	NA	NA	NA	NA	1,800 U	1,900 U	7,200 U	1,900 U	46 J	1,900 U	1,800 U	85 J	1,900 U	NA	NA	1,900 U	NA	NA	140 J	50 J	NA	NA
Benzyl alcoho		ug/kg	NL	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Butylbenzylphthalate		ug/kg	NL	NA	NA	NA	NA	NA	370 UJ	380 U	1,500 UJ	380 U	400 U	390 U	370 U	89 J	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Carbazole		ug/kg	NL	NA	NA	NA	NA	NA	19 J	380 U	120 J	380 U	31 J	390 U	370 U	96 J	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Di-n-butylphthalate		ug/kg	NL	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Di-n-octylphthalate		ug/kg	NL	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	370 U	390 UR	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Dibenzofuran		ug/kg	350,000	NA	NA	NA	NA	NA	370 U	380 U	110 J	380 U	400 U	390 U	370 U	37 J	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Diethylphthalate		ug/kg	NL	NA	NA	NA	NA	NA	370 U	7 J	1,500 U	380 U	400 U	390 U	370 U	390 U	390 U	NA	NA	7 J	NA	NA	400 U	380 U	NA	NA
N-Nitrosodiphenylamine (1		ug/kg	NL	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	380 U	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Phenol		ug/kg	500,000	NA	NA	NA	NA	NA	370 U	380 U	1,500 U	16 J	400 U	390 U	370 U	390 U	390 U	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
Hexachlorobenzene		ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate		ug/kg	NL	NA	NA	NA	NA	NA	370 UJ	380 U	1,500 UJ	380 U	400 U	390 U	370 U	650 B	180 JB	NA	NA	390 U	NA	NA	400 U	380 U	NA	NA
2,4-Dinitropheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloropheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitropheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylpheno		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylpheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylpheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitropheno		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachloropheno		ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzec
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this ar
was between IDL and contract required detection limit (metals
T - indicates total concentration detecter
- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	GP-11	GP-11	GP-11 (dup)	GP-12	GP-12	SB-65	SB-65	SB-66	SB-66	SB-67	SB-67	SB-58	SB-59	SB-59	SB-80	SB-80	SB-60	SB-87	SB-87	SB-61	SB-62	SB-77	SB-77
Sample ID:	Units		GP-11	GP-11	GP-11	GP-12	GP-12	CF-SB-65	CF-SB-65	CF-SB-66	CF-SB-66	CF-SB-67	CF-SB-67	CF-SB-58	CF-SB-59	CF-SB-59	CF-SB-80	CF-SB-80	CF-SB-60	CF-SB-87	CF-SB-87	CF-SB-61	CF-SB-62	SB-77	SB-77
Depth (ft):			(16-20)	(40-45)	(40-45)	(20-24)	(40-45)	(0-4)	(4-8)	(0-2)	(12-16)	(0-4)	(4-6)	(4-6)	(0-4)	(8-10)	(0-4)	(52-56)	(4-8)	(48-52)	(60-64)	(4-8)	(4-6)	(24-28)	(37-39)
Constituent Date			11/15/2001	11/15/2001	11/15/2001	11/14/2001	11/14/2001	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/29/1999	11/29/1999	06/03/2002	06/04/2002	11/30/1999	06/13/2002	06/13/2002	11/29/1999	11/29/1999	11/20/2001	11/20/2001
Pesticides/Polychlorinated Biphenyls (ug/kg)																									
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																									
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	NA	NA	NA	NA	NA	1 UJ	1 UJ	7 J	1 UJ	1 J	1 UJ	1 UJ	1 UJ	1 UJ	0 J	0 UJ	1 UJ	0 U	0 U	1 UJ	1 UJ	0 U	0 U
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																									
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	NA	NA	NA	NA	NA	4.50	2.50 U	7.20	3.1U	7.80	4.20	3.80 U	9.80	2.60 U	5.50	1.90	3.50 U	3.70	2.30	5.50	4.30	3.60	2.50
Barium	mg/kg	400	NA	NA	NA	NA	NA	41.20 B	43.40	89.40	29.20 B	103.00	38.50 B	90.00	174.00	143.00	186.00	47.70	135.00	47.90 J	50.50 J	147.00	104.00	51.10	112.00
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	NA	NA	NA	NA	NA	0.21 UR	0.20 UR	0.21 UR	0.17 UR	0.23 U	0.22 U	0.19 UR	0.68 B	0.22 UR	0.99 U	0.85 U	0.18 UR	1.00 U	0.99 U	0.26 U	0.21 U	0.21 U	0.25 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	NA	NA	NA	NA	NA	50.60	22.00	37.00	47.10	29.10	31.10	31.40	21.80	21.70	26.60	13.20	32.20	12.20	12.00	54.80	29.50	33.70 J	14.00 J
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	4.2	6.8	6.0	6.8	8.8	4.6 J	5.1 J	198.0	5.9 J	406.0 J	6.8 J	42.2	555.0 J	12.1	436.0	7.3	9.2 J	8.8 J	7.5 J	26.2 J	32.9 J	8.3 J	7.6 J
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	NA	NA	NA	NA	NA	0.01 U	0.01 U	0.20 J	0.00 U	1.20 J	0.02 J	0.31 J	0.56 J	0.09 J	1.30	0.09 U	0.03 J	0.07 U	0.10 U	0.19 J	0.03 J	0.00 J	0.00 J
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	NA	NA	NA	NA	NA	1.50	1.30	1.60	1.10	1.90	1.10 U	0.95 U	1.00 U	1.20	1.60 UJ	1.40 UJ	1.20	1.60 U	1.60 U	2.30	1.00 U	1.20 U	1.40 U
Silver	mg/kg	1,500	NA	NA	NA	NA	NA	0.21 UJ	0.20 UJ	0.21 UJ	0.17 UJ	0.23 U	0.22 U	0.19 UJ	0.20 U	0.22 UJ	0.33 J	0.25 U	0.18 UJ	0.30 UJ	0.30 UJ	0.26 U	0.21 U	0.19 U	0.23 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																									
TOC	mg/kg	NL	NA	NA	NA	NA	NA	1,080 J	1,260 J	23,600 J	1,210 J	7,390 J	630 J	3,810 J	65,600 J	3,280 J	NA	NA	3,660 J	NA	NA	3,180 J	2,720 J	NA	NA

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warns the data user to use caution when applying the results of this ar
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ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Units	Comercial Use Standards (ug/kg)	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)	SB-84	SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42	PRASB-1
Sample ID:				CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-98	CF-SB-84	CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42	PRASB-1 (13-14
Depth (ft):				(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)	(40-44)	(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	13-14
Constituent	Date			06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001	06/21/2002	06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	4/21/2009
Location:				63 Lynhurst Ave	63 Lynhurst Ave	63 Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Lynhurst Ave	Sidewalk	25 Willow Ave	25 Willow Ave	Bay Street	Block 2822	North of SIRR	Edgewater St	Edgewater St	Edgewater St	Edgewater St	Langere Place	Langere Place	89 Willow Ave
BTEX (ug/kg)																													
Benzene		ug/kg	44,000	6 U	5 U	4,800 J	11,000 U	6 J	3 J	6 U	6 U	6 U	6 U	6 U	6 U	6 U	0.2 J	6 U	6 U	6 U	6 U	6 U	0.5 J	6 U	NA	0.5 J	6 U	6 U	ND
Toluene		ug/kg	500,000	1 J	1 J	60,000	15,000	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	0.4 J	0.8 J	6 U	0.2 J	6 UJ	6 U	6 U	0.4 J	NA	0.5 J	6 UJ	0.3 J	ND
Ethylbenzene		ug/kg	390,000	6 U	5 U	6,600 J	10,000 J	3 J	1 J	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 U	6 U	6 U	NA	6 U	6 UJ	6 U	ND
Xylene (total)		ug/kg	500,000	6 U	2 J	84,000	130,000	2 J	1 J	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 UJ	6 U	6 U	6 U	NA	6 U	6 UJ	6 U	ND
Volatile Organic Compounds (ug/kg)																													
1,2,4-Trimethylbenzene		ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,3,5-Trimethylbenzene		ug/kg	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
2-Butanone		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
4-Methyl-2-Pentanone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23
Carbon Tetrachloride		ug/kg	22,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Isopropylbenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Styrene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
n-Propylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
p-Isopropyltoluene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
tert-Butylbenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,1,1-Trichloroethane		ug/kg	500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,1,2,2-Tetrachloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		ug/kg	240,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,1-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,2,3-Trichlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,2-Dichloroethane		ug/kg	30,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,2-Dichloroethene(trans		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,2-Dichloropropane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		ug/kg	280,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,4-Dichlorobenzene		ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
1,4-Dioxane		ug/kg	130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
2-Hexanone		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Chloroethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Chloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
cis-1,3-Dichloropropene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Methylcyclohexane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene		ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene		ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene		ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Trichloroethene		ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Vinyl chloride		ug/kg	13,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzec
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)	SB-84	SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42	PRASB-1
Sample ID:	Units		CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-98	CF-SB-84	CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42	PRASB-1 (13-14
Depth (ft):			(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)	(40-44)	(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	13-14
Constituent	**Date**		06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001	06/21/2002	06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	4/21/2009
PAHs (ug/kg)																												
Non-Carcinogenic PAHs																												
Naphthalene	ug/kg	500,000	150 J	100 J	800,000 J	2,100,000	95 J	110 J	360 U	370 U	410 U	370 U	360 U	380 U	410 U	210 J	65 J	94 J	17 J	94 J	78 J	8,100 U	51 J	8,100 U	220 J	60 J	60 J	350
2-Methylnaphthalene	ug/kg	NL	360 U	360 U	520,000	1,400,000	360 U	59 J	360 U	370 U	410 U	370 U	360 U	380 U	410 U	160 J	53 J	64 J	19 J	93 J	83 J	8,200 U	42 J	8,100 U	190 J	90 J	47 J	NA
Acenaphthene	ug/kg	500,000	28 J	360 U	15,000 J	42,000 J	360 U	18 J	37 J	370 U	410 U	370 U	360 U	380 U	410 U	250 J	110 J	60 J	46 J	120 J	43 J	8,100 U	810 UJ	8,100 U	280 J	23 J	62 J	ND
Acenaphthylene	ug/kg	500,000	360 U	360 U	170,000 J	420,000	360 U	83 J	180 J	370 U	410 U	370 U	360 U	380 U	410 U	1,800 J	470	540	61 J	1,000	640 J	730 J	360 J	300 J	3,900	240 J	340 J	150
Anthracene	ug/kg	500,000	360 U	360 U	46,000 J	120,000 J	360 U	48 J	320 J	370 U	410 U	370 U	360 U	380 U	410 U	1,900 J	590	440	160 J	1,200	460 J	610 J	440 J	320 J	2,800	230 J	420	560
Benzo(g,h,i)perylene	ug/kg	500,000	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U	370 U	410 U	370 U	360 U	380 U	410 U	3,100 J	240 J	160 J	110 J	320 J	200 J	1,200 J	71 J	8,100 UJ	840 J	61 J	89 J	970
Fluoranthene	ug/kg	500,000	360 U	360 U	43,000 J	110,000 J	360 U	50 J	350 J	370 U	410 U	370 U	360 U	380 U	410 U	12,000	1,900	1,400	640	3,800	1,100	2,500 J	1,800 J	1,200 J	6,300	540	1,100	5400
Fluorene	ug/kg	500,000	360 U	360 U	70,000 J	180,000 J	360 U	390 U	260 J	370 U	410 U	370 U	360 U	380 U	410 U	320 J	130 J	74 J	60 J	170 J	42 J	8,200 U	56 J	8,100 U	380 J	28 J	70 J	210
Phenanthrene	ug/kg	500,000	360 U	360 U	180,000 J	420,000	360 U	170 J	1,200	370 U	410 U	370 U	360 U	380 U	410 U	5,200	1,200	900	520	1,700	460 J	1,400 J	1,100 J	930 J	5,000	390	680	550
Pyrene	ug/kg	500,000	360 U	360 U	65,000 J	150,000 J	360 U	57 J	540	370 U	410 U	370 U	360 U	380 U	410 U	13,000	2,100	1,400	870	4,300	1,300	2,600 J	1,100 J	2,000 J	6,700	600	1,100	4600
Total Non-Carcinogenic PAHs			178	100	1,909,000	4,942,000	95	595	2,887	0	0	0	0	0	0	37,940	6,858	5,132	2,503	12,797	4,406	9,040	5,020	4,750	26,610	2,262	3,968	
Carcinogenic PAHs																												
Benz(a)anthracene	ug/kg	5,600	360 U	360 U	26,000 J	54,000 J	360 U	390 U	180 J	370 U	410 U	370 U	360 U	380 U	410 U	9,400	1,600	1,000	540	3,000	780 J	1,100 J	1,000 J	780 J	5,400	380 J	800	2800
Benzo(a)pyrene	ug/kg	1,000	360 U	360 U	16,000 J	360,000 U	360 U	390 U	120 J	370 U	410 U	370 U	360 U	380 U	410 U	8,800	1,300	1,000	530	2,800	740 J	1,400 J	1,200	770 J	5,200	450 J	840 J	3400
Benzo(b)fluoranthene	ug/kg	5,600	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U	370 U	410 U	370 U	360 U	380 U	410 U	8,200	1,200	1,000	520	2,500	710 J	1,300 J	1,600	730 J	4,800	680 J	1,100 J	4800
Benzo(k)fluoranthene	ug/kg	56,000	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U	370 U	410 U	370 U	360 U	380 U	410 U	10,000 J	1,700 J	1,400 J	850 J	4,000 J	1,300 J	2,100 J	1,500	740 J	6,600 J	940 J	1,800 J	1300
Chrysene	ug/kg	56,000	360 U	360 U	26,000 J	57,000 J	360 U	390 U	190 J	370 U	410 U	370 U	360 U	380 U	410 U	12,000	1,700	1,200	590	3,200	990	1,700 J	1,800 J	1,400 J	6,000	550	1,100	2900
Dibenz(a,h)anthracene	ug/kg	560	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U	370 U	410 U	370 U	360 U	380 U	410 U	1,600 J	140 J	80 J	46 J	170 J	95 J	490 J	810 UJ	8,100 UJ	500 J	390 UJ	56 J	300
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	360 U	360 U	190,000 U	360,000 U	360 U	390 U	360 U	370 U	410 U	370 U	360 U	380 U	410 U	4,000	360 J	240 J	140 J	490 J	260 J	1,200 J	82 J	8,100 UJ	1,200 J	72 J	130 J	1200
Total Carcinogenic PAHs			0	0	68,000	111,000	0	0	490	0	0	0	0	0	0	54,000	8,000	5,920	3,216	16,160	4,875	9,290	7,182	4420	29,700	3,072	5,826	
Total PAHs			178	100	1,977,000	5,053,000	95	595	3,377	ND	ND	ND	ND	ND	ND	91,940	14,858	11,052	5,719	28,957	9,281	18,330	12,202	9170	56,310	5,334	9,794	
Other Semivolatile Organic Compounds (ug/kg)																												
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16,000 U	260 J	2,000 U	1,800 U	3,900 U	4,000 U	40,000 U	4,000 UJ	40,000 U	7,300 U	1,900 U	2,000 U	NA
2-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	170
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 UJ	800 U	840 U	8,100 U	810 U	8,100 U	1,500 U	38 J	410 U	ND
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16,000 U	120 J	310 J	37 J	310 J	1,400 J	40,000 U	150 J	40,000 U	180 J	170 J	160 J	NA
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	130 J	4,200	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	210 J	61 J	65 J	1,300	150 J	62 J	510 J	610 J	8,100 UJ	1,500 U	1,000	100 J	NA
Carbazole	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	710 J	160 J	120 J	69 J	170 J	87 J	220 J	150 J	8,100 U	660 J	71 J	140 J	130
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	820 U	8,100 U	1,500 U	390 U	410 U	NA
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	350,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	140 J	56 J	37 J	29 J	68 J	52 J	8,100 U	40 J	8,100 U	280 J	26 J	40 J	120
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Hexachlorobenzene	ug/kg	6,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	8,100 U	810 UJ	8,100 U	1,500 U	390 U	410 U	ND
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	33 J	8,100 U	810 U	8,100 U	1,500 U	390 U	410 U	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,300 U	410 U	420 U	380 U	800 U	840 U	29,000 J	4,000 JB	4,400 JB	1,500 U	470 B	410 U	NA
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	6700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND

Notes:
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mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	SB-79	SB-79 (dup)	SB-79A	SB-78	SB-78	SB-78 (dup)	SB-84	SB-84	SB-85	SB-85	SB-86	SB-86 (dup)	SB-86
Sample ID:	Units		CF-SB-79	CF-SB-79	CF-SB-79A	SB-78	SB-78	SB-98	CF-SB-84	CF-SB-84	CF-SB-85	CF-SB-85	CF-SB-86	CF-SB-86	CF-SB-86
Depth (ft):			(24-28)	(20-24)	(51-55)	(49-50)	(114-115)	(114-115)	(40-44)	(48-52)	(40-44)	(48-51)	(40-44)	(40-44)	(48-52)
Constituent Date			06/04/2002	06/04/2002	06/05/2002	12/13/2001	12/13/2001	12/13/2001	06/21/2002	06/21/2002	06/19/2002	06/19/2002	06/20/2002	06/20/2002	06/20/2002
Pesticides/Polychlorinated Biphenyls (ug/kg															
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)															
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/kg	27	0 UJ	0 UJ	0 UJ	0 U	0 U	0 U	0 R	0 R	0 U	0 U	0 U	0 U	0 U
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)															
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	3.10	3.30	1.80 J	2.80	1.10 J	1.30 J	2.80	1.90	2.00 J	3.70	2.60	3.50	5.20
Barium	mg/kg	400	51.20	64.70	44.50	136.00	87.10 J	33.10 J	67.40	42.20	53.10	38.00	59.10	67.00	52.40
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	1.00 U	0.89 U	0.98 U	0.31 J	0.72 J	2.80 U	0.98 U	0.85 U	1.10 U	0.81 U	0.90 U	0.88 U	1.00 U
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	17.80	27.20	11.40 J	13.30	40.60	12.30 J	14.90	12.80	10.60	20.50	12.70	18.90	13.10
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	7.2	6.9	6.8 J	7.6 J	91.4 J	2.4 B	7.2	6.3	5.6	3.7	6.0	8.4	6.6
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	0.09 U	0.09 U	0.08 U	0.07 U	0.07 U	0.08 J	0.10 UJ	0.09 UJ	0.10 U	0.07 U	0.08 U	0.10 U	0.10 U
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	1.60 UJ	1.40 UJ	1.60 UJ	16.40 U	15.10 U	15.20 U	1.60 U	1.40 U	1.80 U	1.30 U	1.40 U	1.40 U	1.60 U
Silver	mg/kg	1,500	0.30 U	0.27 U	0.30 U	3.10 U	0.51	2.80 U	0.29 U	0.25 U	0.33 U	0.24 U	0.27 U	0.26 U	0.30 U
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)															
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Site ID:	SS-34	SS-35	SS-36	SS-33	SS-37	SS-38	SS-39	SS-39 (dup)	SS-39 (dup)	SS-40	SS-41	SS-42	PRASB-1
Sample ID:	CF-SS-34	CF-SS-35	CF-SS-36	CF-SS-33	CF-SS-37	CF-SS-38	CF-SS-39	CF-SS-69	CF-SS-69DL	CF-SS-40	CF-SS-41	CF-SS-42	PRASB-1 (13-14)
Depth (ft):	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	(0-0.16)	13-14
Constituent Date	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	11/30/1999	4/21/2009
Pesticides/Polychlorinated Biphenyls (ug/kg													
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)													
Cyanide, Amenable	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	0.6 UJ	0.61 UJ	0.64 UJ	0.57 UJ	0.61 UJ	0.63 UJ	1.18 J	0.64 UJ	NA	0.59 UJ	0.6 UJ	2.74 J	2.30
Cyanide, Free	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.80
Available Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)													
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7.9	9.3	8.4	6.7	10.3	10.1	5.6	7.1	NA	**26.4**	11.6	8.5	6.1
Barium	94.8	110	124	106	140	160	76	83.8	NA	59.9	131	126	106.0
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	0.63 B	0.32 B	0.53 B	0.21 UN	1.7	1.4	1.4	1.3 NJ	NA	0.23 B	1.1	0.35 B	ND
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	31.3	19.3	19.9	36	31.8	31.9	45.4	36.7	NA	19.6	18.8	66.1	54.3
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	225 J	251 J	382 J	169 J	744 J	350 J	283 J	337	NA	352 J	400 J	226 J	**1,080**
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	0.29 J	0.64 J	0.62 J	0.23	0.63 J	0.22 J	0.2 J	0.27 NJ	NA	0.82 NJ	0.18 NJ	0.2 NJ	1.10
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	125.0
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	2	2.2	1.5	1.6 J	1.3	2.2	1.6	1.2	NA	1.1	2.4	1.8	0.52
Silver	0.22 U	0.21 U	0.2 J	0.21 U	0.31 J	0.24 J	0.47 J	0.26 JB	NA	0.2 U	0.16 U	0.19 U	0.86
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)													
TOC	37,800 J	37,700 J	48,400 J	15,000 J	65,500 J	105,000 J	60,000 J	53,400 J	NA	36,700 J	73,800 J	32,500 J	NA

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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A	PRASB-7B	PRASB-7D	PRASB-8	PRASB-9
Sample ID:	Units		PRASB-1 (24-25	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24	PRASB-3A (3-4)	PRASB-4A(4.5-7.5	PRASB-5(6-8)	PRASB-5(16-17	PRASB-5A(12-16	PRASB-5A(24-25	PRASB-5B(7-8)	PRASB-5B(13-15	PRASB-5B(19-20	PRASB-5C(7-8)	PRASB-5C(12-13	PRASB-7A(4-5)	PRASB-7B(5-7)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5
Depth (ft):			24-25	3-4	6-7	23-24	3-4	4.5-7.5	6-8	16-17	12-16	24-25	7-8	13-15	19-20	7-8	12-13	4-5	5-7	5-7	5-6	3.5-4.5
Constituent Date			4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009
Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
BTEX (ug/kg)																						
Benzene	ug/kg	44,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	390,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (total)	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (ug/kg)																						
1,2,4-Trimethylbenzene	ug/kg	190,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	ug/kg	190,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	500,000	35	29	17	86	ND	ND	ND	4	ND	21	ND	21	20	6	22	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/kg	22,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	42	14	10	ND	13	10	ND	ND
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	500000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/kg	30,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene(trans	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	130,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	ug/kg	130,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	200,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	13,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standa
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the s
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A	PRASB-7B	PRASB-7D	PRASB-8	PRASB-9
Sample ID:	Units		PRASB-1 (24-25	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24	PRASB-3A (3-4)	PRASB-4A(4.5-7.5	PRASB-5(6-8)	PRASB-5(16-17	PRASB-5A(12-16	PRASB-5A(24-25	PRASB-5B(7-8)	PRASB-5B(13-15	PRASB-5B(19-20	PRASB-5C(7-8)	PRASB-5C(12-13	PRASB-7A(4-5)	PRASB-7B(5-7)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5
Depth (ft):			24-25	3-4	6-7	23-24	3-4	4.5-7.5	6-8	16-17	12-16	24-25	7-8	13-15	19-20	7-8	12-13	4-5	5-7	5-7	5-6	3.5-4.5
Constituent Date			4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/21/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009	4/23/2009	4/22/2009	4/23/2009
PAHs (ug/kg)																						
Non-Carcinogenic PAHs																						
Naphthalene	ug/kg	500,000	ND	ND	250	ND	150	ND	890	7800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	860
2-Methylnaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	500,000	ND	ND	160	ND	ND	ND	680	440.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	160
Acenaphthylene	ug/kg	500,000	ND	ND	200	ND	ND	ND	240	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1500
Anthracene	ug/kg	500,000	ND	ND	1200	ND	ND	ND	1,700	100	ND	ND	ND	97	ND	ND	ND	ND	ND	ND	ND	580
Benzo(g,h,i)perylene	ug/kg	500,000	ND	120	910	ND	210	ND	820	200	ND	ND	ND	880	ND	ND	ND	ND	ND	ND	ND	910
Fluoranthene	ug/kg	500,000	ND	410	6300	ND	460	ND	5,700	450	300	ND	ND	1,000	ND	ND	220	ND	ND	86	ND	2400
Fluorene	ug/kg	500,000	ND	ND	530	ND	ND	ND	790	140	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	360
Phenanthrene	ug/kg	500,000	ND	210	2700	ND	130	ND	6,100	290	210	ND	ND	410	ND	ND	190	ND	ND	ND	ND	1700
Pyrene	ug/kg	500,000	ND	370	5200	ND	450	ND	5,100	480	280	ND	ND	1,000	ND	ND	200	ND	ND	80	ND	3900
Total Non-Carcinogenic PAHs																						
Carcinogenic PAHs																						
Benz(a)anthracene	ug/kg	5,600	ND	230	2400	ND	280	ND	2,300	280	140	ND	ND	790	ND	ND	110	ND	ND	ND	ND	2,800
Benzo(a)pyrene	ug/kg	1,000	250	200	**2300**	275	350	ND	**1,900**	310	120	ND	ND	**1,100**	ND	ND	78	ND	ND	ND	ND	**2,200**
Benzo(b)fluoranthene	ug/kg	5,600	ND	230	3000	ND	390	ND	1,700	260	ND	ND	ND	1,000	ND	ND	ND	ND	ND	ND	ND	3,100
Benzo(k)fluoranthene	ug/kg	56,000	ND	130	820	ND	210	ND	1,500	310	130	ND	ND	500	ND	ND	ND	ND	ND	ND	ND	2,000
Chrysene	ug/kg	56,000	ND	270	2100	ND	230	ND	2,200	300	160	ND	ND	690	ND	ND	110	ND	ND	ND	ND	3,300
Dibenz(a,h)anthracene	ug/kg	560	ND	ND	210	ND	ND	ND	360	ND	ND	ND	ND	170	ND	ND	ND	ND	ND	ND	ND	300
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	ND	100	970	ND	200	ND	830	180	ND	ND	ND	760	ND	ND	ND	ND	ND	ND	ND	950
Total Carcinogenic PAHs																						
Total PAHs																						
Other Semivolatile Organic Compounds (ug/kg																						
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	ND	ND	190	ND	ND	ND	590	220	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	130
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	350,000	ND	ND	350	ND	ND	ND	630	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	500,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ug/kg	6,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	500,000	ND	ND	ND	ND	ND	ND	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	6700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
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warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
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- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	PRASB-1	PRASB-2	PRASB-2	PRASB-2	PRASB-3A	PRASB-4A	PRASB-5	PRASB-5	PRASB-5A	PRASB-5A	PRASB-5B	PRASB-5B	PRASB-5B	PRASB-5C	PRASB-5C	PRASB-7A	PRASB-7B	PRASB-7D	PRASB-8	PRASB-9
Sample ID:	Units		PRASB-1 (24-25	PRASB-2 (3-4)	PRASB-2 (6-7)	PRASB-2 (23-24	PRASB-3A (3-4)	PRASB-4A(4.5-7.	PRASB-5(6-8)	PRASB-5(16-17	PRASB-5A(12-16	PRASB-5A(24-25	PRASB-5B(7-8)	PRASB-5B(13-15	PRASB-5B(19-20	PRASB-5C(7-8)	PRASB-5C(12-13	PRASB-7A(4-5)	PRASB-7B(5-7)	PRASB-7D(5-7)	PRASB-8(5-6)	PRASB-9(3.5-4.5
Depth (ft):			24-25	3-4	6-7	23-24	3-4	4.5-7.5	6-8	16-17	12-16	24-25	7-8	13-15	19-20	7-8	12-13	4-5	5-7	5-7	5-6	3.5-4.5
Constituent	**Date**		**4/21/2009**	**4/21/2009**	**4/21/2009**	**4/21/2009**	**4/21/2009**	**4/22/2009**	**4/23/2009**	**4/23/2009**	**4/22/2009**	**4/22/2009**	**4/22/2009**	**4/22/2009**	**4/22/2009**	**4/23/2009**	**4/23/2009**	**4/22/2009**	**4/23/2009**	**4/23/2009**	**4/22/2009**	**4/23/2009**
Pesticides/Polychlorinated Biphenyls (ug/kg																						
4,4'-DDE		ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT		ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																						
Cyanide, Amenable		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total		mg/kg	27	ND	ND	8.40	1.20	10.1	ND	ND	11.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17.10
Cyanide, Free		mg/kg	NL	ND	ND	ND	ND	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.50	ND	ND	ND	ND
Available Cyanide		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																						
Aluminum		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		mg/kg	16	5.8	5.90	4.00	10.10	3.5	2.6	2.2	7.6	2.9	2.5	5.10	11.30	7.10	1.80	3.10	3.6	4.40	3.90	4.6	15
Barium		mg/kg	400	144.0	123.00	43.10	170.00	62.7	102.0	33.1	61.8	38.9	**534.0**	97.20	59.10	210.00	32.10	52.40	56.7	44.20	42.10	43.7	223
Beryllium		mg/kg	590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		mg/kg	9.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Calcium		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		mg/kg	400	27.3	25.30	20.00	39.60	30.1	24.8	44.0	29.3	22.8	30.7	55.20	40.20	119.00	21.90	20.40	25	40.10	50.20	23.2	65.4
Cobalt		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		mg/kg	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		mg/kg	1,000	14.7	261	145	11.50	74.9	18.2	13.0	126.0	29.6	5.6	15.80	126	52.20	9.70	228	30.3	41.60	48.30	17.7	489
Magnesium		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		mg/kg	2.80	ND	0.45	1.70	ND	0.320	0.049	ND	0.19	0.22	0.23	0.29	0.67	0.04	0.22	0.62	0.043	ND	0.08	0.18	1.30
Nickel		mg/kg	310	60.20	61.20	87.80	282.0	146.0	221.0	272.0	153.0	137.0	201.0	**379**	247	**515**	150	95.60	79.8	**333**	**622**	199	291
Potassium		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		mg/kg	1,500	ND	0.78	0.63	ND	ND	0.430	ND	0.770	ND	3.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82
Silver		mg/kg	1,500	0.30	0.49	0.19	0.14	0.092	0.160	0.070	0.140	ND	0.22	0.18	0.18	0.22	0.08	0.18	0.079	0.20	0.16	0.10	0.37
Sodium		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		mg/kg	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																						
TOC		mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and th
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this a
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC a
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

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Site ID:		Comercial Use Standards (ug/kg)	PRASB-15		PRASB-15		PRASB-15		PRASB-16		PRASB-16		PRASB-16		PRASB-17		PRASB-17		PRASB-17		PRASB-18		PRASB-18		PRASB-18		PRASB-19		PRASB-19		PRASB-19		PRASB-20-B	PRASB-20-C	PRASB-21-B	PRASB-21-C
Sample ID:	Units		PRASB-15(4-5)		PRASB-15(30-35)		PRASB-15(37.5-40)		PRASB-16(4-5)		PRASB-16(5-10)		PRASB-16(32.5-35)		PRASB-17(2-3)		PRASB-17(15.17.5)		PRASB-17(35-40)		PRASB-18(4-5)		PRASB-18(17.5-20)		PRASB-18(30-35)		PRASB-19(4-5)		PRASB-19(20-22.5)		PRASB-19(35-40)		PRASB-20-B	PRASB-20-C	PRASB-21-B	PRASB-21-C
Depth (ft):			4-5		30-35		37.5-40		4-5		5-10		32.5-35		2-3		15-17.5		35-40		4-5		17.5-20		30-35		4-5		20-22.5		35-40		0-7	0-7	0-7	0-7
Constituent Date			11/9/2011		11/10/2011		11/10/2011		11/9/2011		11/10/2011		11/10/2011		11/9/2011		11/10/2011		11/10/2011		11/9/2011		11/11/2011		11/11/2011		11/9/2011		11/11/2011		11/11/2011		12/28/2011	12/28/2011	12/28/2011	12/28/2011
Location:			Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		Block 2822		89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
BTEX (ug/kg)																																				
Benzene	ug/kg	44,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	460		1	U	1.3	U	4.6		1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Toluene	ug/kg	500,000	0.6	J	0.97	U	1.1	U	0.4	J	1.2	U	0.84	J	0.5	J	1,900		0.68	J	0.92	J	1	U	1.3		0.56	J	1.1	U	1	U	NA	NA	NA	NA
Ethylbenzene	ug/kg	390,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	6.4		1.4	U	2,300		2.3		1.3	U	11		9.5		1.2	U	0.62	J	1	U	NA	NA	NA	NA
Xylene (total)	ug/kg	500,000	ND	ND	ND	ND	0.58		ND	ND	ND	ND	2.3		ND	ND	4,500		1.2		ND	ND	2.3		6.5		ND	ND	ND	ND	ND	ND	NA	NA	NA	NA
Volatile Organic Compounds (ug/kg)																																				
1,2,4-Trimethylbenzene	ug/kg	190,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
2-Butanone	ug/kg	500,000	R	R	R	R	R	R	2.8	J	7	J	R	R	R	R	R	R	10	U	5.5	J	2.6	J	1.2	J	R	R	11	U	1.5	J	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	11	UJ	9.7	UJ	11	UJ	12	UJ	12	UJ	11	UJ	14	UJ	1100	U	10	UJ	4.6	J	10	UJ	11	UJ	12	UJ	11	UJ	10	UJ	NA	NA	NA	NA
Acetone	ug/kg	500,000	30	J	15		57	J	71		72	J	14	J	13	J	R	R	10	U	95		30	J	9	J	12	U	11	U	12	J	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	22,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	90	J	1	U	1.3	U	0.54	J	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	73		33		35		16		41		28		39		110	U	1	U	110		4.9		4.5		61		2.1	U	6.8		NA	NA	NA	NA
Styrene	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	2.1		1.4	U	640		0.66	J	1.3	U	1	U	0.63	J	1.2	U	1.1	U	1	U	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	UJ	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	UJ	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	UJ	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	56	UJ	49	UJ	55	UJ	61	UJ	61	UJ	53	UJ	72	UJ	5300	UJ	52	UJ	67	UJ	51	UJ	53	UJ	62	UJ	56	UJ	50	UJ	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	11	U	9.7	UJ	11	U	12	UJ	12	U	11	U	14	UJ	1100	UJ	10	U	13	UJ	10	U	11	U	12	UJ	11	U	10	U	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Bromoform	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Bromomethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	1.1	U	0.97	U	0.97	J	1.2	U	4.3		0.69	J	1.4	U	110	UJ	1	U	2.3		1	U	1.1	U	1.2	U	1.1	U	0.47	J	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Chloroethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Chloroform	ug/kg	350,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Chloromethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	210	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	0.46	J	0.97	U	1.1	U	1.2	U	0.46	J	1.1	U	1.4	U	110	U	1	U	0.91	J	1	U	1.1	U	0.59	J	1.1	U	1	U	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	1.1	U	0.97	U	1.1	U	1.2	U	1.2	U	1.1	U	1.4	U	110	U	1	U	1.3	U	1	U	1.1	U	1.2	U	1.1	U	1	U	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzed
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sample
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected based
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this ar
was between IDL and contract required detection limit (metals
T - indicates total concentration detecter
- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:			Comercial Use Standards (ug/kg)	PRASB-15		PRASB-15		PRASB-15		PRASB-16		PRASB-16		PRASB-16		PRASB-17		PRASB-17		PRASB-17		PRASB-18		PRASB-18		PRASB-18		PRASB-19		PRASB-19		PRASB-19		PRASB-20-B		PRASB-20-C		PRASB-21-B		PRASB-21-C	
Sample ID:				PRASB-15(4-5)		PRASB-15(30-35)		PRASB-15(37.5-40)		PRASB-16(4-5)		PRASB-16(5-10)		PRASB-16(32.5-35)		PRASB-17(2-3)		PRASB-17(15.17.5)		PRASB-17(35-40)		PRASB-18(4-5)		PRASB-18(17.5-20)		PRASB-18(30-35)		PRASB-19(4-5)		PRASB-19(20-22.5)		PRASB-19(35-40)		PRASB-20-B		PRASB-20-C		PRASB-21-B		PRASB-21-C	
Depth (ft):				4-5		30-35		37.5-40		4-5		5-10		32.5-35		2-3		15-17.5		35-40		4-5		17.5-20		30-35		4-5		20-22.5		35-40		0-7		0-7		0-7		0-7	
Constituent	**Date**			**11/9/2011**		**11/10/2011**		**11/10/2011**		**11/9/2011**		**11/10/2011**		**11/10/2011**		**11/9/2011**		**11/10/2011**		**11/10/2011**		**11/9/2011**		**11/11/2011**		**11/11/2011**		**11/9/2011**		**11/11/2011**		**11/11/2011**		**12/28/2011**		**12/28/2011**		**12/28/2011**		**12/28/2011**	
PAHs (ug/kg)																																							
Non-Carcinogenic PAHs																																							
Naphthalene		ug/kg	500,000	390	U	370	U	380	U	2,100	U	440	U	190	J	520	U	1,700		500		200	J	380	U	170	J	68	J	400	U	370	U	NA		NA		NA		NA	
2-Methylnaphthalene		ug/kg	NL	390	U	370	U	380	U	2,100	U	440	U	370	U	520	U	3,100		370	U	170	J	380	U	76	J	420	U	400	U	370	U	NA		NA		NA		NA	
Acenaphthene		ug/kg	500,000	390	U	370	U	380	U	620	J	440	U	370	U	520	U	460		370	U	190	J	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Acenaphthylene		ug/kg	500,000	390	U	370	U	380	U	510	J	440	U	370	U	170	J	2,100		370	U	1,400		380	U	370	U	220	J	400	U	370	U	NA		NA		NA		NA	
Anthracene		ug/kg	500,000	390	U	370	U	380	U	2,200		440	U	370	U	520	U	2,100		370	U	1,100		380	U	370	U	160	J	400	U	370	U	NA		NA		NA		NA	
Benzo(g,h,i)perylene		ug/kg	500,000	390	U	370	U	380	U	6,500		440	U	370	U	220	J	850		370	U	3,300		380	U	370	U	700		400	U	370	U	NA		NA		NA		NA	
Fluoranthene		ug/kg	500,000	390	U	370	U	380	U	10,000		440	U	370	U	210	J	2,900		370	U	3,300		380	U	370	U	890		400	U	370	U	NA		NA		NA		NA	
Fluorene		ug/kg	500,000	390	U	370	U	380	U	1,100	J	440	U	370	U	520	U	2,400		370	U	380	J	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Phenanthrene		ug/kg	500,000	390	U	370	U	380	U	12,000		440	U	370	U	150	J	8,500		370	U	3,500		380	U	370	U	520		400	U	370	U	NA		NA		NA		NA	
Pyrene		ug/kg	500,000	390	U	370	U	380	U	28,000		440	U	370	U	360	J	3,500		370	U	5,300		380	U	370	U	1100		400	U	370	U	NA		NA		NA		NA	
Total Non-Carcinogenic PAHs																																							
Carcinogenic PAHs																																							
Benz(a)anthracene		ug/kg	5,600	39	U	37	U	38	U	**8,400**		30	J	37	U	52	U	1,700		15	J	3,900		38	U	37	U	980		40	U	37	U	NA		NA		NA		NA	
Benzo(a)pyrene		ug/kg	1,000	39	U	37	U	38	U	**6,700**		18	J	37	U	410		**1,400**		12	J	**5,500**		38	U	37	U	960		40	U	37	U	NA		NA		NA		NA	
Benzo(b)fluoranthene		ug/kg	5,600	39	U	37	U	38	U	**7,300**		22	J	37	U	440		1,400		13	J	**6,900**		38	U	37	U	1,700		40	U	37	U	NA		NA		NA		NA	
Benzo(k)fluoranthene		ug/kg	56,000	39	U	37	U	38	U	2,900		11	J	37	U	52	U	450		37	U	2,200		38	U	37	U	560		40	U	37	U	NA		NA		NA		NA	
Chrysene		ug/kg	56,000	390	U	370	U	380	U	11,000		440	U	370	U	330	J	1,600		370	U	5,700		380	U	370	U	1,200		400	U	370	U	NA		NA		NA		NA	
Dibenz(a,h)anthracene		ug/kg	560	39	U	37	U	38	U	**1,600**		44	U	37	U	52	U	210		37	U	46	U	38	U	37	U	42	U	40	U	37	U	NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene		ug/kg	5,600	39	U	37	U	38	U	4,600		44	U	37	U	170		1,100		9.4	J	2,800		38	U	37	U	670		40	U	37	U	NA		NA		NA		NA	
Total Carcinogenic PAHs																																							
Total PAHs																																							
Other Semivolatile Organic Compounds (ug/kg																																							
1,1'-Biphenyl		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	710		370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
1,2,4,5-Tetrachlorobenzene		ug/kg	NL	390	U	370	UJ	380	UJ	2100	U	440	UJ	370	UJ	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2,2'-oxybis(1-Chloropropane		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2,3,4,6-Tetrachlorophenol		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2,4,5-Trichlorophenol		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2,4,6-Trichlorophenol		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2,4-Dichlorophenol		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2,4-Dimethylphenol		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
3-Nitroaniline		ug/kg	NL	790	U	750	U	780	U	4200	U	890	U	760	U	1100	U	770	U	750	U	930	U	770	U	750	U	850	U	810	U	740	U	NA		NA		NA		NA	
2-Methylphenol		ug/kg	500,000	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
4-Chloroaniline		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
4-Methylphenol		ug/kg	500,000	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Benzoic acid		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Benzyl alcohol		ug/kg	NL	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Butylbenzylphthalate		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Carbazole		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	450		370	U	150	J	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Di-n-butylphthalate		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Di-n-octylphthalate		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Dibenzofuran		ug/kg	350,000	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	790		370	U	150	J	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Diethylphthalate		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
N-Nitrosodiphenylamine (1		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Phenol		ug/kg	500,000	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Hexachlorobenzene		ug/kg	6,000	39	U	37	U	38	U	210	U	44	U	37	U	52	U	38	U	37	U	46	U	38	U	37	U	42	U	40	U	37	U	NA		NA		NA		NA	
Isophorone		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
bis(2-Ethylhexyl)phthalate		ug/kg	NL	390	U	140	J	380	U	2100	U	440	U	370	U	520	U	100	J	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2,4-Dinitrophenol		ug/kg	NL	1200	U	1100	U	1200	U	6300	U	1300	U	1100	U	1600	U	1100	U	1100	U	1400	U	1200	U	1100	U	1300	U	1200	U	1100	U	NA		NA		NA		NA	
2,4-Dinitrotoluene		ug/kg	NL	79	U	75	U	78	U	420	U	89	U	76	U	110	U	77	U	75	U	93	U	77	U	75	U	85	U	81	U	74	U	NA		NA		NA		NA	
2,6-Dinitrotoluene		ug/kg	NL	79	U	75	U	78	U	420	U	89	U	76	U	110	U	77	U	75	U	93	U	77	U	75	U	85	U	81	U	74	U	NA		NA		NA		NA	
2-Chloronaphthalene		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2-Chlorophenol		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
2-Nitroaniline		ug/kg	NL	790	U	750	U	780	U	4200	U	890	U	760	U	1100	U	770	U	750	U	930	U	770	U	750	U	850	U	810	U	740	U	NA		NA		NA		NA	
2-Nitrophenol		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
3-Methylphenol		ug/kg	500,000	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
3,3'-Dichlorobenzidine		ug/kg	NL	790	U	750	U	780	U	4200	U	890	U	760	U	1100	U	770	U	750	U	930	U	770	U	750	U	850	U	810	U	740	U	NA		NA		NA		NA	
4,6-Dinitro-2-methylphenol		ug/kg	NL	1200	U	1100	U	1200	U	6300	U	1300	U	1100	U	1600	U	1100	U	1100	U	1400	U	1200	U	1100	U	1300	U	1200	U	1100	U	NA		NA		NA		NA	
4-Bromophenyl phenyl ethe		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
4-Chloro-3-methylphenol		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
4-Chlorophenyl phenyl ethe		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
4-Nitroaniline		ug/kg	NL	790	U	750	U	780	U	4200	UJ	890	U	760	U	1100	UJ	770	U	750	U	930	UJ	770	U	750	U	850	UJ	810	U	740	U	NA		NA		NA		NA	
4-Nitrophenol		ug/kg	NL	1200	U	1100	U	1200	U	6300	UJ	1300	U	1100	U	1600	UJ	1100	U	1100	U	1400	UJ	1200	U	1100	U	1300	UJ	1200	U	1100	U	NA		NA		NA		NA	
Acetophenone		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Atrazine		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Benzaldehyde		ug/kg	NL	390	UJ	370	UJ	380	UJ	2100	UJ	440	UJ	370	UJ	520	UJ	380	U	370	UJ	460	UJ	380	U	370	UJ	420	UJ	400	UJ	370	UJ	NA		NA		NA		NA	
bis(2-Chloroethoxy)methane		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
bis(2-Chloroethyl) ethe		ug/kg	NL	39	U	37	U	38	U	210	UJ	44	U	37	U	52	UJ	38	U	37	U	46	UJ	38	U	37	U	42	UJ	40	U	37	U	NA		NA		NA		NA	
Caprolactam		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Dimethyl phthalate		ug/kg	NL	390	U	370	U	380	U	2100	U	440	U	370	U	520	U	380	U	370	U	460	U	380	U	370	U	420	U	400	U	370	U	NA		NA		NA		NA	
Hexachlorobutadiene		ug/kg	NL	79	U	75	U	78	U	420	U	89	U	76	U	110	U	77	U	75	U	93	U	77	U	75	U	85	U	81	U	74	U	NA		NA		NA		NA	
Hexachlorocyclopentadiene		ug/kg	NL	390	UJ	370	U	380	U	2100	UJ	440	U	370	U	520	UJ	380	U	370	U	460	UJ	380	U	370	U	420	UJ	400	U	370	U	NA		NA		NA		NA	
Hexachloroethane		ug/kg	NL	39	U	37	U	38	U	210	U	44	U	37	U	52	U	38	U	37	U	46	U	38	U	37	U	42	U	40	U	37	U	NA		NA		NA		NA	
Nitrobenzene		ug/kg	NL	39	U	37	U	38	U	210	U	44	U	37	U	52	U	38	U	37	U	46	U	38	U	37	U	42	U	40	U	37	U	NA		NA		NA		NA	
N-Nitrosodi-n-propylamine		ug/kg	NL	39	U	37	U	38	U	210	UJ	44	U	37	U	52	UJ	38	U	37	U	46	UJ	38	U	37	U	42	UJ	40	U	37	U	NA		NA		NA		NA	
Pentachlorophenol		ug/kg	6700	1200	U	1100	U	1200	U	6300	U	1300	U	1100	U	1600	U	1100	U	1100	U	1400	U	1200	U	1100	U	1300	U	1200	U	1100	U	NA		NA		NA		NA	

Notes:
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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	PRASB-15	PRASB-15	PRASB-15	PRASB-16	PRASB-16	PRASB-16	PRASB-17	PRASB-17	PRASB-17	PRASB-18	PRASB-18	PRASB-18	PRASB-19	PRASB-19	PRASB-19	PRASB-20-B	PRASB-20-C	PRASB-21-B	PRASB-21-C
Sample ID:	Units		PRASB-15(4-5)	PRASB-15(30-35)	PRASB-15(37.5-40)	PRASB-16(4-5)	PRASB-16(5-10)	PRASB-16(32.5-35)	PRASB-17(2-3)	PRASB-17(15.17.5)	PRASB-17(35-40)	PRASB-18(4-5)	PRASB-18(17.5-20)	PRASB-18(30-35)	PRASB-19(4-5)	PRASB-19(20-22.5)	PRASB-19(35-40)	PRASB-20-B	PRASB-20-C	PRASB-21-B	PRASB-21-C
Depth (ft):			4-5	30-35	37.5-40	4-5	5-10	32.5-35	2-3	15-17.5	35-40	4-5	17.5-20	30-35	4-5	20-22.5	35-40	0-7	0-7	0-7	0-7
Constituent Date			11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/10/2011	11/10/2011	11/9/2011	11/11/2011	11/11/2011	11/9/2011	11/11/2011	11/11/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
Pesticides/Polychlorinated Biphenyls (ug/kg																					
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)																					
Cyanide, Amenable	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U
Cyanide, Total	mg/kg	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.1	8.7	0.55 U	0.95
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	0.047 U	0.044 U	0.046 U	0.051 U	0.053 U	0.045 U	0.063 U	0.046 U	0.044 U	0.056 U	0.046 U	0.045 U	0.051 U	0.048 U	0.044 U	NA	NA	NA	NA
Metals (mg/kg)																					
Aluminum	mg/kg	NL	8,000	3,890	4,450	5,460	5,960	5,050	2,280	4,170	4,580	6,170	6,150	3,710	6,410	2,170	4,190	NA	NA	NA	NA
Antimony	mg/kg	NL	2.2 U	2.2 U	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	4.2	2.3 U	2.1 U	2.4 U	2.3 U	2.2 U	NA	NA	NA	NA
Arsenic	mg/kg	16	3.2	3.1	2.5	11.2	3.1	6.4	5	1.5	3.6	**19.7**	3.8	2.3	13.6	2.1	2.8	NA	NA	NA	NA
Barium	mg/kg	400	83.7	49.6	56.9	221	101	65.1	**1,350**	58.1	56.8	**4,900**	149	50.3	332	118	54.4	NA	NA	NA	NA
Beryllium	mg/kg	590	0.43 U	0.3 J	0.38 J	0.31 J	0.29 J	0.34 J	0.61 U	0.26 J	0.4 J	0.29 J	0.42 J	0.35 J	0.32 J	0.21 J	0.41 J	NA	NA	NA	NA
Cadmium	mg/kg	9.3	0.2 J	1.1 U	1.1 U	1.4	1.3 U	1.1 U	2.5	1.1 U	1.1 U	1.5	1.2 U	1.1 U	1.5	1.2 U	1.1 U	NA	NA	NA	NA
Calcium	mg/kg	NL	10,300	8,320	12,600	30,900	3,960	11,300	42,400	2,120	12,900	21,000	2,390	5,250	12,700	1,240	8,130	NA	NA	NA	NA
Chromium	mg/kg	400	25.2	23.1	12.4	24.4	28.5	113	59.6	31.8	48.5	25.5	40	105	30.4	31.7	137	NA	NA	NA	NA
Cobalt	mg/kg	NL	15.5	8.3 J	5.1 J	12.1 J	12.4 J	35.9	8 J	23.4	21.7	11.6 J	26.7	34	10 J	20.7	26.9	NA	NA	NA	NA
Copper	mg/kg	270	59.1	9.7	22.4	65.6	11.4	19.6	37.6	15.1	30.1	**302**	21	49	137	11.1	15.6	NA	NA	NA	NA
Iron	mg/kg	NL	18,400	12,900	12,200	32,200	12,600	25,500	16,300	18,800	19,500	30,300	24,800	24,100	20,000	17,800	23,600	NA	NA	NA	NA
Lead	mg/kg	1,000	181	5.1	8.8	**1,050**	24.6	5.9	**1,530**	9.3	8.8	**3,380**	14.3	4.2	**1,860**	2.8	6	NA	NA	NA	NA
Magnesium	mg/kg	NL	5,820	5,870	3,840	5,140	5,430	14,900	16,900	30,900	8,680	7,550	8,620	24,200	8,280	33,600	23,100	NA	NA	NA	NA
Manganese	mg/kg	10,000	261	317	370	515	191	492	206	226	454	265	510	348	164	690	407	NA	NA	NA	NA
Mercury	mg/kg	2.80	0.34	0.036 U	0.038 U	0.76	0.041 U	0.036 U	0.47	0.036 U	0.033 U	0.7	0.036 U	0.032 U	1.1	0.035 U	0.034 U	NA	NA	NA	NA
Nickel	mg/kg	310	**337**	108	12.6	94.6	191	**715**	128	**450**	**388**	105	**476**	**673**	99.5	**483**	**494**	NA	NA	NA	NA
Potassium	mg/kg	NL	713 J	879 J	1,290	598 J	632 J	1070 J	292 J	984 J	1,030 J	820 J	849 J	834 J	547 J	358 J	891 J	NA	NA	NA	NA
Selenium	mg/kg	1,500	2.2 U	2.2 U	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	1.7 J	2.3 U	2.1 U	1.5 J	2.3 U	1.2 J	NA	NA	NA	NA
Silver	mg/kg	1,500	2.2 U	2.2 U	2.2 U	0.59 J	0.23 J	2.2 U	0.37 J	2.2 U	2.1 U	0.94 J	2.3 U	2.1 U	0.55 J	2.3 U	2.2 U	NA	NA	NA	NA
Sodium	mg/kg	NL	586 J	71.8 J	101 J	149 J	152 J	69.2 J	117 J	127 J	74.3 J	633 J	85.7 J	66.8 J	671 J	1,160 U	70.6 J	NA	NA	NA	NA
Thallium	mg/kg	NL	2.2 U	2.2 U	2.2 U	2.5 U	2.6 U	2.2 U	3 U	2.2 U	2.1 U	2.7 U	2.3 U	2.1 U	2.4 U	2.3 U	2.2 U	NA	NA	NA	NA
Vanadium	mg/kg	NL	19.7	12.9	16.4	23.6	15.8	15.4	10.9 J	15.1	19	27.1	24.6	13.8	35.7	10.1 J	16.9	NA	NA	NA	NA
Zinc	mg/kg	10,000	132	22	24.4	552	32.7	30.3	1,820	29.2	29.1	1,450	28.5	25.2	655	17.5	29.6	NA	NA	NA	NA
Total Organic Carbon (mg/kg)																					
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24C
Sample ID:	Units		PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Depth (ft):			0-7	0-7	0-7	0-7	0-7	0-7
Constituent Date			12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
Location:			89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave	89 Willow Ave
BTEX (ug/kg)								
Benzene	ug/kg	44,000	NA	NA	NA	NA	NA	NA
Toluene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/kg	390,000	NA	NA	NA	NA	NA	NA
Xylene (total)	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds (ug/kg)								
1,2,4-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ug/kg	190,000	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	500,000	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NL	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	22,000	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NL	NA	NA	NA	NA	NA	NA
n-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	ug/kg	500000	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	240,000	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	30,000	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene(trans	ug/kg	500,000	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	ug/kg	280,000	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	ug/kg	130,000	NA	NA	NA	NA	NA	NA
1,4-Dioxane	ug/kg	130,000	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NL	NA	NA	NA	NA	NA	NA
Bromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NL	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Carbon disulfide	ug/kg	NL	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	350,000	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Methyl acetate	ug/kg	NL	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ethe	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NL	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	150,000	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	200,000	NA	NA	NA	NA	NA	NA
Vinyl chloride	ug/kg	13,000	NA	NA	NA	NA	NA	NA

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Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:		Comercial Use Standards (ug/kg)	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24C
Sample ID:	Units		PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Depth (ft):			0-7	0-7	0-7	0-7	0-7	0-7
Constituent / Date			12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
PAHs (ug/kg)								
Non-Carcinogenic PAHs								
Naphthalene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Acenaphthylene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Fluorene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Pyrene	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Total Non-Carcinogenic PAHs								
Carcinogenic PAHs								
Benz(a)anthracene	ug/kg	5,600	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/kg	1,000	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/kg	5,600	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/kg	56,000	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg	56,000	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	ug/kg	560	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/kg	5,600	NA	NA	NA	NA	NA	NA
Total Carcinogenic PAHs								
Total PAHs								
Other Semivolatile Organic Compounds (ug/kg)								
1,1'-Biphenyl	ug/kg	NL	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,2'-oxybis(1-Chloropropane	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
3-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA
2-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA
4-Chloroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA
4-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Benzoic acid	ug/kg	NL	NA	NA	NA	NA	NA	NA
Benzyl alcohol	ug/kg	NL	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA
Carbazole	ug/kg	NL	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	350,000	NA	NA	NA	NA	NA	NA
Diethylphthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (1	ug/kg	NL	NA	NA	NA	NA	NA	NA
Phenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	ug/kg	6,000	NA	NA	NA	NA	NA	NA
Isophorone	ug/kg	NL	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	ug/kg	NL	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	ug/kg	NL	NA	NA	NA	NA	NA	NA
2-Chlorophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
2-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA
2-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
3-Methylphenol	ug/kg	500,000	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	ug/kg	NL	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA
4-Nitroaniline	ug/kg	NL	NA	NA	NA	NA	NA	NA
4-Nitrophenol	ug/kg	NL	NA	NA	NA	NA	NA	NA
Acetophenone	ug/kg	NL	NA	NA	NA	NA	NA	NA
Atrazine	ug/kg	NL	NA	NA	NA	NA	NA	NA
Benzaldehyde	ug/kg	NL	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	NL	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl) ethe	ug/kg	NL	NA	NA	NA	NA	NA	NA
Caprolactam	ug/kg	NL	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	ug/kg	NL	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	ug/kg	NL	NA	NA	NA	NA	NA	NA
Hexachloroethane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Nitrobenzene	ug/kg	NL	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	NL	NA	NA	NA	NA	NA	NA
Pentachlorophenol	ug/kg	6700	NA	NA	NA	NA	NA	NA

Notes:
Yellow highlight indicates exceedance is above the Commercial Use Stand
Blue highlight indicates that the material was not detected at or above the r
Pink highlight indicates that the material was detected at the standar
NE - not establishec
NA - not analyzec
J - estimated value
U - indicates not detected to the reporting limit for organic analysis and the
UJ - estimated detection limi
-- unable to calculate because it was non-detected or not analyze
(dup) - indicates duplicate sampl
D - identifies all compounds in the analysis completed at secondary dilutic
R - the reported results or detection limits are estimated or rejected basec
B - analyte was found within the laboratory method blank as well as the sa
warns the data user to use caution when applying the results of this ar
was between IDL and contract required detection limit (metals
T - indicates total concentration detecte
- Naphthalene was tested by and reported under the VOC and SVOC ar
mg/kg - milligrams/kilogram or parts per million (ppm
ug/kg - micrograms/kilogram or parts per billion (ppb
JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 1-6
Comparison of Remaining Soil Analytical Data to Restricted Commercial Soil Cleanup Objectives
Former Clifton MGP Site
Clifton, New York

AECOM

Site ID:	Units	Comercial Use Standards (ug/kg)	PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24C
Sample ID:			PRASB-22-B	PRASB-22-C	PRASB-23-B	PRASB-23-C	PRASB-24-B	PRASB-24-C
Depth (ft):			0-7	0-7	0-7	0-7	0-7	0-7
Constituent / Date			12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011	12/28/2011
Pesticides/Polychlorinated Biphenyls (ug/kg								
4,4'-DDE	ug/kg	62,000	NA	NA	NA	NA	NA	NA
4,4'-DDT	ug/kg	47,000	NA	NA	NA	NA	NA	NA
Dieldrin	ug/kg	1,400	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	ug/kg	200,000	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	ug/kg	NL	NA	NA	NA	NA	NA	NA
Heptachlor	ug/kg	15,000	NA	NA	NA	NA	NA	NA
gamma-Chlordane	ug/kg	NL	NA	NA	NA	NA	NA	NA
Total Cyanide (mg/kg)								
Cyanide, Amenable	mg/kg	NL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5
Cyanide, Total	mg/kg	27	26.5	13.2	0.56 U	0.56 U	1	1.2
Cyanide, Free	mg/kg	NL	NA	NA	NA	NA	NA	NA
Available Cyanide	mg/kg	NL	NA	NA	NA	NA	NA	NA
Metals (mg/kg)								
Aluminum	mg/kg	NL	NA	NA	NA	NA	NA	NA
Antimony	mg/kg	NL	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	16	NA	NA	NA	NA	NA	NA
Barium	mg/kg	400	NA	NA	NA	NA	NA	NA
Beryllium	mg/kg	590	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9.3	NA	NA	NA	NA	NA	NA
Calcium	mg/kg	NL	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	400	NA	NA	NA	NA	NA	NA
Cobalt	mg/kg	NL	NA	NA	NA	NA	NA	NA
Copper	mg/kg	270	NA	NA	NA	NA	NA	NA
Iron	mg/kg	NL	NA	NA	NA	NA	NA	NA
Lead	mg/kg	1,000	NA	NA	NA	NA	NA	NA
Magnesium	mg/kg	NL	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	10,000	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	2.80	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	310	NA	NA	NA	NA	NA	NA
Potassium	mg/kg	NL	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	1,500	NA	NA	NA	NA	NA	NA
Silver	mg/kg	1,500	NA	NA	NA	NA	NA	NA
Sodium	mg/kg	NL	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	NL	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	NL	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	10,000	NA	NA	NA	NA	NA	NA
Total Organic Carbon (mg/kg)								
TOC	mg/kg	NL	NA	NA	NA	NA	NA	NA

Notes:
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R - the reported results or detection limits are estimated or rejected basec
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warns the data user to use caution when applying the results of this a
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JB - estimated detection limit/analyte was found within laboratory method
N - spiked sample recovery was not within control limits (metals

Table 2-1
Emergency Contact Numbers
Former Clifton MGP Site
Clifton, New York

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
Staten Island University Hospital	(718) 226-9000
Electric (Con Edison)	(800) 752-6633
Water/Sewer (NYCDEP)	(212) 639-9675
Gas (National Grid)	(718) 643-4050
Andrew Prophete, National Grid	(718) 963-5412
Katherine Vater, National Grid	(718) 963-5480
Shail Pandya, AECOM	(212) 377-8708

*** Note: Contact numbers subject to change and should be updated as necessary**

Table 3-1
Monitoring and Inspection Schedule
Former Clifton MGP Site
Clifton, New York

Monitoring Program	Frequency*	Matrix	Analysis
Soil Cover System	Annually	Cap	Inspection
Composite Cover System	Annually	Cap	Inspection
Monitored Natural Attenuation	Annually for a period of three years and biannually thereafter	Groundwater	Benzene, toluene, ethylbenzene, xylene, polycyclic aromatic hydrocarbons, Monitored Natural Attenuation parameters (Dissolved Oxygen, Nitrate, Ammonia, Total Iron, Ferrous Iron, Sulfate, Sulfide, Methane, Alkalinity, Oxidation Reduction Potential, and pH)
Passive DNAPL Recovery System	As needed to ensure DNAPL well sumps do not completely fill with DNAPL between inspections	DNAPL	-
Groundwater Pump and Treat System	Monthly	Water	SPDES Equivalency Permit Limits
SVI/Indoor Air	Prior to any Building Renovation/Construction	Air	EPA Modified TO-15 Parameters
Excavation	Prior to Disposal	Soil	Disposal Facility Parameters
Dewatering	Prior to Disposal	Water	Disposal Facility Parameters

***The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH**

Notes:

DNAPL - Dense Nonaqueous Phase Liquid

SPDES - State Pollution Discharge Elimination System

SVI - Soil Vapor Intrusion

Table 3-2
DNAPL Recovery Well Construction Summary
Former Clifton MGP Site
Clifton, New York

DNAPL Recovery Well I.D.	Ground Surface Elevation *	Top of Vault Elevation	Top of Riser Pipe Elevation	Depth of Well (feet bgs)	Screen Interval	TOS (feet bgs)	BOS (feet bgs)	Diameter (inches)	TOS_elev	BOS_elev	Protective Casing	Riser Type	Screen Type	Screen slotted size/ diameter (inches)	Sump Type	Sump Length (feet)
RW-200S	9.2	9.57	NM	23	10.0 - 20.0	10	20	4.0	-0.8	-10.8	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-200I	9.2	9.58	NM	37	24.0 - 34.0	24	34	4.0	-14.8	-24.8	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-201S	9.2	9.57	8.77	29	14.0 - 24.0	14	24	6.0	-4.8	-14.8	Flush-Mount	PVC	Wire Wrap SS	0.02/6.0	SS	5.0
RW-201I	8.9	9.37	8.6	37.5	22.5-32.5	23	33	6.0	-13.6	-23.6	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	5.0
RW-202S	9.85	9.94	9.64	25	10.0 - 20.0	10	20	6.0	-0.2	-10.2	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	5.0
RW-202I	9.85	9.85	9.48	42	27.0 - 37.0	27	37	6.0	-17.2	-27.2	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	5.0
RW-203S	9.3	9.16	8.67	27	14.0 - 24.0	14	24	4.0	-4.7	-14.7	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-203I	9.3	9.14	8.54	37	24.0 - 34.0	24	34	4.0	-14.7	-24.7	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-204I	9.12	9.35	8.6	43	30.0 - 40.0	30	40	4.0	-20.9	-30.9	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-205D	8.75	8.82	8.18	77	64.0 - 74.0	64	74	4.0	-55.3	-65.3	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-206S	8.6	9.02	8.26	28	15.0 - 25.0	15	25	4.0	-6.4	-16.4	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-206IA	8.6	9.05	8.15	48	35.0 - 45.0	35	45	4.0	-26.4	-36.4	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-206IB	8.55	9.13	7.63	58	45.0 - 55.0	45	55	4.0	-36.5	-46.5	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-207S	8.5	8.8	8.15	23	10.0 - 20.0	10	20	4.0	-1.5	-11.5	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-207I	8.5	8.77	8.23	33	20.0 - 30.0	20	30	4.0	-11.5	-21.5	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-208S	8.27	8.53	7.81	23	10.0 - 20.0	10	20	4.0	-1.7	-11.7	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-208I	8.27	8.52	7.23	42	29.0 - 39.0	29	39	4.0	-20.7	-30.7	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-209S	8	8.48	7.63	30	15.0 - 25.0	15	25	6.0	-7.0	-17.0	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	5.0
RW-209I	8	8.28	7.69	40	25.0 - 35.0	25	35	6.0	-17.0	-27.0	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	5.0
RW-210S	7.6	7.85	7.3	28	15.0 - 25.0	15	25	4.0	-7.4	-17.4	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-210I	7.6	7.93	7.32	38	25.0 - 35.0	25	35	4.0	-17.4	-27.4	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-211S	8.5	8.74	7.15	29	6.0 - 26.0	6	26	4.0	2.5	-17.5	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
RW-211I	8.5	8.76	7.23	43	30.0 - 40.0	30	40	4.0	-21.5	-31.5	Flush-Mount	PVC	Wire Wrap SS	0.02/4.0	SS	3.0
NRW-01S+	14.18	15.28	14.86	19	34.0 - 44.0	9	19	4.0	5.2	-4.8	Flush-Mount	SS	SS	0.02/4.0	--	--
NRW-01I+	14.27	15.37	15.04	49	9.0 - 19.0	34	44	4.0	-19.7	-29.7	Flush-Mount	SS	SS	0.02/4.0	SS	5.0

* - Derived from the nearest surface elevation from final as-built survey
\+ - Measurements are taken from containment cell pad
NM - Not measured
ft bgs - feet below ground surface
TOS - Top of Screen
BOS - Bottom of Screen
SS - Stainless Steel
= Shallow recovery wells
= Intermediate recovery wells
= Deep recovery wells

Table 3-3
Schedule of Monitoring and Inspection Reports
Former Clifton MGP Site
Clifton, New York

Task	Reporting Frequency
Groundwater	Annual[1]
DNAPL Recovery	Semi-Annual
Pump and Treat System	Annual
Periodic Inspections	Annual

***The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH**

Notes:

DNAPL - Dense Nonaqueous Phase Liquid

[1] Annually for the first three years and then biannually

Figures

UNITED STATES GEOLOGIC SURVEY
THE NARROWS QUADRANGLE
NEW YORK - NEW JERSEY
7.5 MINUTE SERIES (TOPOGRAPHY)

THE NARROWS, NY. - NJ.
1966
PHOTOREVISED 1981

SCALE 1:24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

N

AECOM

NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

SITE LOCATION MAP

DATE: 1/17/14 | DRWN: XW | JOB NO.: 60137363-540

FIGURE 1-1

File: V:\Clifton\60137363\CADD\SMP\FIGURE 1-1.dwg Layout: ANSI_AVI-LJ User: WeiX1 Plotted: Jan 29, 2014 - 4:58pm Xref's:

LEGEND

- LIMIT OF OPERABLE UNIT (OU)
- LIMITS OF SITE MANAGEMENT PLAN (SMP)
- SEWER BUFFER ZONE
- SEWER LINE
- PROPERTY LINE
- FENCE
- SIRTOA RAILWAY TRACKS
- BUTTRESS SHALLOW SLURRY WALL
- BARRIER SLURRY WALL
- DNAPL RECOVERY WELL LOCATION
- CATCH BASIN
- CURB
- RW-1 MONITORING WELL LOCATION
- STORM DRAIN MANHOLE
- DNAPL DENSE NONAQUEDUS PHASE LIQUID

LIMIT OF SMP INCLUDES

40 WILLOW AVENUE PROPERTY

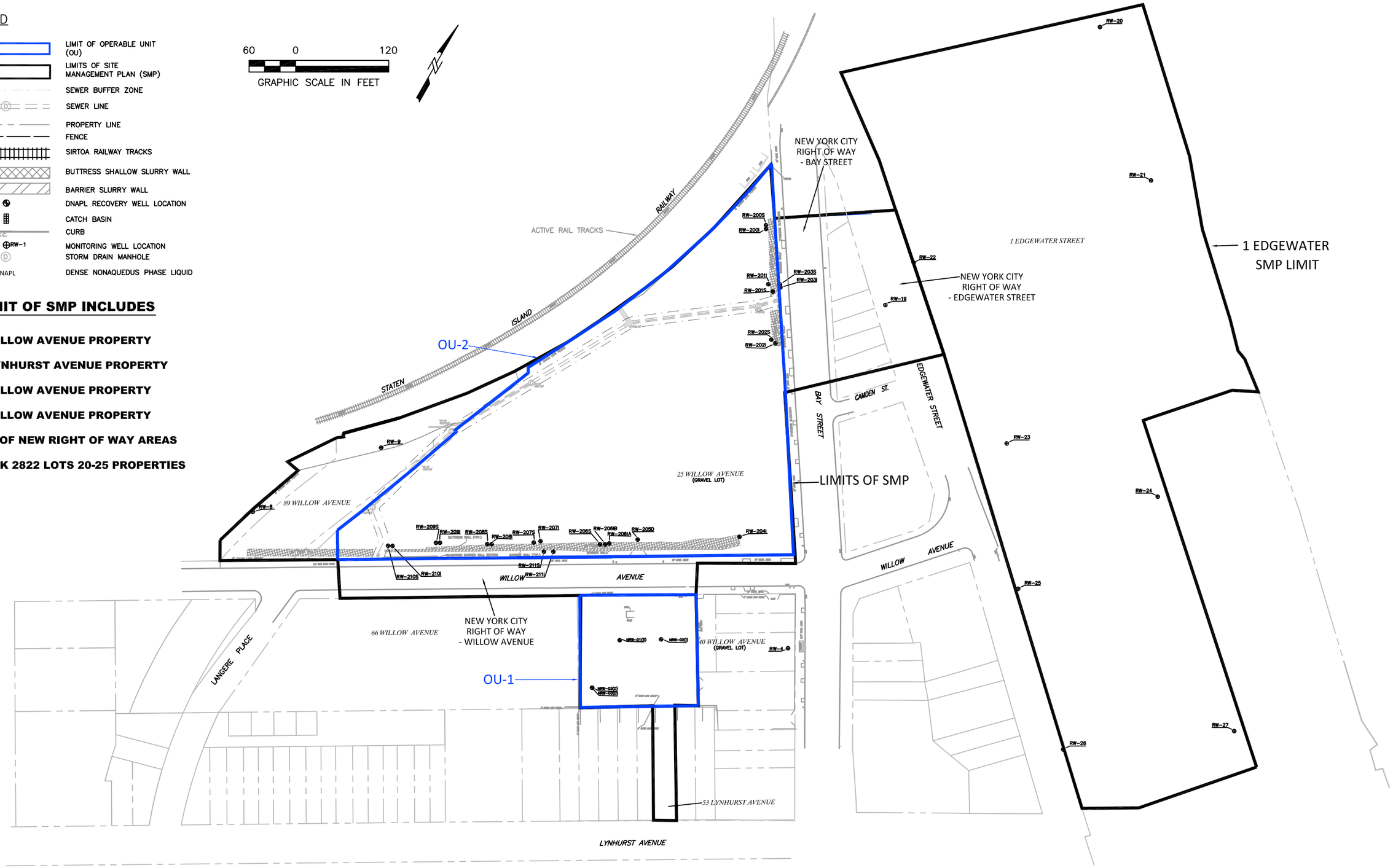
53 LYNHURST AVENUE PROPERTY

25 WILLOW AVENUE PROPERTY

89 WILLOW AVENUE PROPERTY

CITY OF NEW RIGHT OF WAY AREAS

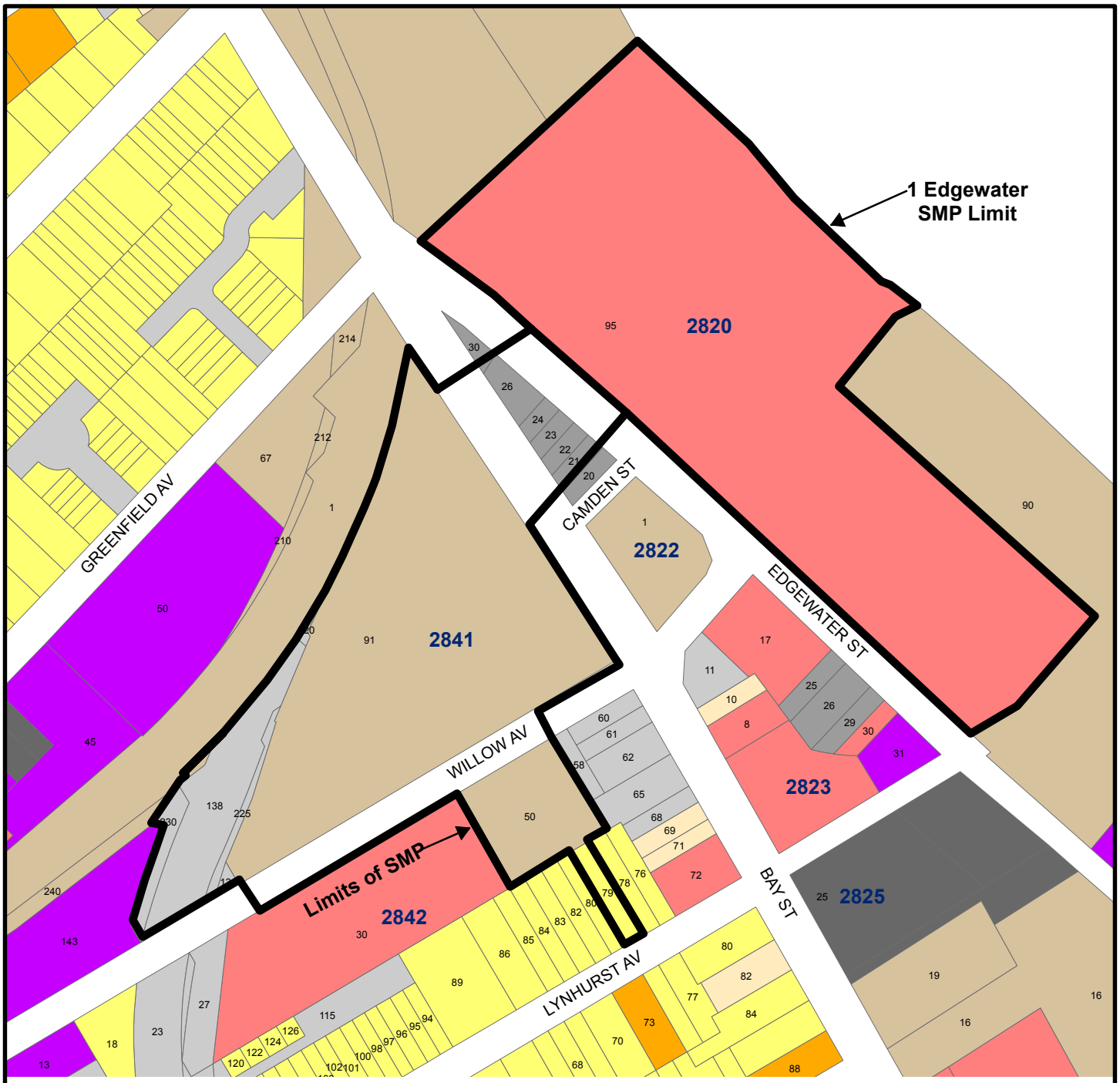
BLOCK 2822 LOTS 20-25 PROPERTIES



AECOM

NATIONAL GRID FORMER CLIFTON MANUFACTURED GAS PLANT SITE MANAGEMENT PLAN			SITE LAYOUT
DATE: 01/31/2014	DRWN: XW	JOB NO.: 60137363-540	FIGURE 1-2

File: \\USNYC2FP001\Environment\National Grid\Clifton\60137363\0400\SMP\FIGURE 1-2.dwg Layout: 1-2 User: PenglesS Plotted: Jan 29, 2016 - 5:28pm Xref's:



Legend

Land Use

- One & Two Family Buildings
- Multi Family Walk Up Buildings
- Mixed Residential Commercial Buildings
- Commercial and Office Building
- Industrial and Manufacturing
- Transportation and Utility
- Parking Facilities
- Vacant Land
- Unknown
- Limit of SMP
- Building
- Block Boundary
- 2841 Block Number
- 91 Lot Number

Note: Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning.

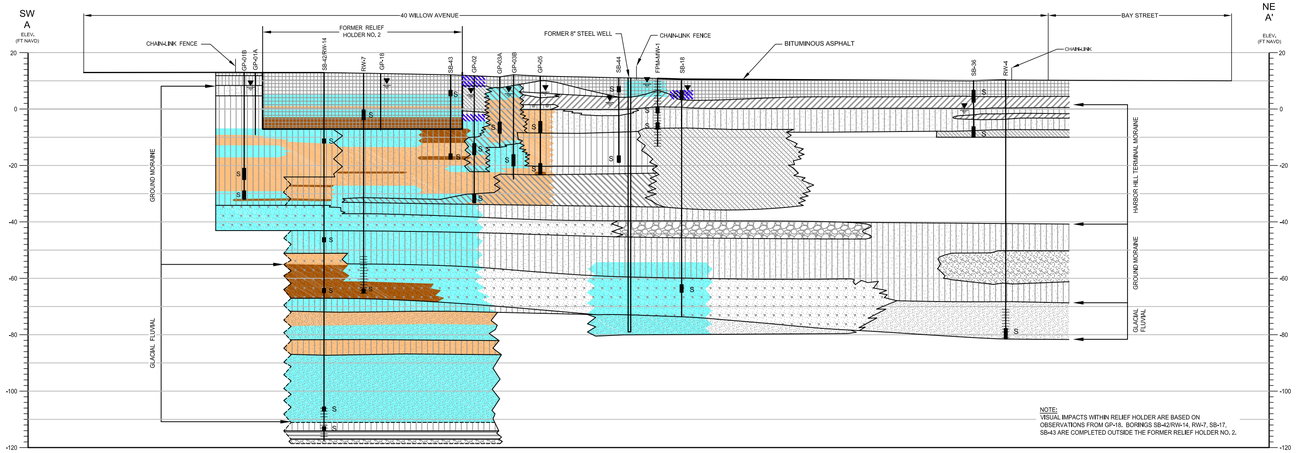
AECOM Environment
125 Broad Street
New York, NY 10004
(212) 377-8400
www.aecom.com

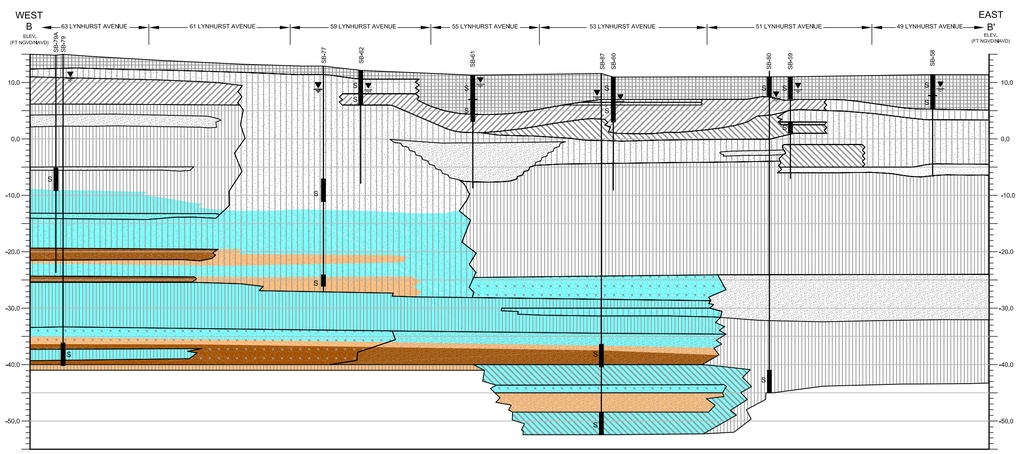
Site Tax Map
National Grid
Former Clifton Manufactured Gas Plant
Site Management Plan
Staten Island, New York

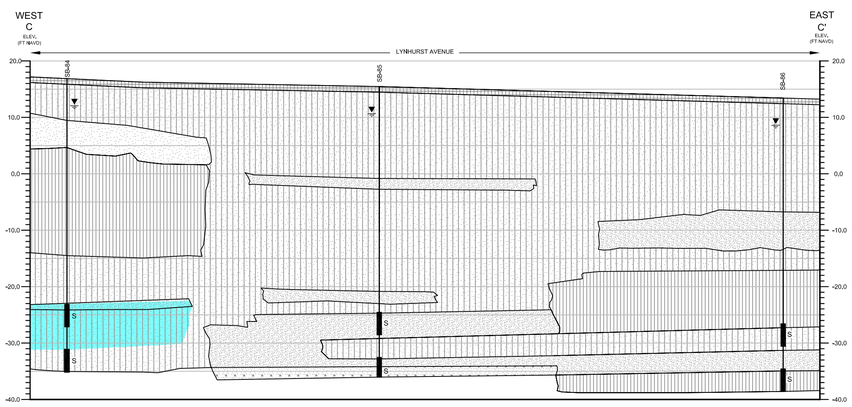
Scale:	Date:	Project Number:
1 in = 200 ft	01/31/2014	60137363-540

Figure Number: 1-3

V:\Clifton\60137363\CADD\SMP\







SOURCES:

1. CROSS SECTIONS ADAPTED THE REPORT " FINAL REMEDIAL INVESTIGATION REPORT, CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2)", DATED FEBRUARY 2005 BY GEI CONSULTANTS, INC..
2. UST CLOSURE SUMMARY REPORT, CLIFTON SERVICE CENTER, 25 WILLOW AVENUE, STATEN ISLAND, NEW YORK BY LEXICON ENVIRONMENTAL ASSOCIATES, INC., OCTOBER 15, 1993.
3. FOLLOW-UP SOIL AND GROUNDWATER INVESTIGATION AT THE BROOKLYN UNION GAS COMPANY CLIFTON STATION FACILITY, 40 WILLOW AVENUE, STATEN ISLAND, NY BY FANNING, PHILLIPS & MOLNAR, AUGUST 29, 1994.
4. "MAP OF PROPERTY, EXIST. BLDG & YARD CONNECTIONS, NEW YORK AND RICHMOND GAS COMPANY - 1921", BY FANNING, PHILLIPS & MOLNAR ENGINEERS, RONKONKOMA, NEW YORK. SCALE 1"=30', DATED 2/8/94 - REVISED TO 2/13/98.
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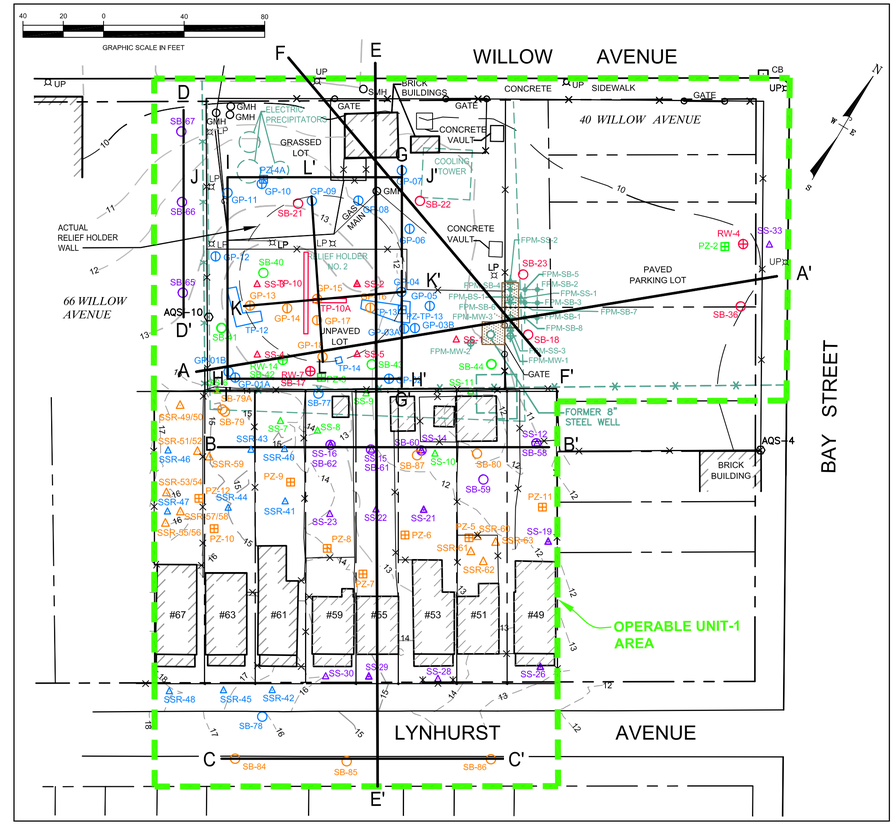


LEGEND

- EXISTING BUILDING/STRUCTURE
- HISTORICAL STRUCTURE/FEATURE
- CHAIN LINK FENCE
- CURRENT/HISTORIC PROPERTY BOUNDARY
- 10 — GROUND SURFACE CONTOURS (FT)
- RW-4 — REMEDIAL INVESTIGATION (RI) MONITORING WELL LOCATION
- SB-18 — RI SOIL BORING LOCATION
- PZ-3 — RI PIEZOMETER LOCATION
- SS-11 — RI SOIL SAMPLE LOCATION
- AQS-10 — RI AIR QUALITY SAMPLE LOCATION
- GP-01A — FEASIBILITY STUDY (FS) SUPPORT GEOPROBE LOCATION
- TP-12 — RI TEST PIT LOCATION
- ROUND 1 RI SAMPLE LOCATION (FEBRUARY-APRIL 1999)
- ROUND 2 RI SAMPLE LOCATION (JULY-OCTOBER 1999)
- ROUND 3 RI SAMPLE LOCATION (NOVEMBER-DECEMBER 1999)
- ROUND 4 RI SAMPLE LOCATION (NOVEMBER 2001-JANUARY 2002)
- ROUND 5 RI SAMPLE LOCATION (MAY-JUNE 2002)
- LEX-65-1 — PREVIOUS LEXICON SIDEWALL SOIL SAMPLE LOCATION
- LEX-OW-1 — PREVIOUS LEXICON MONITORING WELL LOCATION
- FPM-OW-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR MONITORING WELL LOCATION
- FPM-GP-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR GEOPROBE/PIEZOMETER LOCATION
- SB-NY — PREVIOUS SOIL BORING LOCATION
- FPM-SB-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR SOIL BORING LOCATION
- CNY#1 — PREVIOUS CITY OF NEW YORK SOIL BORING LOCATION
- GAS LINE
- LP — LIGHT POLE
- UP — UTILITY POLE
- CB — CATCH BASIN
- MANHOLE
- EXCAVATION BOUNDARY
- A — A' — CROSS-SECTION LOCATION

LEGEND

ALLUVIAL/MARSH DEPOSITS
- GRAVELLY-SAND
- SAND (shallow)
- SILT (shallow)
- SILT-CLAY
- GRAVELLY SILT
- PEAT

GLACIAL DEPOSITS
- SILT (deep)
- SILT-SAND
- SAND, SILT, CLAY
- SILT-CLAY
- SAND (deep)
- GRAVELLY-SAND
- COBBLE ZONE

WEATHERED BEDROCK
- SAPROLITE (weathered bedrock)
- MICACEOUS SAND
- MICACEOUS SILT

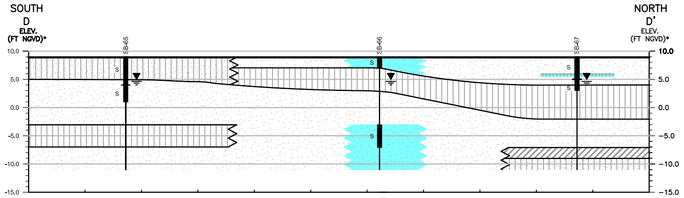
FILL
- FILL
- INFERRED CONTACT
- CONTACT
- OBSERVED APPARENT GROUNDWATER TABLE BASED UPON BORING INFORMATION
- BOUNDARY IS APPROXIMATED
- SB-SCRW-15 — SOIL BORING/ MONITORING WELL IDENTIFICATION
- S — ANALYTICAL SOIL SAMPLE INTERVAL
- WELL SCREEN INTERVAL
- SHEEN AND TAR/ NAPHTHA ODORS
- TAR STAINING, TAR BLEBS/SHEEN AND TARNAPHTHA ODORS
- TAR SATURATED, SOIL MATRIX, TARNAPHTHA ODORS
- PETROLEUM STAINING, SHEENS AND ODORS

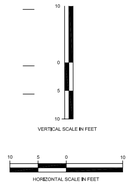
AECOM

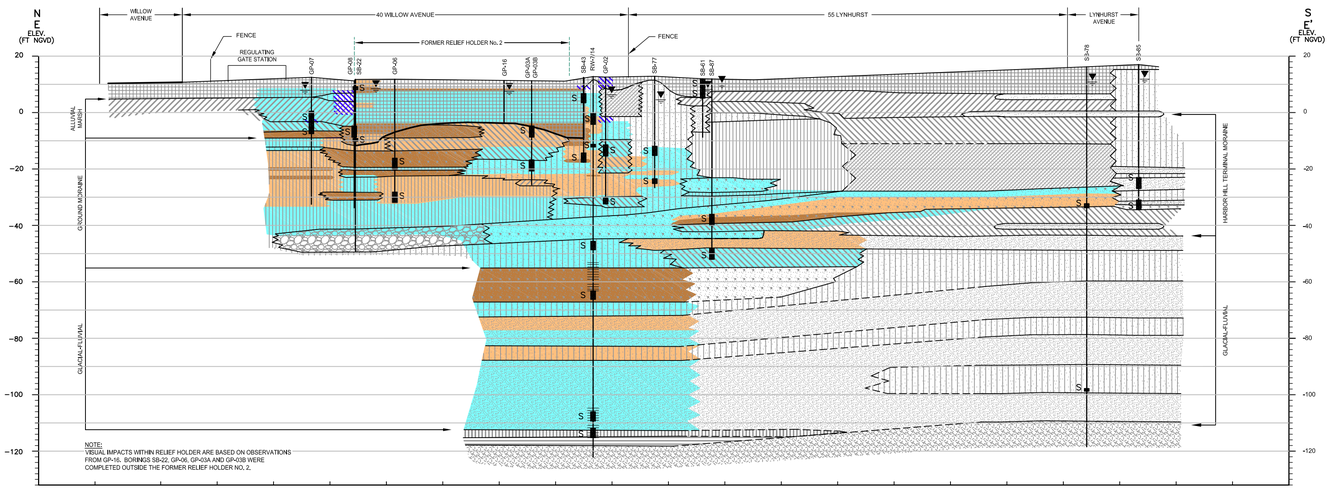
NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

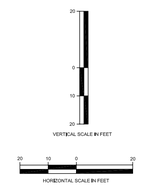
40 WILLOW AVENUE AND ADJACENT OFF-SITE AREA CROSS SECTIONS A-A', B-B' AND C-C'

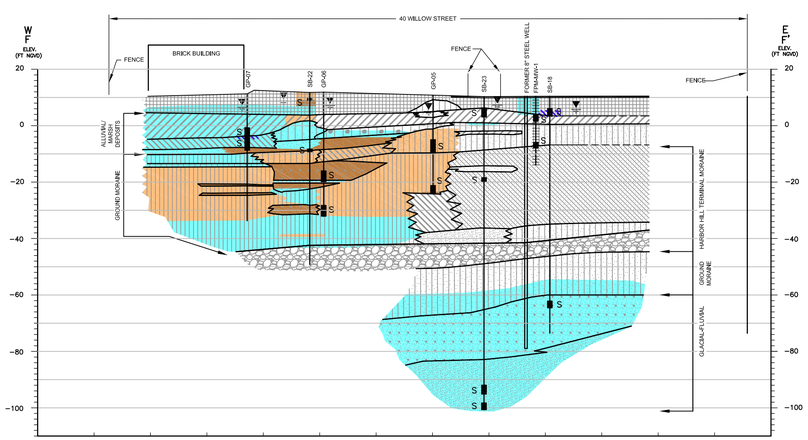
DATE: 1/31/14	DRWN: XW	JOB NO.: 60137363-540	**FIGURE 1-4A**

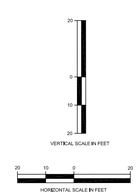


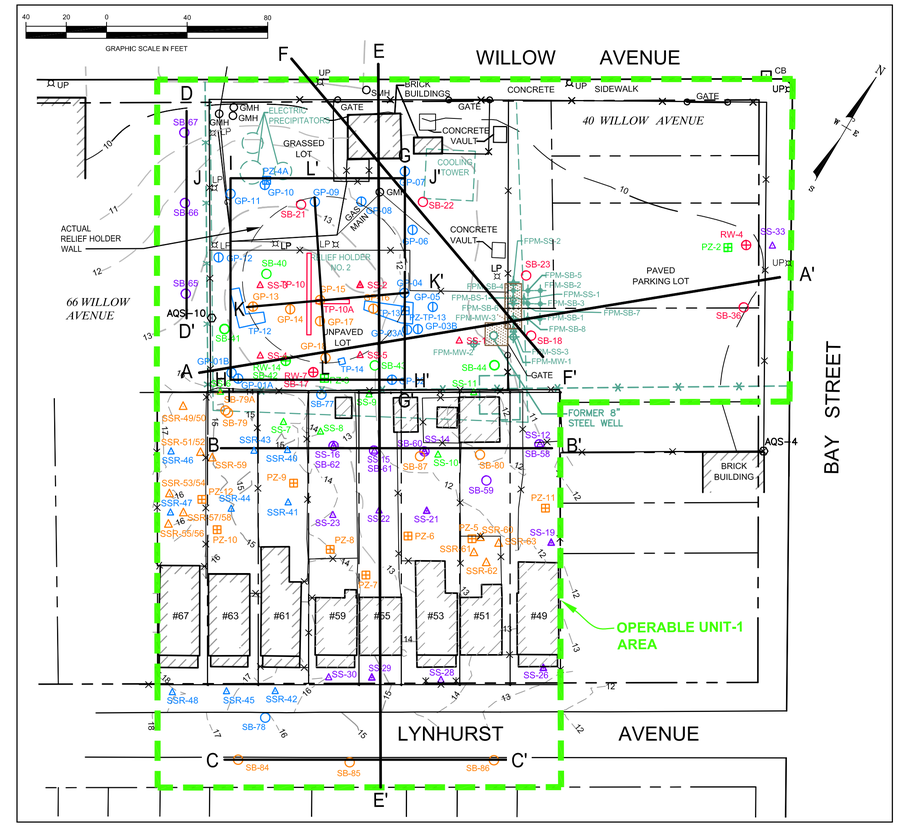












LEGEND

- EXISTING BUILDING/STRUCTURE
- HISTORICAL STRUCTURE/FEATURE
- CHAIN LINK FENCE
- CURRENT/HISTORIC PROPERTY BOUNDARY
- 10 — GROUND SURFACE CONTOURS (FT)
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- PZ-3 — RI PIEZOMETER LOCATION
- SS-11 — RI SOIL SAMPLE LOCATION
- AQS-10 — RI AIR QUALITY SAMPLE LOCATION
- GP-01A — FEASIBILITY STUDY (FS) SUPPORT GEOPROBE LOCATION
- TP-12 — RI TEST PIT LOCATION
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- FPM-GP-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR GEOPROBE/PIEZOMETER LOCATION
- SB-NY — PREVIOUS SOIL BORING LOCATION
- FPM-SB-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR SOIL BORING LOCATION
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- GAS LINE
- LP — LIGHT POLE
- UP — UTILITY POLE
- CB — CATCH BASIN
- MANHOLE
- EXCAVATION BOUNDARY
- A — A' — CROSS-SECTION LOCATION

SOURCES:

1. CROSS SECTIONS ADAPTED THE REPORT " FINAL REMEDIAL INVESTIGATION REPORT, CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2)", DATED FEBRUARY 2005 BY GEI CONSULTANTS, INC..
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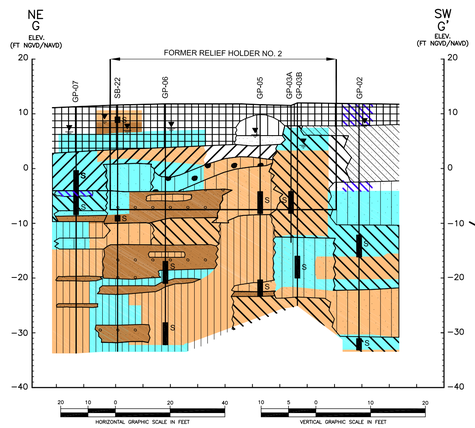
AECOM

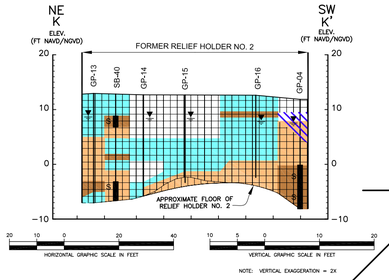
NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

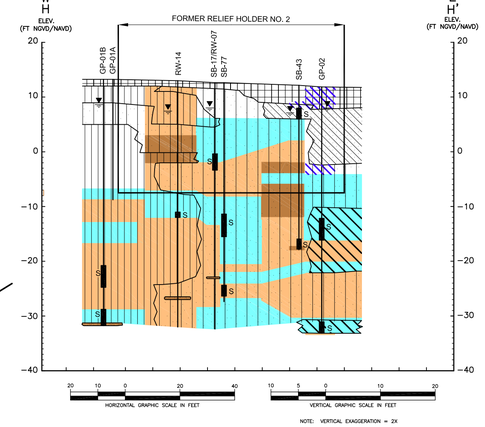
40 WILLOW AVENUE AND ADJACENT OFF-SITE AREA CROSS SECTIONS D-D', E-E' AND F-F'

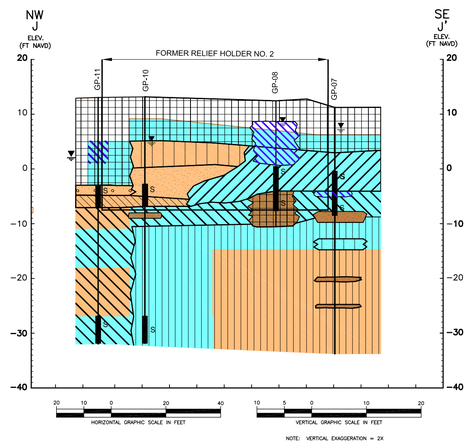
DATE: 1/31/14 | DRWN: XW | JOB NO.: 60137363-540

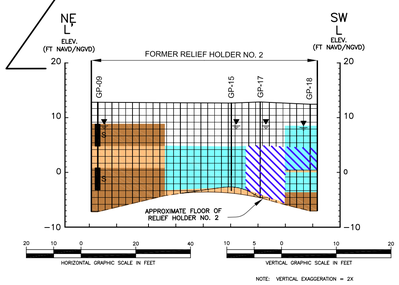
FIGURE 1-4B

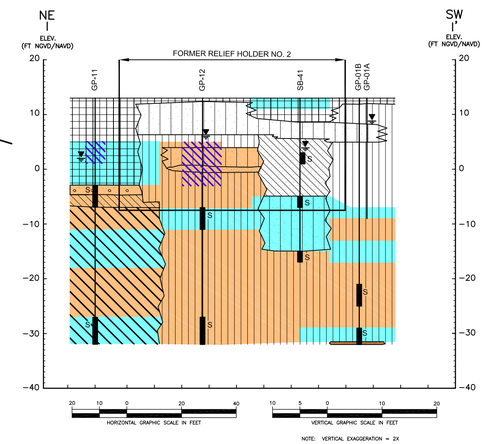


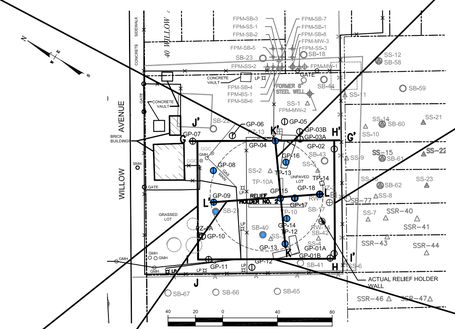


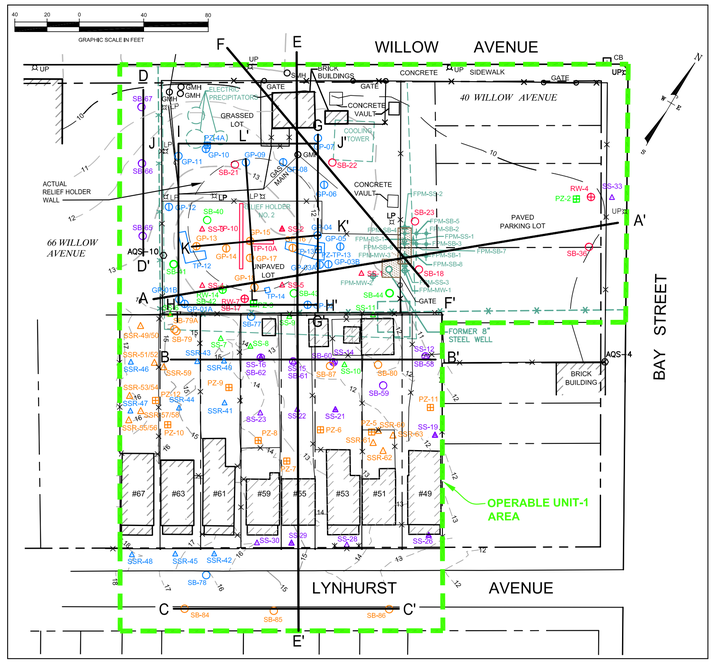












NOT TO SCALE

LEGEND

- EXISTING BUILDING/STRUCTURE
- HISTORICAL STRUCTURE/FEATURE
- CHAIN LINK FENCE
- CURRENT/HISTORIC PROPERTY BOUNDARY
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- SS-11 — RI SOIL SAMPLE LOCATION
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- FPM-GP-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR GEOPROBE/PIEZOMETER LOCATION
- SB-NY — PREVIOUS SOIL BORING LOCATION
- FPM-SB-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR SOIL BORING LOCATION
- CNY#1 — PREVIOUS CITY OF NEW YORK SOIL BORING LOCATION
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- LP — LIGHT POLE
- UP — UTILITY POLE
- CB — CATCH BASIN
- MANHOLE
- EXCAVATION BOUNDARY
- A — A' CROSS-SECTION LOCATION

SOURCES:

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LEGEND

ALLUVIAL/MARSH DEPOSITS: GRAVELLY-SAND; SAND (shallow); SILT (shallow); SILT-CLAY; GRAVELLY SILT; PEAT

GLACIAL DEPOSITS: SILT (deep); SILT-SAND; SAND, SILT, CLAY; SILT-CLAY; SAND (deep); GRAVELLY-SAND; COBBLE ZONE

WEATHERED BEDROCK: SAPROLITE (weathered bedrock); MICACEOUS SAND; MICACEOUS SILT; FILL

- CONTACT
- OBSERVED APPARENT GROUNDWATER TABLE BASED UPON BORING INFORMATION
- BOUNDARY IS APPROXIMATED
- GP-11 — SOIL BORING IDENTIFICATION
- BORING
- ANALYTICAL SOIL SAMPLE INTERVAL
- RW-7 — WELL SCREEN INTERVAL
- SHEEN AND TAR/ NAPHTHA ODORS
- TAR STAINING, TAR BLEEB/SHEEN AND TAR/NAPHTHA ODORS
- TAR SATURATED, SOIL MATRIX, TAR/NAPHTHA ODORS
- PETROLEAM STAINING, SHEENS AND ODORS

LEGEND

- GP-04 — FEASIBILITY STUDY (FS) GEOPROBE BORING (COMPLETED WITHIN RELIEF HOLDER NO. 2
- SB-40 — SUPPLEMENTAL RI BORING COMPLETED WITHIN RELIEF HOLDER NO. 2
- GP-02 — FS GEOPROBE BORING LOCATION
- CHAIN LINK FENCE
- HISTORICAL STRUCTURE/FEATURE
- RI AIR QUALITY SAMPLE LOCATION
- SS-1 — RI SOIL SAMPLE LOCATION
- RW-1 — RI MONITORING WELL LOCATION
- TP-10 — RI TEST PIT LOCATION
- SB-23 — RI SOIL BORING LOCATION
- PZ-4 — RI PIEZOMETER LOCATION
- FPM-MW-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR MONITORING WELL LOCATION
- FPM-SB-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR SOIL BORING LOCATION
- LP — LIGHT POLE
- UTILITY POLE
- CB — CATCH BASIN
- MANHOLE

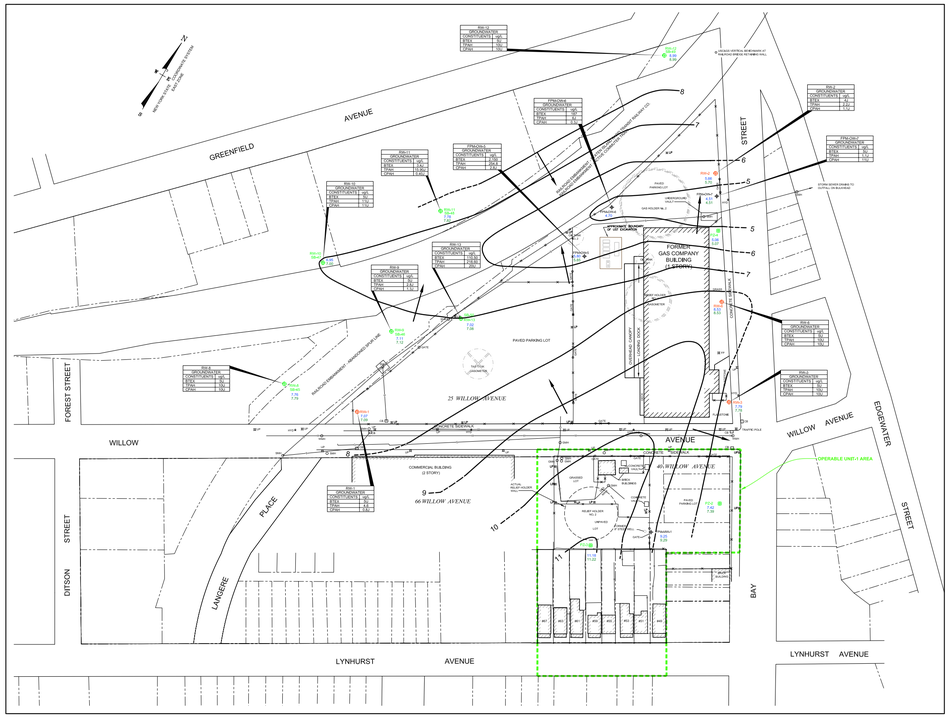
AECOM

NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

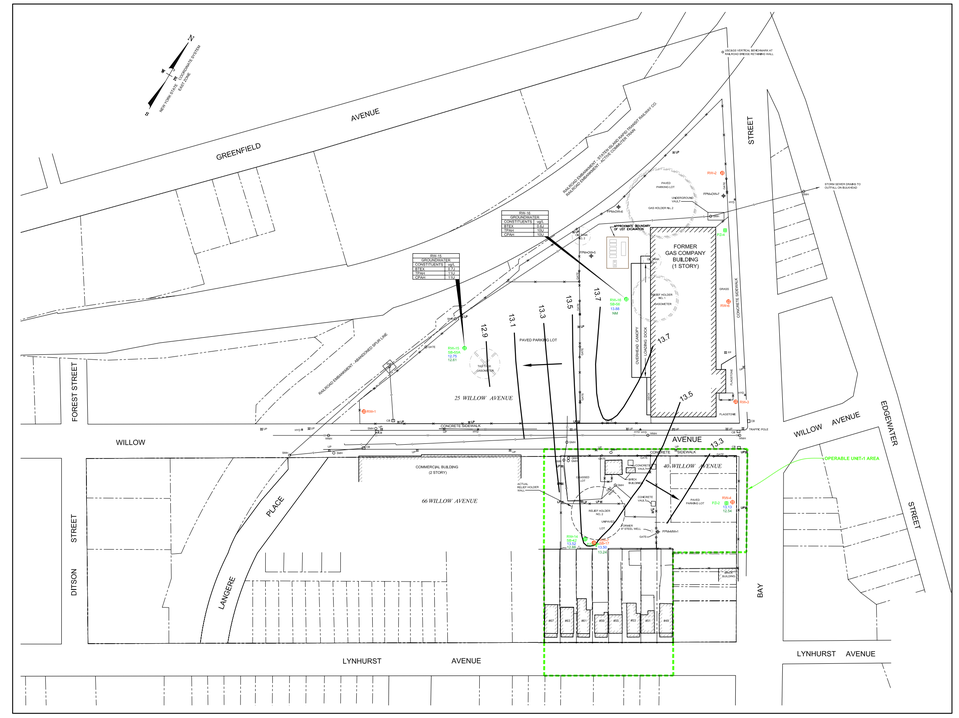
40 WILLOW AVENUE AND ADJACENT OFF-SITE AREA CROSS SECTIONS G-G', H-H', I-I', J-J', K-K' AND L-L'

DATE: 1/31/14 | DRWN: XW | JOB NO.: 60137363-540

FIGURE 1-4C



SHALLOW AQUIFER GROUNDWATER CONTOURS AND ANALYTICAL RESULTS - OCTOMBER 13, 1999



DEEP AQUIFER GROUNDWATER CONTOURS AND ANALYTICAL RESULTS - OCTOMBER 13, 1999

LEGEND

	EXISTING BUILDING/STRUCTURE
	CHAIN LINK FENCE
	CURRENT/HISTORIC PROPERTY BOUNDARY
RW-4	REMEDIAL INVESTIGATION (RI) MONITORING WELL AND OBSERVED WATER ELEVATION (FEET NGVD)
PZ-4	RI PIEZOMETER LOCATION
	ROUND 1 RI SAMPLE LOCATION (FEBRUARY-APRIL 1999)
	ROUND 2 RI SAMPLE LOCATION (JULY-OCTOBER 1999)
FPM-OW-7	PREVIOUS FANNING, PHILLIPS & MOLNAR MONITORING WELL LOCATION
9	WATER ELEVATION CONTOUR (FEET) (HIGH TIDE, 10/13/99)
	SHALLOW GROUNDWATER FLOW DIRECTION
5.66	HIGH TIDE WATER LEVEL (FEET NGVD)
5.07	LOW TIDE WATER LEVEL (FEET NGVD)
G	GAS LINE
S	SEWER LINE
W	WATER LINE
FP	FLAG POLE
LP	LIGHT POLE
HYD	FIRE HYDRANT
UP	UTILITY POLE
CB	CATCH BASIN
	MANHOLE
BTEX	SUM OF THE BENZENE, TOLUENE, ETHYL BENZENE, AND XYLENE CONCENTRATIONS DETECTED IN GROUNDWATER
TPAH	SUM OF THE TOTAL PAH CONCENTRATIONS DETECTED IN GROUNDWATER
CPAH	SUM OF THE CARCINOGENIC PAH CONCENTRATIONS DETECTED IN GROUNDWATER
ug/L	MICROGRAMS/LITER OR PARTS PER BILLION (ppb)
U	INDICATES NON-DETECT TO THE LEVEL SHOWN
J	INDICATES VALUE ESTIMATED

SOURCES:

1. GROUNDWATER CONTOURS AND ANALYTICAL RESULTS ADAPTED THE REPORT " FINAL REMEDIAL INVESTIGATION REPORT, CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2)", DATED FEBRUARY 2005 BY GEI CONSULTANTS, INC..
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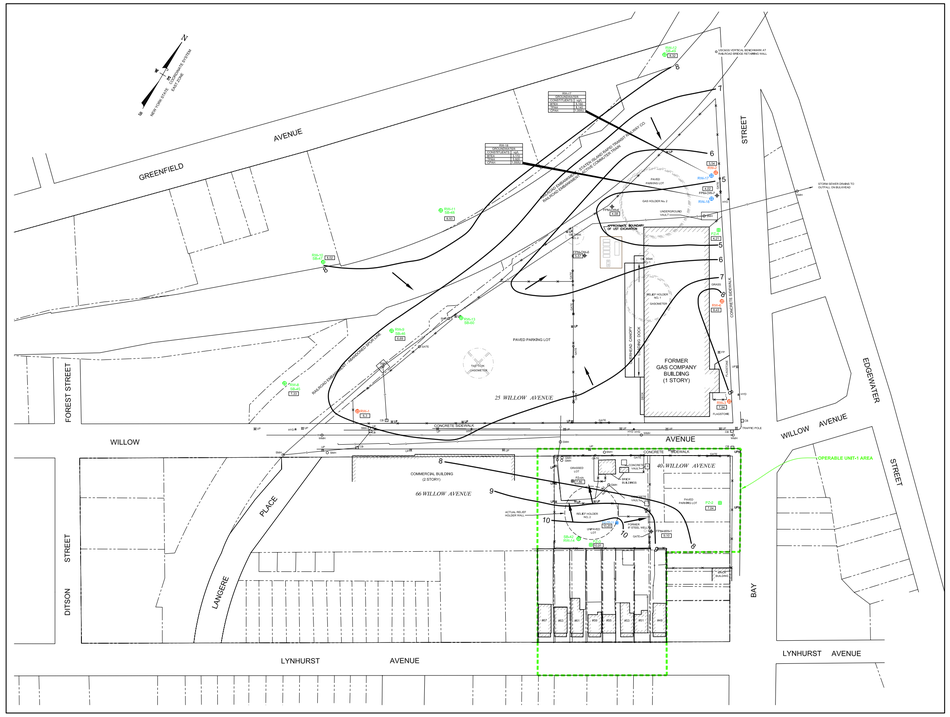
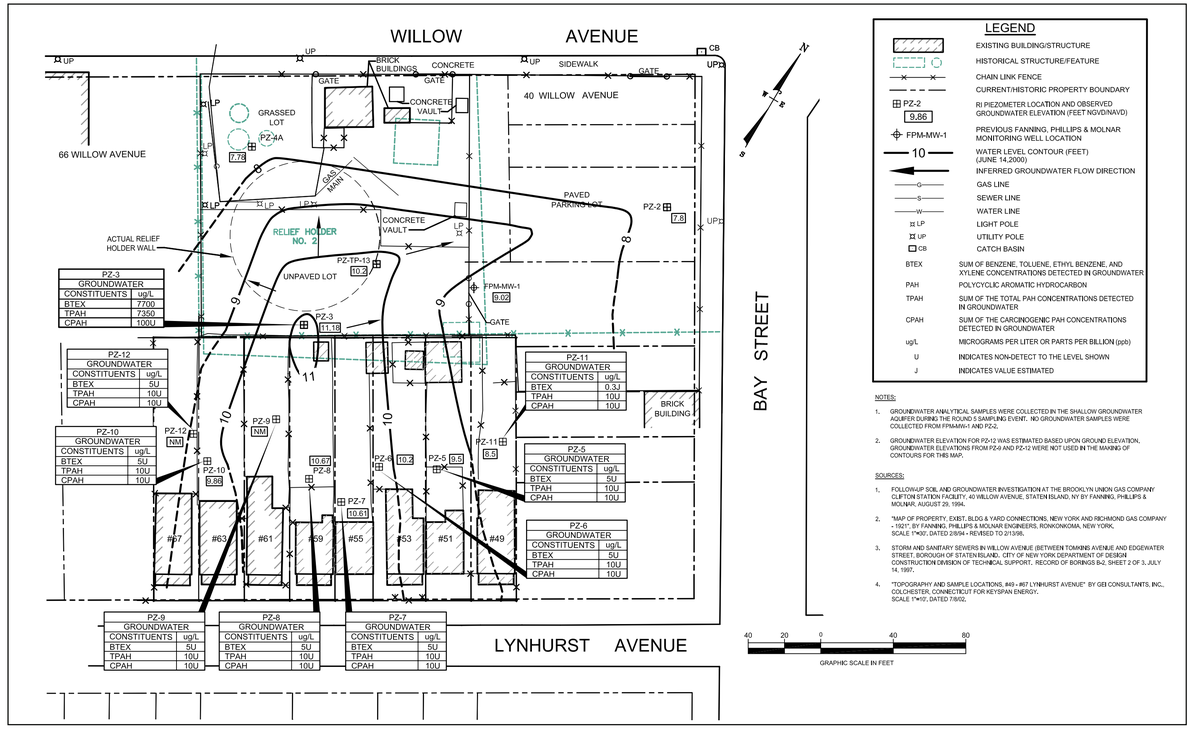
50 25 0 50 100
GRAPHIC SCALE IN FEET



SHALLOW AQUIFER GROUNDWATER CONTOURS AND ANALYTICAL RESULTS - JANUARY 17, 2002



PZ-3 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	7700
TPAH	7350
CPAH	100J

PZ-12 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	5U
TPAH	10U
CPAH	10U

PZ-10 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	5U
TPAH	10U
CPAH	10U

PZ-11 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	0.3J
TPAH	10U
CPAH	10U

PZ-5 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	5U
TPAH	10U
CPAH	10U

PZ-6 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	5U
TPAH	10U
CPAH	10U

PZ-9 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	5U
TPAH	10U
CPAH	10U

PZ-8 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	5U
TPAH	10U
CPAH	10U

PZ-7 GROUNDWATER	
CONSTITUENTS	ug/L
BTEX	5U
TPAH	10U
CPAH	10U

LEGEND

	EXISTING BUILDING/STRUCTURE
	HISTORICAL STRUCTURE/FEATURE
	CHAIN LINK FENCE
	CURRENT/HISTORIC PROPERTY BOUNDARY
PZ-2 9.86	RI PIEZOMETER LOCATION AND OBSERVED GROUNDWATER ELEVATION (FEET NGVD/NAVD)
FPM-MW-1	PREVIOUS FANNING, PHILLIPS & MOLNAR MONITORING WELL LOCATION
10	WATER LEVEL CONTOUR (FEET) (JUNE 14,2000)
	INFERRED GROUNDWATER FLOW DIRECTION
G	GAS LINE
S	SEWER LINE
W	WATER LINE
LP	LIGHT POLE
UP	UTILITY POLE
CB	CATCH BASIN
BTEX	SUM OF BENZENE, TOLUENE, ETHYL BENZENE, AND XYLENE CONCENTRATIONS DETECTED IN GROUNDWATER
PAH	POLYCYCLIC AROMATIC HYDROCARBON
TPAH	SUM OF THE TOTAL PAH CONCENTRATIONS DETECTED IN GROUNDWATER
CPAH	SUM OF THE CARCINOGENIC PAH CONCENTRATIONS DETECTED IN GROUNDWATER
ug/L	MICROGRAMS PER LITER OR PARTS PER BILLION (ppb)
U	INDICATES NON-DETECT TO THE LEVEL SHOWN
J	INDICATES VALUE ESTIMATED

NOTES:

1. GROUNDWATER ANALYTICAL SAMPLES WERE COLLECTED IN THE SHALLOW GROUNDWATER AQUIFER DURING THE ROUND 5 SAMPLING EVENT. NO GROUNDWATER SAMPLES WERE COLLECTED FROM FPMMW-1 AND PZ-2.
2. GROUNDWATER ELEVATION FOR PZ-12 WAS ESTIMATED BASED UPON GROUND ELEVATION, GROUNDWATER ELEVATIONS FROM PZ-9 AND PZ-12 WERE NOT USED IN THE MAKING OF CONTOURS FOR THIS MAP.

SOURCES:

1. FOLLOW-UP SOIL AND GROUNDWATER INVESTIGATION AT THE BROOKLYN UNION GAS COMPANY CLIFTON STATION FACILITY, 40 WILLOW AVENUE, STATEN ISLAND, NY BY FANNING, PHILLIPS & MOLNAR, AUGUST 29, 1994.
2. "MAP OF PROPERTY, EXIST. BLDG & YARD CONNECTIONS, NEW YORK AND RICHMOND GAS COMPANY - 1921", BY FANNING, PHILLIPS & MOLNAR ENGINEERS, RONKONKOMA, NEW YORK, SCALE 1"=30', DATED 2/8/94 - REVISED TO 2/13/98.
3. STORM AND SANITARY SEWERS IN WILLOW AVENUE (BETWEEN TOMKINS AVENUE AND EDGEWATER STREET, BOROUGH OF STATEN ISLAND, CITY OF NEW YORK DEPARTMENT OF DESIGN CONSTRUCTION DIVISION OF TECHNICAL SUPPORT, RECORD OF BORINGS B-2, SHEET 2 OF 3, JULY 14, 1997.
4. "TOPOGRAPHY AND SAMPLE LOCATIONS, #49 - #67 LYNHURST AVENUE" BY GEI CONSULTANTS, INC., COLCHESTER, CONNECTICUT FOR KEYSPAN ENERGY, SCALE 1"=10', DATED 7/6/02.

SHALLOW AQUIFER GROUNDWATER CONTOURS AND ANALYTICAL RESULTS - JUNE 14, 2002

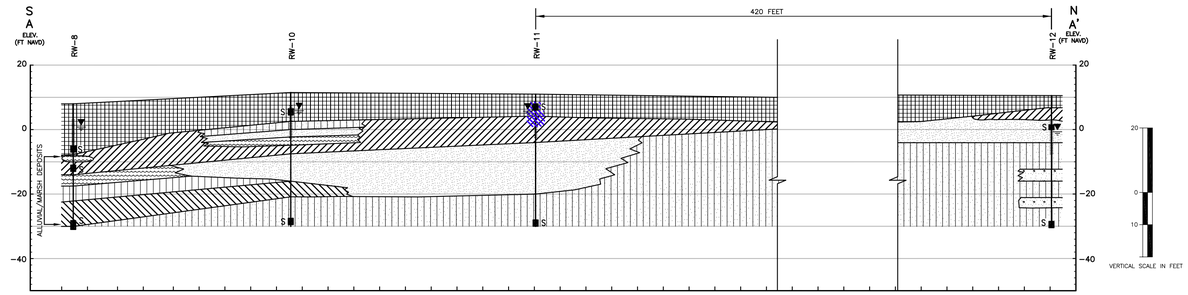
AECOM

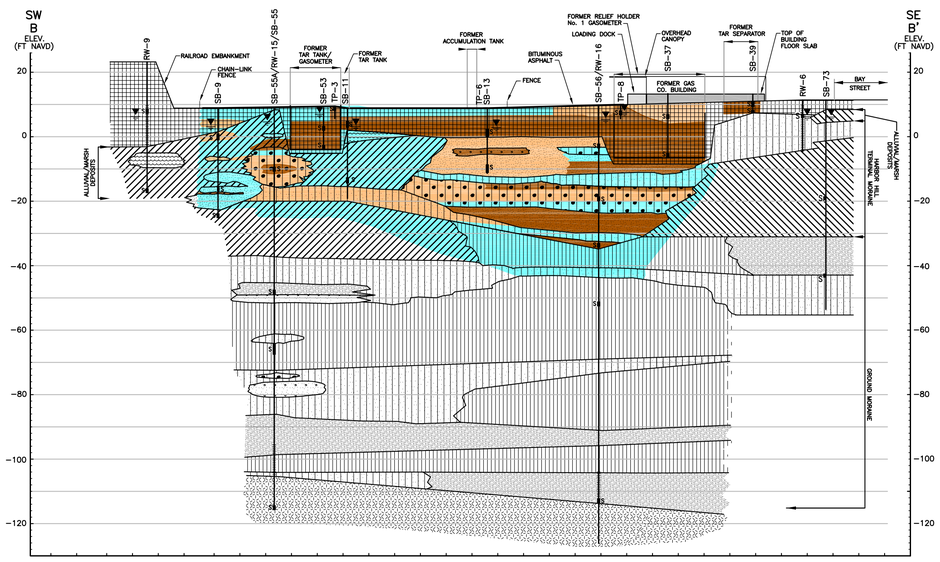
NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

DATE: 1/31/14 | DRWN: XW | JOB NO.: 60137363-540

GROUNDWATER CONTOURS AND ANALYTICAL RESULTS

FIGURE 1-5





LEGEND

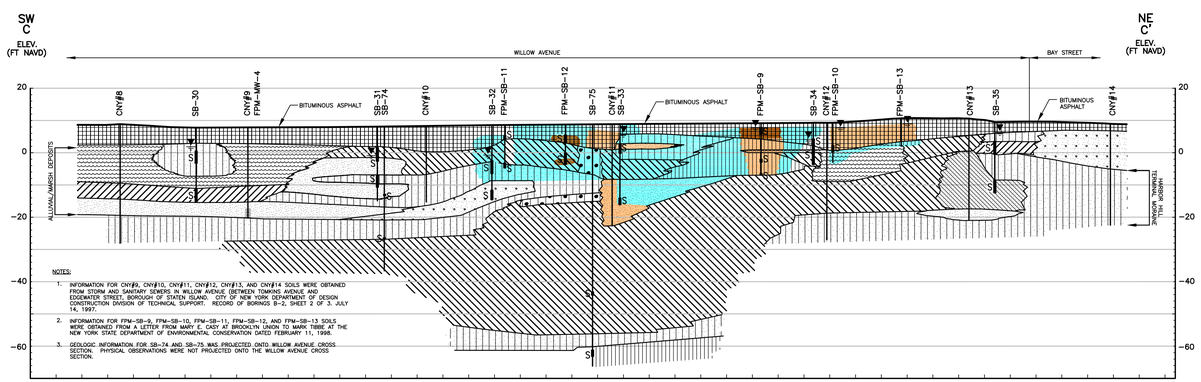
ALLUVIAL/MARSH DEPOSITS
- GRAVELLY-SAND
- SAND (shallow)
- SILT (shallow)
- SILT-CLAY
- GRAVELLY SILT
- PEAT

GLACIAL DEPOSITS
- SILT (deep)
- SILT-SAND
- SAND, SILT, CLAY
- SILT-CLAY
- SAND (deep)
- GRAVELLY-SAND

WEATHERED BEDROCK
- SAPROLITE (weathered bedrock)

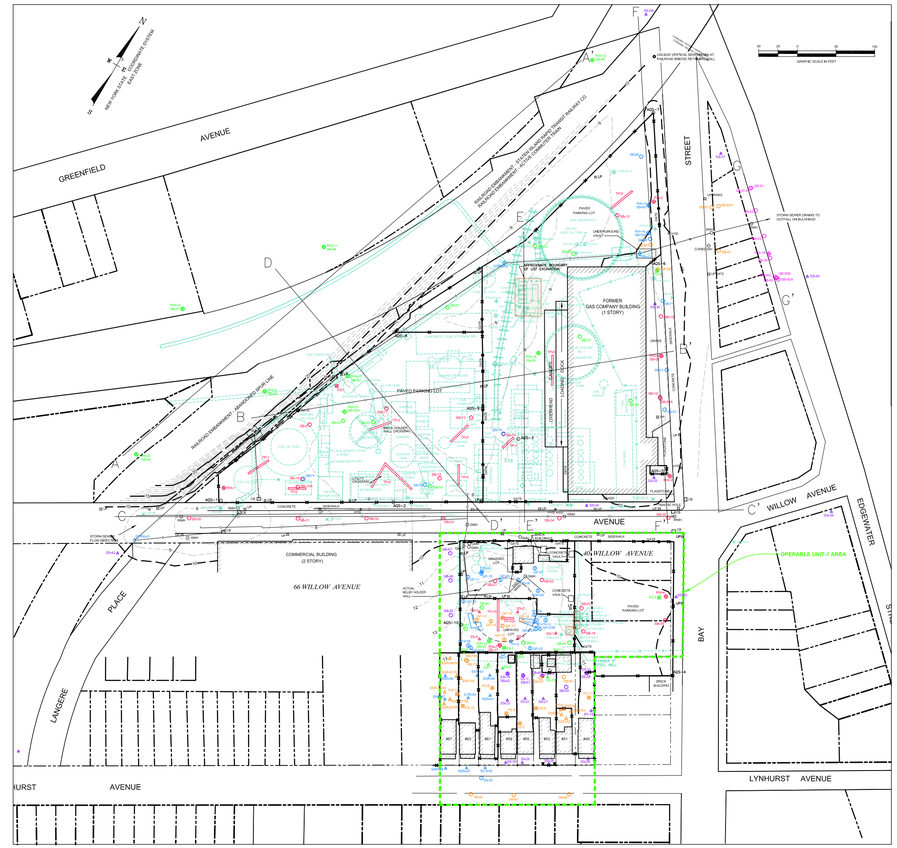
FILL
- FILL

- CONTACT
- OBSERVED APPARENT GROUNDWATER TABLE
- BOUNDARY IS APPROXIMATED
- SB-56/RW-15 — SOIL BORING/ MONITORING WELL IDENTIFICATION
- S — ANALYTICAL SOIL SAMPLE INTERVAL
- WELL SCREEN INTERVAL
- SHEEN AND TAR/ NAPHTHA ODORS
- TAR STAINING, TAR BLEBS/SHEEN AND TAR/NAPHTHA ODORS
- TAR SATURATED, SOIL MATRIX, TAR/NAPHTHA ODORS
- PETROLEUM STAINING, SHEENS AND ODORS



NOTES:

1. INFORMATION FOR CNY@8, CNY@10, CNY@11, CNY@12, CNY@13, AND CNY@14 SOILS WERE OBTAINED FROM STORM AND SANITARY SEWERS IN WILLOW AVENUE (BETWEEN TOMKINS AVENUE AND EDGEWATER STREET, BOROUGH OF STATEN ISLAND. CITY OF NEW YORK DEPARTMENT OF DESIGN CONSTRUCTION DIVISION OF TECHNICAL SUPPORT. RECORD OF BORINGS B-2, SHEET 2 OF 3. JULY 14, 1997.
2. INFORMATION FOR FPM-SB-9, FPM-SB-10, FPM-SB-11, FPM-SB-12, AND FPM-SB-13 SOILS WERE OBTAINED FROM A LETTER FROM MARY E. CASY AT BROOKLYN UNION TO MARK TIBBE AT THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION DATED FEBRUARY 11, 1998.
3. GEOLOGIC INFORMATION FOR SB-74 AND SB-75 WAS PROJECTED ONTO WILLOW AVENUE CROSS SECTION. PHYSICAL OBSERVATIONS WERE NOT PROJECTED ONTO THE WILLOW AVENUE CROSS SECTION.



SOURCES:

1. CROSS SECTIONS ADAPTED THE REPORT " FINAL REMEDIAL INVESTIGATION REPORT, CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2)", DATED FEBRUARY 2005 BY GEI CONSULTANTS, INC..
2. UST CLOSURE SUMMARY REPORT, CLIFTON SERVICE CENTER, 25 WILLOW AVENUE, STATEN ISLAND, NEW YORK BY LEXICON ENVIRONMENTAL ASSOCIATES, INC., OCTOBER 15, 1993.
3. FOLLOW-UP SOIL AND GROUNDWATER INVESTIGATION AT THE BROOKLYN UNION GAS COMPANY CLIFTON STATION FACILITY, 40 WILLOW AVENUE, STATEN ISLAND, NY BY FANNING, PHILLIPS & MOLNAR, AUGUST 29, 1994.
4. "MAP OF PROPERTY, EXIST. BLDG & YARD CONNECTIONS, NEW YORK AND RICHMOND GAS COMPANY - 1921", BY FANNING, PHILLIPS & MOLNAR ENGINEERS, RONKONKOMA, NEW YORK. SCALE 1"=30', DATED 2/8/94 - REVISED TO 2/13/96.
5. STORM AND SANITARY SEWERS IN WILLOW AVENUE (BETWEEN TOMKINS AVENUE AND EDGEWATER STREET, BOROUGH OF STATEN ISLAND. CITY OF NEW YORK DEPARTMENT OF DESIGN CONSTRUCTION DIVISION OF TECHNICAL SUPPORT. RECORD OF BORINGS B-2, SHEET 2 OF 3. JULY 14, 1997.
6. "TOPOGRAPHY AND SAMPLE LOCATIONS, #49 - #67 LYNHURST AVENUE" BY GEI CONSULTANTS, INC., COLCHESTER, CONNECTICUT FOR KEYSPAN ENERGY. SCALE 1"=10', DATED 7/8/02.

LEGEND

- CHAIN LINK FENCE
- EXISTING BUILDING/STRUCTURE
- HISTORICAL STRUCTURE/FEATURE
- AQS-1 — RI AIR QUALITY SAMPLE LOCATION
- SS-1 — RI SOIL SAMPLE LOCATION
- RW-1 — RI MONITORING WELL LOCATION
- TP-7 — RI TEST PIT LOCATION
- SB-14 — RI SOIL BORING LOCATION
- PZ-3 — RI PIEZOMETER LOCATION
- STRM-03 — RI STORM SEWER SAMPLE LOCATION
- GP-1 — FEASIBILITY STUDY (FS) SUPPORT GEOPROBE LOCATION
- ROUND 1 SAMPLING OF REMEDIAL INVESTIGATION
- ROUND 2 SAMPLING OF REMEDIAL INVESTIGATION
- ROUND 3 SAMPLING OF REMEDIAL INVESTIGATION
- ROUND 4 SAMPLING OF REMEDIAL INVESTIGATION
- ROUND 5 SAMPLING OF REMEDIAL INVESTIGATION
- ROUND 6 SAMPLING OF REMEDIAL INVESTIGATION
- LEX-SS-1 — PREVIOUS LEXICON SIDEWALL SOIL SAMPLE LOCATION
- LEX-OW-1 — PREVIOUS LEXICON MONITORING WELL LOCATION
- FPM-OW-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR MONITORING WELL LOCATION
- FPM-GP-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR GEOPROBE/PIEZOMETER LOCATION
- SB-NY — PREVIOUS SOIL BORING LOCATION
- FPM-SB-1 — PREVIOUS FANNING, PHILLIPS & MOLNAR SOIL BORING LOCATION
- CNY-P1 — PREVIOUS CITY OF NEW YORK SOIL BORING LOCATION
- GAS LINE
- SEWER LINE
- WATER LINE
- FP — FLAG POLE
- LP — LIGHT POLE
- HYD — FIRE HYDRANT
- UP — UTILITY POLE
- CB — CATCH BASIN
- MANHOLE
- EXCAVATION BOUNDARY
- C — C' — CROSS-SECTION LOCATION

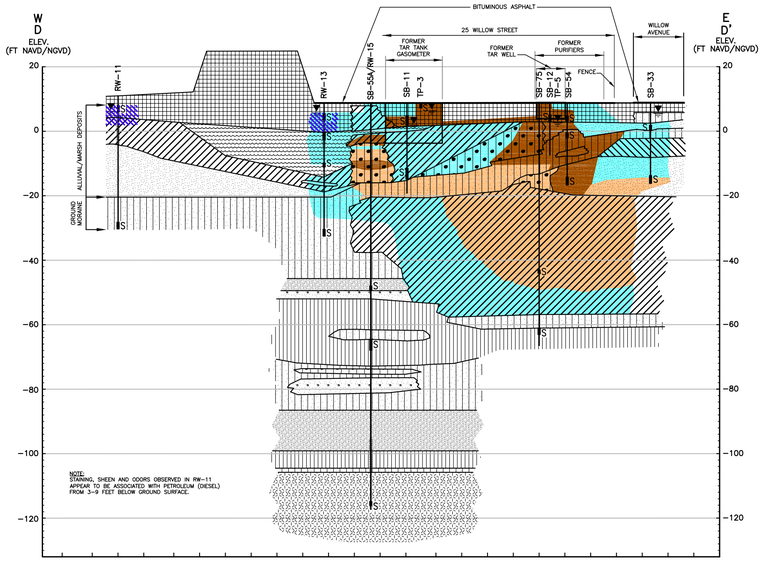
NOTE: PZ-1 ABANDONED AFTER ROUND 1 RI SAMPLING

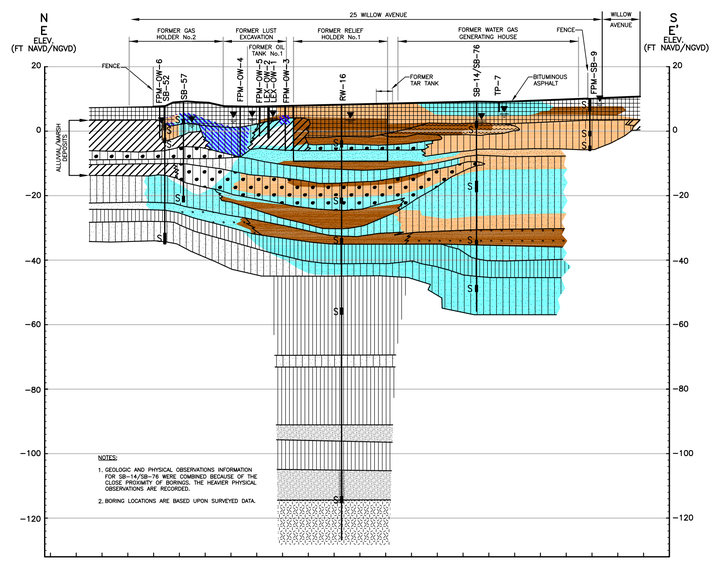
AECOM

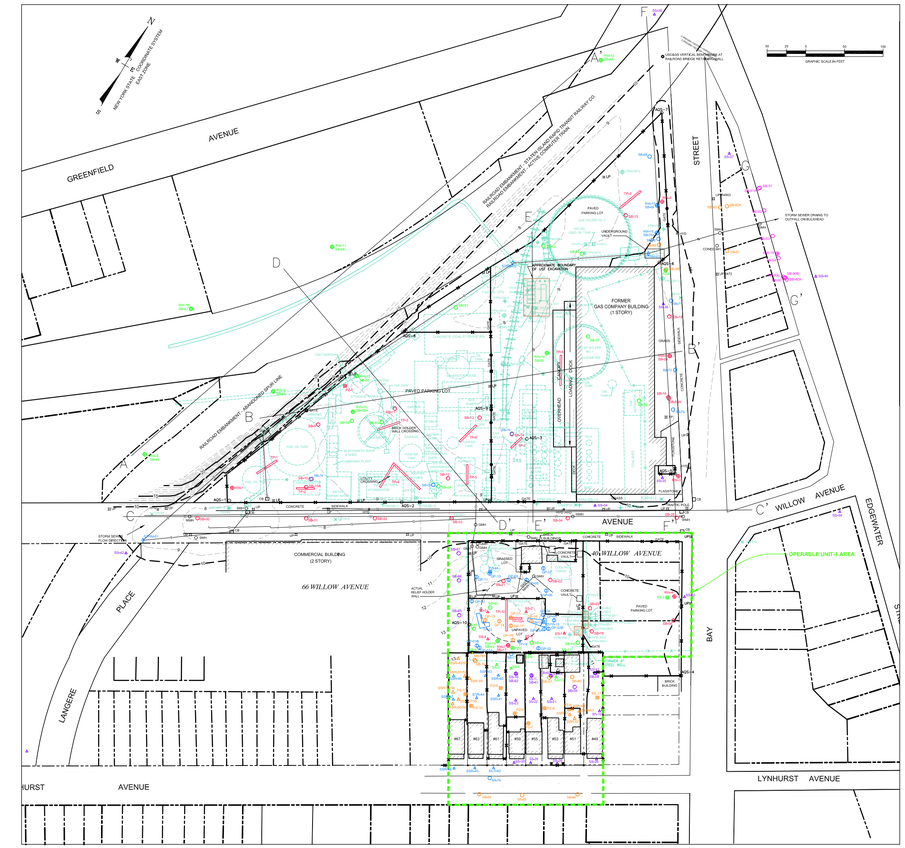
NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

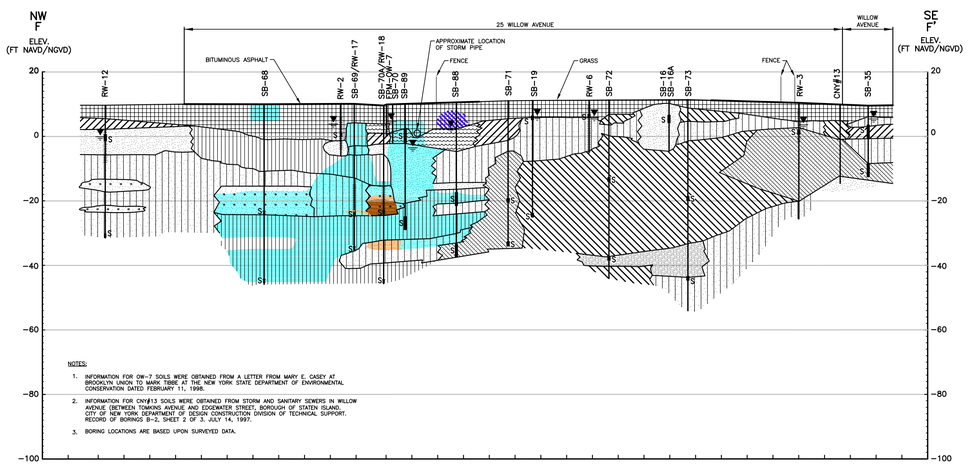
25 WILLOW AVENUE AND ADJACENT OFF-SITE AREA CROSS SECTIONS A-A', B-B' AND C-C'

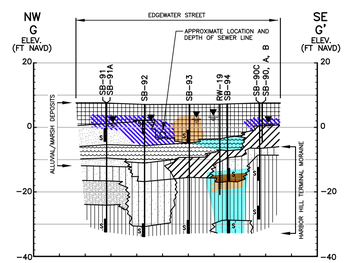
DATE: 1/31/14	DRWN: XW	JOB NO.: 60137363-540	**FIGURE 1-6A**











VERTICAL SCALE IN FEET

SOURCES:

1. CROSS SECTIONS ADAPTED THE REPORT " FINAL REMEDIAL INVESTIGATION REPORT, CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2)", DATED FEBRUARY 2005 BY GEI CONSULTANTS, INC..
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6. "TOPOGRAPHY AND SAMPLE LOCATIONS, #49 - #67 LYNHURST AVENUE" BY GEI CONSULTANTS, INC., COLCHESTER, CONNECTICUT FOR KEYSPAN ENERGY. SCALE 1"=10', DATED 7/8/02.

LEGEND

CHAIN LINK FENCE	GAS LINE
EXISTING BUILDING/STRUCTURE	SEWER LINE
HISTORICAL STRUCTURE/FEATURE	WATER LINE
AQS-1 RI AIR QUALITY SAMPLE LOCATION	FP FLAG POLE
SS-1 RI SOIL SAMPLE LOCATION	LP LIGHT POLE
RW-1 RI MONITORING WELL LOCATION	HYD FIRE HYDRANT
TP-7 RI TEST PIT LOCATION	UP UTILITY POLE
SB-14 RI SOIL BORING LOCATION	CB CATCH BASIN
PZ-3 RI PIEZOMETER LOCATION	MANHOLE
STRM-03 RI STORM SEWER SAMPLE LOCATION	EXCAVATION BOUNDARY
GP-1 FEASIBILITY STUDY (FS) SUPPORT GEOPROBE LOCATION	C — C' CROSS-SECTION LOCATION
ROUND 1 SAMPLING OF REMEDIAL INVESTIGATION	
ROUND 2 SAMPLING OF REMEDIAL INVESTIGATION	
ROUND 3 SAMPLING OF REMEDIAL INVESTIGATION	
ROUND 4 SAMPLING OF REMEDIAL INVESTIGATION	NOTE: PZ-1 ABANDONED AFTER ROUND 1 RI SAMPLING
ROUND 5 SAMPLING OF REMEDIAL INVESTIGATION	
ROUND 6 SAMPLING OF REMEDIAL INVESTIGATION	
LEX-SS-1 PREVIOUS LEXICON SIDEWALL SOIL SAMPLE LOCATION	
LEX-OW-1 PREVIOUS LEXICON MONITORING WELL LOCATION	
FPM-OW-1 PREVIOUS FANNING, PHILLIPS & MOLNAR MONITORING WELL LOCATION	
FPM-GP-1 PREVIOUS FANNING, PHILLIPS & MOLNAR GEOPROBE/PIEZOMETER LOCATION	
SB-NY PREVIOUS SOIL BORING LOCATION	
FPM-SB-1 PREVIOUS FANNING, PHILLIPS & MOLNAR SOIL BORING LOCATION	
CNY-P1 PREVIOUS CITY OF NEW YORK SOIL BORING LOCATION	

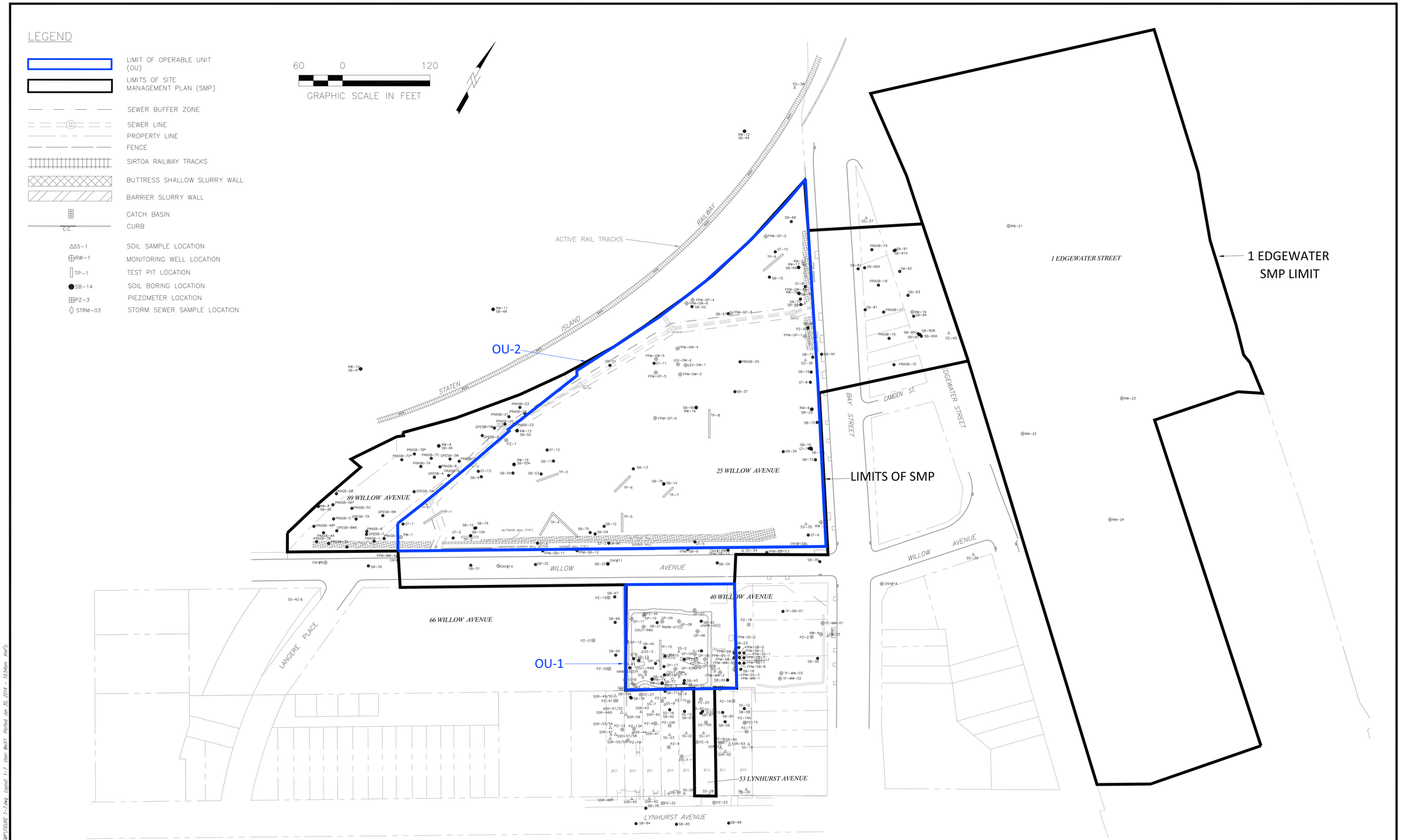
AECOM

NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

DATE: 1/31/14 | DRWN: XW | JOB NO.: 60137363-540

25 WILLOW AVENUE AND ADJACENT OFF-SITE AREA CROSS SECTIONS D-D', E-E', F-F' AND G-G'

FIGURE 1-6B



AECOM

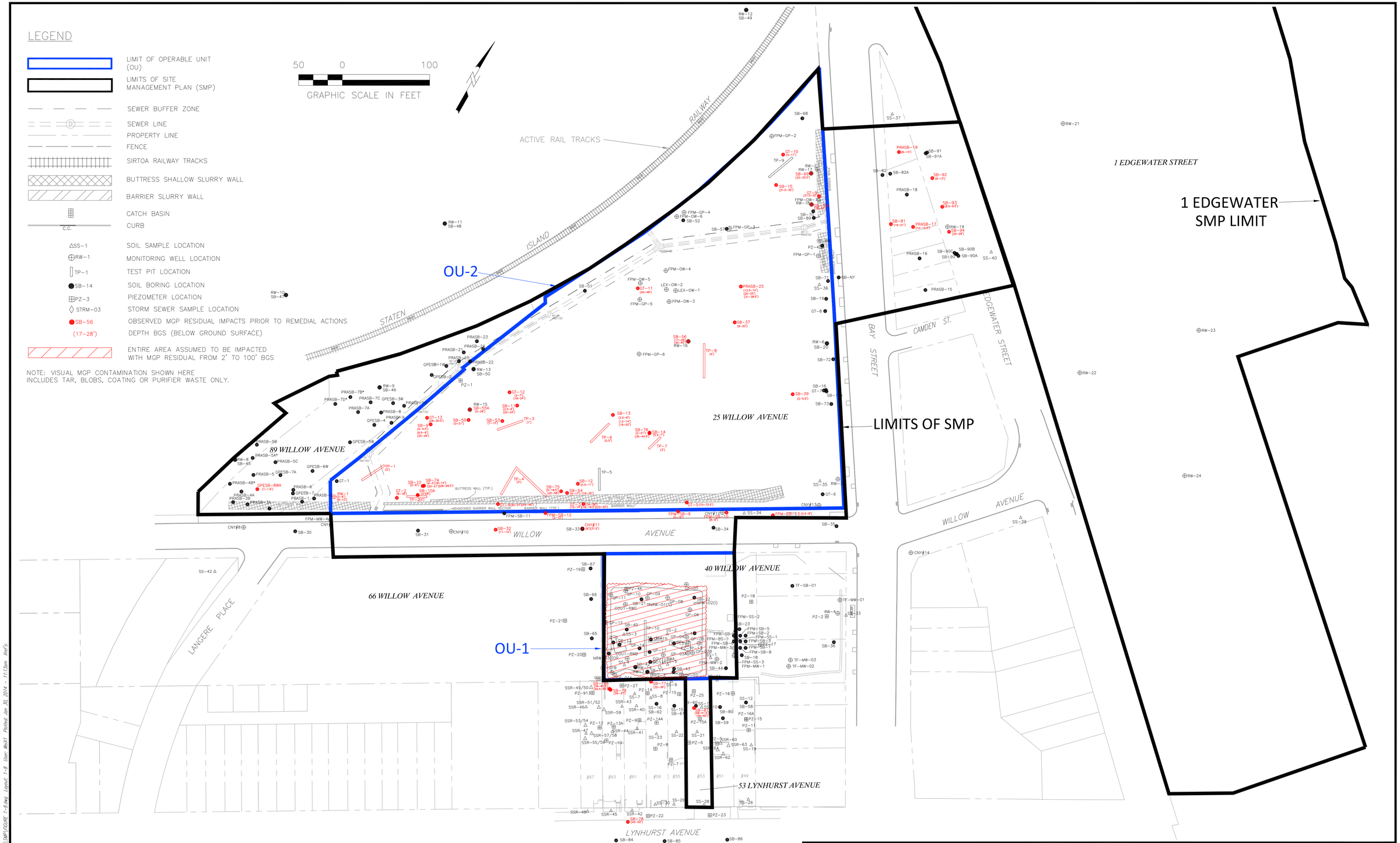
NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

DATE: 01/31/14 | DRWN: XW | JOB NO.: 60137363-540

INVESTIGATION LOCATIONS

FIGURE 1-7

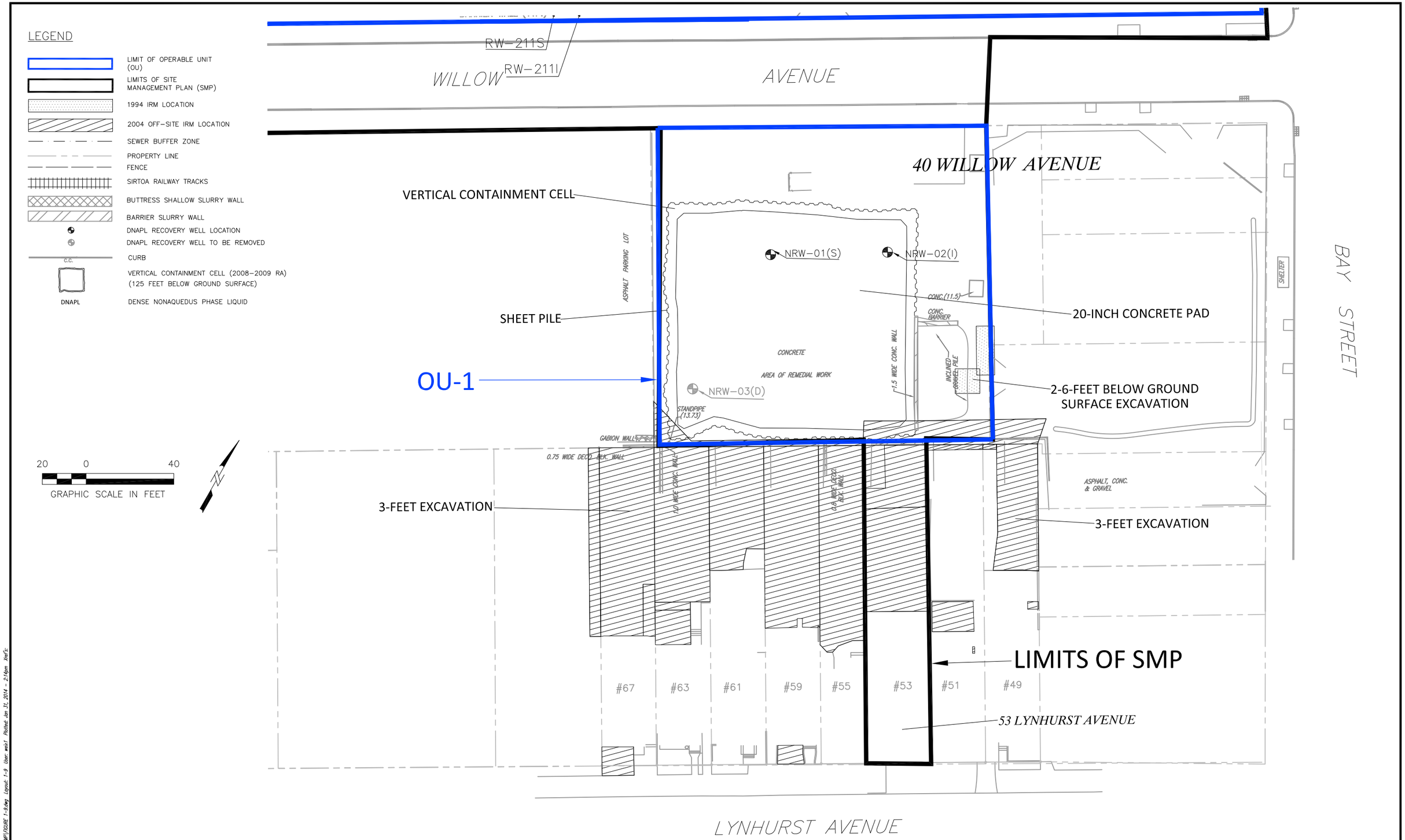
File: K:\Clifton\60137363\CADD\SMP\FIGURE 1-7.dwg Layout: 1-7 User: Wick11 Plotted: Jan 30, 2014 - 10:54am Xref's:



AECOM

NATIONAL GRID FORMER CLIFTON MANUFACTURED GAS PLANT SITE MANAGEMENT PLAN			EXTENT OF COAL TAR CONTAMINATION IN SOILS PRIOR TO REMEDIAL ACTION IMPLEMENTATION
DATE: 01/31/14	DRWN: XW	JOB NO.: 60137363-520	FIGURE 1-8

File: V:\Clifton\60137363\01_SMP\FIGURE 1-8.dwg Layout: 1-8 User: Wx01 Plotted: Jan 30, 2014 - 11:15am Ref-C:



AECOM

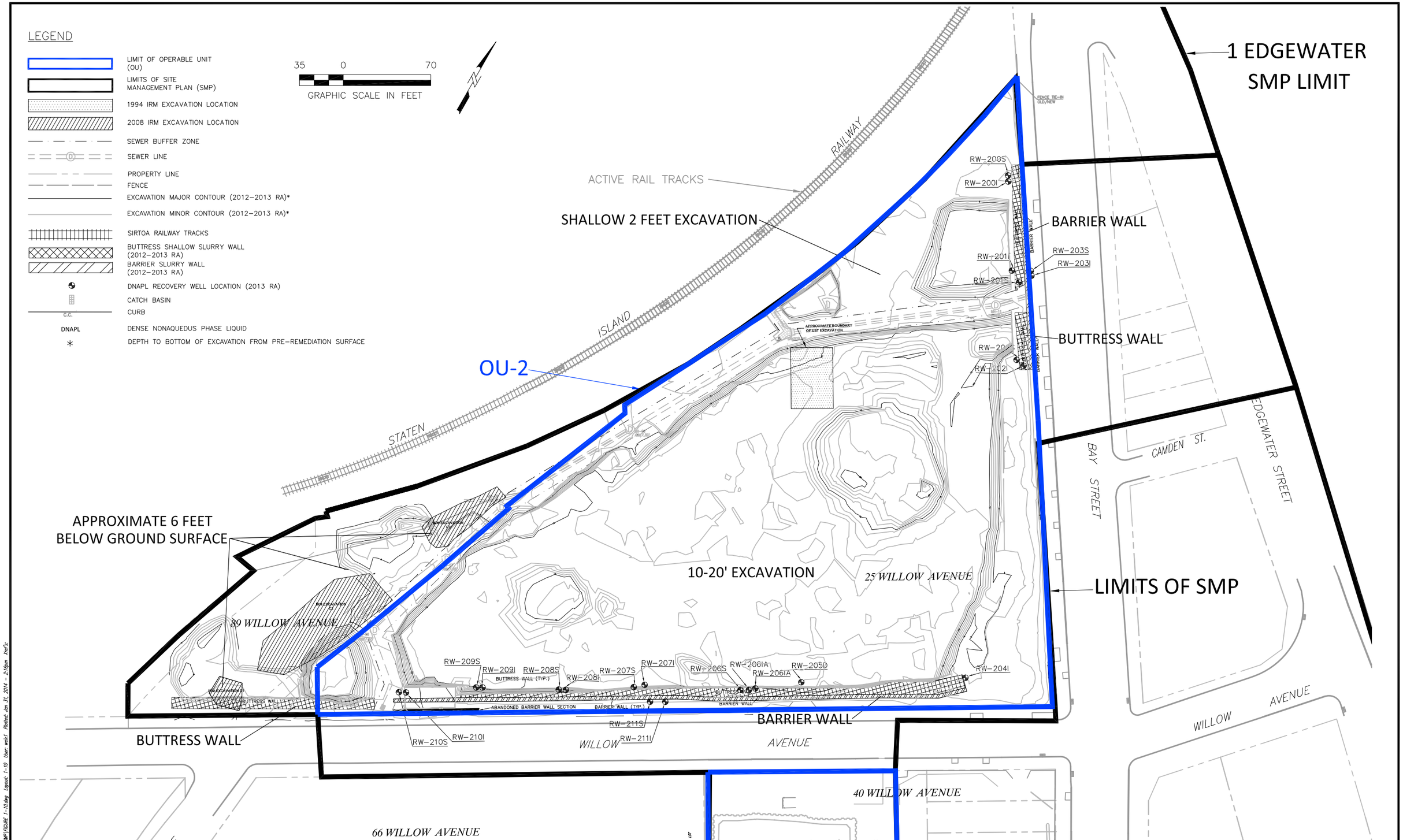
NATIONAL GRID FORMER CLIFTON MANUFACTURED GAS PLANT SITE MANAGEMENT PLAN			EXTENT OF REMEDIAL ACTION ON 40 WILLOW AVENUE AND SURROUNDING OFF-SITE PROPERTIES
DATE: 01/24/2014	DRWN: XW	JOB NO.: 60137363-540	FIGURE 1-9

File: V:\Clifton\60137363\CADD\SMP\FIGURE 1-9.dwg Layout: 1-9 User: wm1 Plotted: Jan 31, 2014 - 2:14pm Xref:

LEGEND

- LIMIT OF OPERABLE UNIT (OU)
- LIMITS OF SITE MANAGEMENT PLAN (SMP)
- 1994 IRM EXCAVATION LOCATION
- 2008 IRM EXCAVATION LOCATION
- SEWER BUFFER ZONE
- SEWER LINE
- PROPERTY LINE
- FENCE
- EXCAVATION MAJOR CONTOUR (2012–2013 RA)*
- EXCAVATION MINOR CONTOUR (2012–2013 RA)*
- SIRTOA RAILWAY TRACKS
- BUTTRESS SHALLOW SLURRY WALL (2012–2013 RA)
- BARRIER SLURRY WALL (2012–2013 RA)
- DNAPL RECOVERY WELL LOCATION (2013 RA)
- CATCH BASIN
- C.C. CURB
- DNAPL DENSE NONAQUEDUS PHASE LIQUID
- * DEPTH TO BOTTOM OF EXCAVATION FROM PRE–REMEDIATION SURFACE

35 0 70
GRAPHIC SCALE IN FEET



AECOM

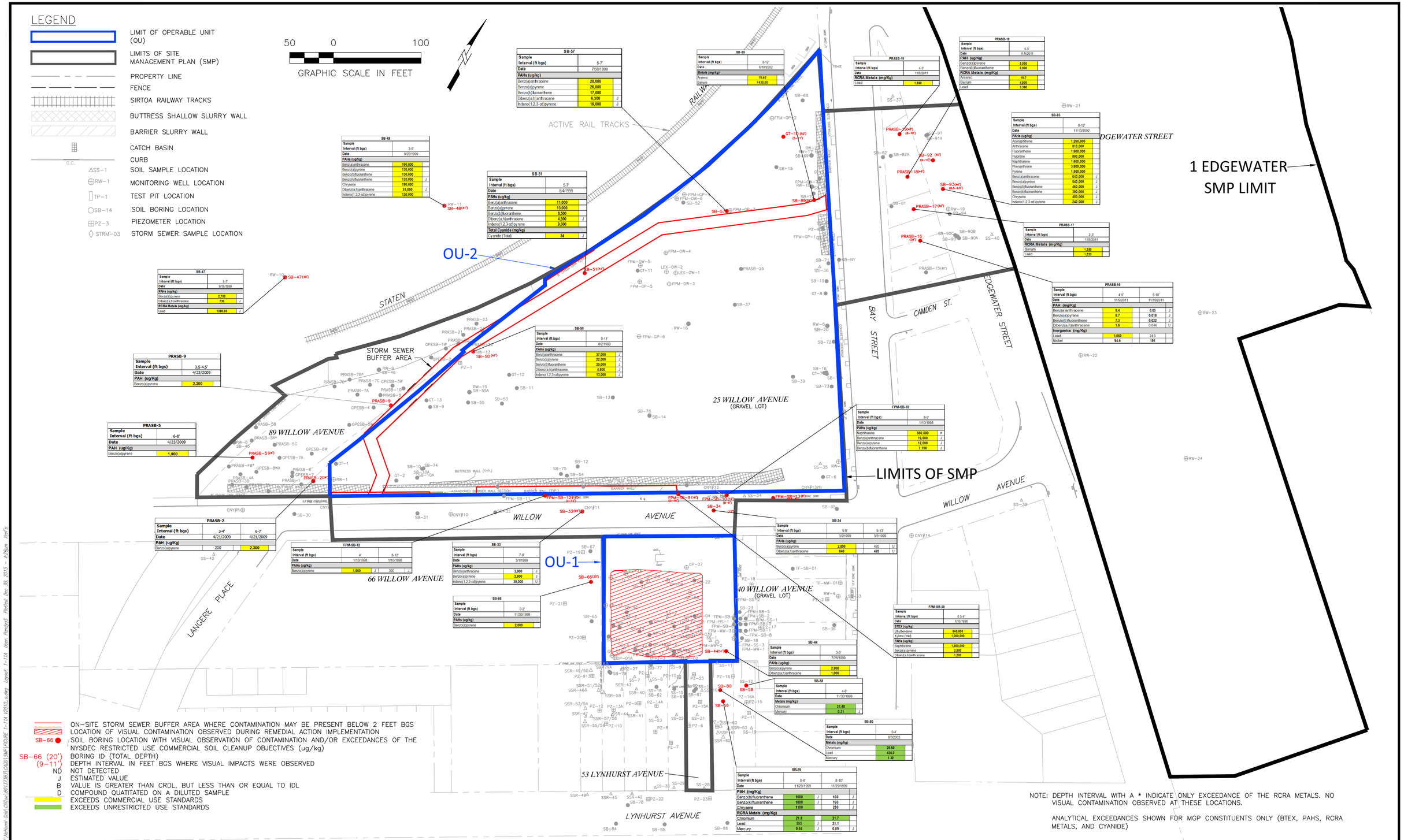
NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

DATE: 01/31/2014 | DRWN: XW | JOB NO.: 60137363–540

EXTENT OF INTERIM REMEDIAL MEASURE AND REMEDIAL ACTION ON 25 AND 89 WILLOW AVENUE PROPERTIES

FIGURE 1-10

File: V:\Clifton\60137363\CADD\SMP\FIGURE 1-10.dwg Layout: 1-10 User: wes1 Plotted: Jan 31, 2014 - 2:16pm Xref's:



SB-57	
Sample Interval (ft bgs)	5-7'
Date	7/30/1999
PAHs (ug/kg)	
Benz(a)anthracene	20,000
Benzo(a)pyrene	26,000
Benzo(b)fluoranthene	17,000
Dibenz(a,h)anthracene	6,300 J
Indeno(1,2,3-cd)pyrene	16,000 J

SB-89	
Sample Interval (ft bgs)	9-12'
Date	6/19/2002
Metals (mg/kg)	
Arsenic	19.40
Barium	1435.00

PRASB-19	
Sample Interval (ft bgs)	4-5'
Date	11/6/2011
RCRA Metals (mg/Kg)	
Lead	1.860

PRASB-18	
Sample Interval (ft bgs)	4-5'
Date	11/6/2011
PAH (ug/Kg)	
Benzo(a)pyrene	5,500
Benzo(b)fluoranthene	6,900
RCRA Metals (mg/Kg)	
Arsenic	19.7
Barium	4,900
Lead	3,340

SB-93	
Sample Interval (ft bgs)	5-12'
Date	11/13/2002
PAHs (ug/kg)	
Acenaphthene	1,200,000
Anthracene	810,000
Fluoranthene	1,900,000
Fluorene	890,000
Naphthalene	1,600,000
Phenanthrene	3,800,000
Pyrene	1,500,000
Benz(a)anthracene	640,000 J
Benzo(a)pyrene	540,000 J
Benzo(b)fluoranthene	460,000 J
Benzo(k)fluoranthene	390,000 J
Chrysene	450,000 J
Indeno(1,2,3-cd)pyrene	240,000 J

SB-48	
Sample Interval (ft bgs)	3-5'
Date	9/20/1999
PAHs (ug/kg)	
Benz(a)anthracene	190,000
Benzo(a)pyrene	130,000
Benzo(b)fluoranthene	130,000
Benzo(k)fluoranthene	130,000 J
Chrysene	180,000 J
Dibenz(a,h)anthracene	51,000 J
Indeno(1,2,3-cd)pyrene	120,000

SB-51	
Sample Interval (ft bgs)	5-7
Date	8/4/1999
PAHs (ug/kg)	
Benz(a)anthracene	11,000
Benzo(a)pyrene	13,000
Benzo(b)fluoranthene	8,500
Dibenz(a,h)anthracene	4,300 J
Indeno(1,2,3-cd)pyrene	9,000
Total Cyanide (mg/kg)	
Cyanide (Total)	34 J

PRASB-17	
Sample Interval (ft bgs)	2-3'
Date	11/6/2011
RCRA Metals (mg/Kg)	
Barium	1,350
Lead	1,830

PRASB-16		
Sample Interval (ft bgs)	4-5'	5-10'
Date	11/9/2011	11/10/2011
PAH (mg/Kg)		
Benz(a)anthracene	8.4	0.03 J
Benzo(a)pyrene	6.7	0.018 J
Benzo(b)fluoranthene	7.3	0.022 J
Dibenz(a,h)anthracene	1.6	0.044 U
Inorganics (mg/Kg)		
Lead	1,050	24.6
Nickel	94.6	191

SB-47	
Sample Interval (ft bgs)	5-7'
Date	9/15/1999
PAHs (ug/kg)	
Benzo(a)pyrene	2,700
Dibenz(a,h)anthracene	730 J
RCRA Metals (mg/kg)	
Lead	1380.00 J

SB-50	
Sample Interval (ft bgs)	9-11'
Date	8/2/1999
PAHs (ug/kg)	
Benz(a)anthracene	37,000 J
Benzo(a)pyrene	22,000 J
Benzo(b)fluoranthene	20,000 J
Dibenz(a,h)anthracene	4,800 J
Indeno(1,2,3-cd)pyrene	13,000 J

PRASB-9	
Sample Interval (ft bgs)	3.5-4.5'
Date	4/23/2009
PAH (ug/Kg)	
Benzo(a)pyrene	2,200

FPM-SB-10		
Sample Interval (ft bgs)	8-9'	
Date	1/10/1998	
PAHs (ug/kg)		
Naphthalene	560,000	#
Benz(a)anthracene	19,000	J
Benzo(a)pyrene	12,000	J
Benzo(b)fluoranthene	7,100	J

PRASB-5	
Sample Interval (ft bgs)	6-8'
Date	4/23/2009
PAH (ug/Kg)	
Benzo(a)pyrene	1,900

PRASB-2		
Sample Interval (ft bgs)	3-4'	6-7'
Date	4/21/2009	4/21/2009
PAH (ug/Kg)		
Benzo(a)pyrene	200	2,300

FPM-SB-12				
Sample Interval (ft bgs)	4'		8-12'	
Date	1/10/1998		1/10/1998	
PAHs (ug/kg)				
Benzo(a)pyrene	1,600	J	300	J

SB-33		
Sample Interval (ft bgs)	7-9'	
Date	3/11/1999	
PAHs (ug/kg)		
Benz(a)anthracene	3,900	J
Benzo(a)pyrene	2,800	J
Indeno(1,2,3-cd)pyrene	39,000	U

SB-66	
Sample Interval (ft bgs)	0-2'
Date	11/30/1999
PAHs (ug/kg)	
Benzo(a)pyrene	2,000

SB-34				
Sample Interval (ft bgs)	5-9'		9-13'	
Date	3/2/1999		3/2/1999	
PAHs (ug/kg)				
Benzo(a)pyrene	2,000		420	U
Dibenz(a,h)anthracene	840		420	U

FPM-SB-09	
Sample Interval (ft bgs)	0.5-4'
Date	1/10/1998
BTEX (ug/kg)	
Ethylbenzene	645,000
Xylene (total)	1,000,000
PAHs (ug/kg)	
Naphthalene	1,400,000
Benzo(a)pyrene	2,800
Dibenz(a,h)anthracene	1,200

SB-44	
Sample Interval (ft bgs)	3-5'
Date	7/26/1999
PAHs (ug/kg)	
Benzo(a)pyrene	2,800
Dibenz(a,h)anthracene	1,000

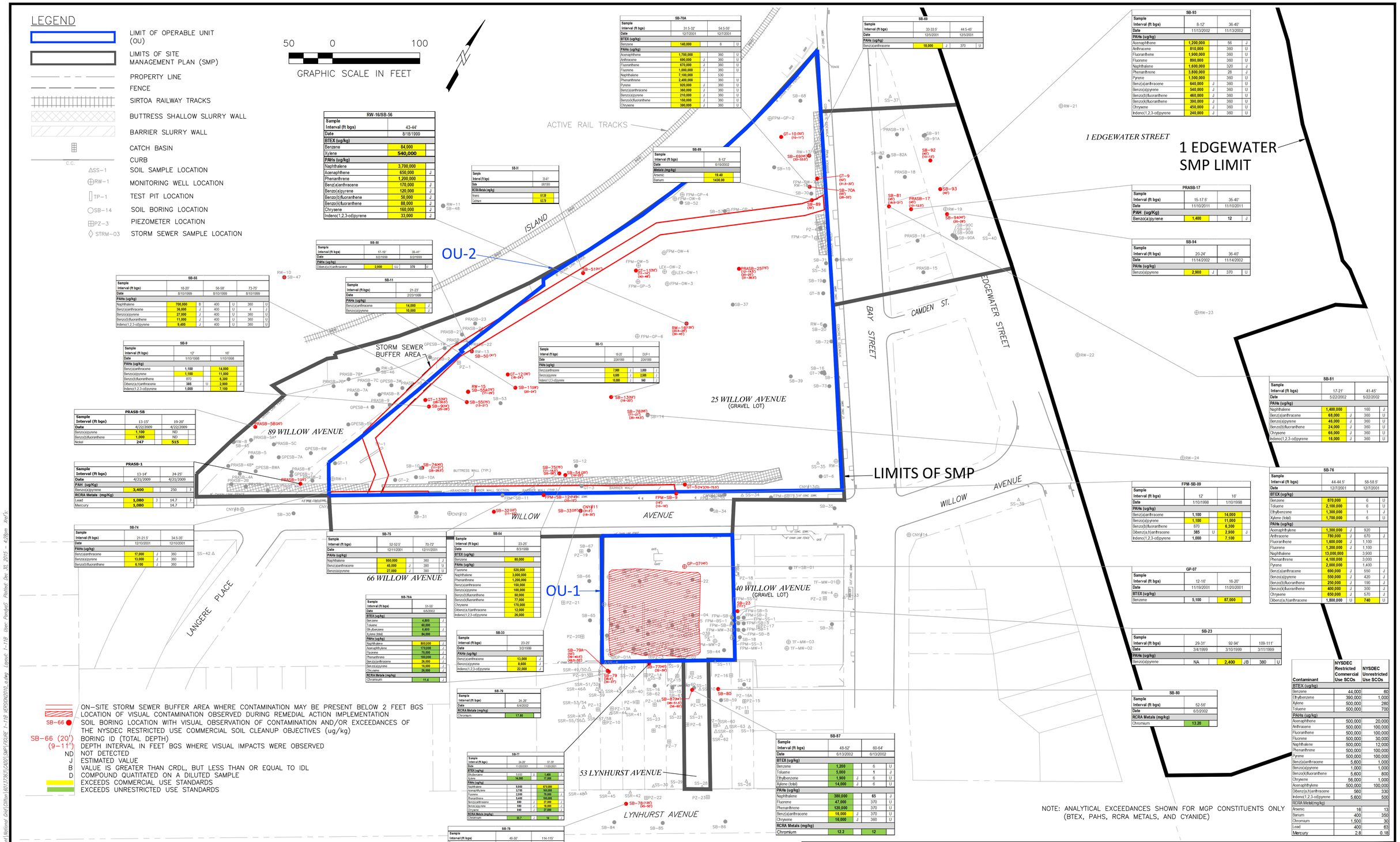
SB-58	
Sample Interval (ft bgs)	4-6'
Date	11/30/1999
Metals (mg/kg)	
Chromium	31.40
Mercury	0.31 J

SB-80	
Sample Interval (ft bgs)	0-4'
Date	6/3/2002
Metals (mg/kg)	
Chromium	26.60
Lead	436.0
Mercury	1.30

SB-59				
Sample Interval (ft bgs)	0-4'		8-10'	
Date	11/29/1999		11/29/1999	
PAH (mg/Kg)				
Benzo(b)fluoranthene	1000	J	160	J
Benzo(k)fluoranthene	1800	J	160	J
Chrysene	1100		230	J
RCRA Metals (mg/Kg)				
Chromium	21.8		21.7	
Lead	555	J	21.1	
Mercury	0.56	J	0.09	J

AECOM

NATIONAL GRID FORMER CLIFTON MANUFACTURED GAS PLANT SITE MANAGEMENT PLAN	EXTENT OF REMAINING SOIL CONTAMINATION (LESS THAN 10' BELOW GROUND SURFACE)
DATE: 5/1/2015 DRWN: XW JOB NO.: 60137363-540	FIGURE 1-11A



RW-16/SB-56		
Sample Interval (ft bgs)	43-44'	
Date	8/18/1999	
BTEX (ug/kg)		
Benzene	84,000	
Xylene	540,000	
PAHs (ug/kg)		
Naphthalene	3,700,000	
Acenaphthene	650,000	J
Phenanthrene	1,200,000	
Benz(a)anthracene	170,000	J
Benzo(a)pyrene	120,000	J
Benzo(b)fluoranthene	50,000	J
Benzo(k)fluoranthene	88,000	J
Chrysene	160,000	J
Indeno(1,2,3-cd)pyrene	33,000	J

SB-70A				
Sample Interval (ft bgs)	31.5-32'		54.5-55'	
Date	12/7/2001		12/7/2001	
BTEX (ug/kg)				
Benzene	140,000		6	U
PAHs (ug/kg)				
Acenaphthene	1,700,000		360	U
Anthracene	690,000	J	360	U
Fluoranthene	870,000	J	360	U
Fluorene	1,000,000	J	360	U
Naphthalene	7,100,000		530	
Phenanthrene	2,400,000		360	U
Pyrene	920,000	J	360	U
Benz(a)anthracene	360,000	J	360	U
Benzo(a)pyrene	210,000	J	360	U
Benzo(k)fluoranthene	150,000	J	360	U
Chrysene	390,000	J	360	U

SB-69				
Sample Interval (ft bgs)	33-33.5'		44.5-45'	
Date	12/5/2001		12/5/2001	
PAHs (ug/kg)				
Benz(a)anthracene	18,000	J	370	U

SB-93				
Sample Interval (ft bgs)	8-12'		36-40'	
Date	11/13/2002		11/13/2002	
PAHs (ug/kg)				
Acenaphthene	1,200,000		56	J
Anthracene	810,000		360	U
Fluoranthene	1,900,000		360	U
Fluorene	890,000		360	U
Naphthalene	1,600,000		320	J
Phenanthrene	3,800,000		28	J
Pyrene	1,500,000		360	U
Benz(a)anthracene	640,000	J	360	U
Benzo(a)pyrene	540,000	J	360	U
Benzo(b)fluoranthene	460,000	J	360	U
Benzo(k)fluoranthene	390,000	J	360	U
Chrysene	450,000	J	360	U
Indeno(1,2,3-cd)pyrene	240,000	J	360	U

SB-89		
Sample Interval (ft bgs)	8-12'	
Date	6/19/2002	
Metals (mg/kg)		
Arsenic	19.40	
Barium	1430.00	

SB-51		
Sample Interval (ft bgs)	39-41'	
Date	8/4/1999	
SCEM Metals (mg/kg)		
Arsenic	61.30	
Cadmium	63.70	

SB-50				
Sample Interval (ft bgs)	17-19'		39-41'	
Date	8/2/1999		8/2/1999	
PAHs (ug/kg)				
Dibenz(a,h)anthracene	2,900	UJ	370	U

SB-55						
Sample Interval (ft bgs)	18-20'		56-58'		73-75'	
Date	8/10/1999		8/10/1999		8/10/1999	
PAHs (ug/kg)						
Naphthalene	700,000	B	400	U	360	U
Benz(a)anthracene	36,000	J	400	U	4	J
Benzo(a)pyrene	27,000	J	400	U	360	U
Benzo(b)fluoranthene	11,000	J	400	U	360	U
Indeno(1,2,3-cd)pyrene	9,400	J	400	U	360	U

SB-11		
Sample Interval (ft bgs)	21-23'	
Date	2/23/1999	
PAHs (ug/kg)		
Benz(a)anthracene	14,000	J
Benzo(a)pyrene	10,000	J

SB-9				
Sample Interval (ft bgs)	12'		18'	
Date	1/10/1998		1/10/1998	
PAHs (ug/kg)				
Benz(a)anthracene	1,100		14,000	
Benzo(a)pyrene	1,100		11,000	
Benzo(b)fluoranthene	870		9,300	
Dibenz(a,h)anthracene	385	U	2,900	J
Indeno(1,2,3-cd)pyrene	1,000		7,100	

SB-13				
Sample Interval (ft bgs)	18-20'		DUP-1	
Date	2/24/1999		2/24/1999	
PAHs (ug/kg)				
Benz(a)anthracene	7,900	J	3,000	J
Benzo(a)pyrene	6,600	J	2,500	J
Indeno(1,2,3-cd)pyrene	16,000	J	540	J

PRASB-5B		
Sample Interval (ft bgs)	13-15'	19-20'
Date	4/22/2009	4/22/2009
Benzo(a)pyrene	1,100	ND
Benzo(b)fluoranthene	1,000	ND
Nickel	247	515

PRASB-1				
Sample Interval (ft bgs)	13-14'		24-25'	
Date	4/21/2009		4/21/2009	
PAH (ug/Kg)				
Benzo(a)pyrene	3,400		250	J
RCRA Metals (mg/Kg)				
Lead	1,080	J	14.7	J
Mercury	1.080		14.7	

SB-74				
Sample Interval (ft bgs)	21-21.5'		34.5-35'	
Date	12/10/2001		12/10/2001	
PAHs (ug/kg)				
Benz(a)anthracene	17,000	J	360	
Benzo(a)pyrene	13,000	J	360	
Benzo(b)fluoranthene	6,100	J	360	

SB-75				
Sample Interval (ft bgs)	52-52.5'		70-72'	
Date	12/11/2001		12/11/2001	
PAHs (ug/kg)				
Naphthalene	950,000		360	J
Benz(a)anthracene	46,000	J	360	U
Benzo(a)pyrene	27,000	J	360	U

SB-54		
Sample Interval (ft bgs)	23-25'	
Date	8/3/1999	
BTEX (ug/kg)		
Benzene	80,000	
PAHs (ug/kg)		
Fluorene	620,000	
Naphthalene	3,000,000	
Phenanthrene	1,200,000	
Benz(a)anthracene	150,000	
Benzo(a)pyrene	100,000	
Benzo(b)fluoranthene	90,000	
Benzo(k)fluoranthene	77,000	
Chrysene	170,000	
Dibenz(a,h)anthracene	12,000	
Indeno(1,2,3-cd)pyrene	28,000	

SB-79A		
Sample Interval (ft bgs)	55-58'	
Date	6/6/2002	
BTEX (ug/kg)		
Benzene	4,800	J
Toluene	80,000	
Ethylbenzene	6,600	J
Xylene (total)	84,000	
PAHs (ug/kg)		
Naphthalene	800,000	J
Acenaphthylene	170,000	J
Fluorene	70,000	J
Phenanthrene	180,000	J
Benz(a)anthracene	26,000	J
Benzo(a)pyrene	16,000	J
Chrysene	20,000	J
RCRA Metals (mg/kg)		
Chromium	11.4	J

SB-33		
Sample Interval (ft bgs)	23-25'	
Date	3/2/1999	
PAHs (ug/kg)		
Benz(a)anthracene	11,000	J
Benzo(a)pyrene	8,600	J
Indeno(1,2,3-cd)pyrene	22,000	J

SB-79		
Sample Interval (ft bgs)	24-28'	
Date	6/4/2002	
RCRA Metals (mg/kg)		
Chromium	17.80	

SB-77				
Sample Interval (ft bgs)	24-26'		37-39'	
Date	11/20/2001		11/20/2001	
BTEX (ug/kg)				
Ethylbenzene	5,000	U	1,400	J
Xylene	14,000		37,000	
PAHs (ug/kg)				
Naphthalene	9,900		471,000	
Acenaphthylene	3,700		102,000	
Fluorene	2,600		78,000	J
Phenanthrene	8,400		360,000	
Benz(a)anthracene	680	J	27,000	J
Benzo(a)pyrene	590	J	18,000	J
Chrysene	640	J	27,000	J
RCRA Metals (mg/kg)				
Chromium	32.7	J	14	J

SB-78				
Sample Interval (ft bgs)	48-50'		114-115'	
Date	12/13/2001		12/13/2001	
BTEX (ug/kg)				
Toluene	10,000		6	U
Ethylbenzene	10,000	J	3	J
Xylene (total)	130,000		2	J
PAHs (ug/kg)				
Naphthalene	2,100,000		95	J
Benz(a)anthracene	84,000	J	360	U
Chrysene	57,000	J	360	U
RCRA Metals (mg/kg)				
Chromium	13.3		40.6	J
Lead	7.6	J	91.4	J

SB-87				
Sample Interval (ft bgs)	48-52'		60-64'	
Date	6/13/2002		6/13/2002	
BTEX (ug/kg)				
Benzene	1,200		6	U
Toluene	5,000		1	J
Ethylbenzene	1,900	J	6	U
Xylene (total)	14,000	J	6	U
PAHs (ug/kg)				
Naphthalene	380,000		65	J
Fluorene	47,000		370	U
Phenanthrene	120,000		370	U
Benz(a)anthracene	16,000	J	370	U
Chrysene	16,000	J	360	U
RCRA Metals (mg/kg)				
Chromium	12.2		12	

PRASB-17		
Sample Interval (ft bgs)	15-17.5'	35-40'
Date	11/10/2011	11/10/2011
PAH (ug/Kg)		
Benzo(a)pyrene	1,400	12 J

SB-94				
Sample Interval (ft bgs)	20-24'		36-40'	
Date	11/14/2002		11/14/2002	
PAHs (ug/kg)				
Benzo(a)pyrene	2,900	J	370	U

SB-81				
Sample Interval (ft bgs)	17.21'		41.45'	
Date	5/22/2002		5/22/2002	
PAHs (ug/kg)				
Naphthalene	1,400,000		160	J
Benz(a)anthracene	68,000	J	360	U
Benzo(a)pyrene	46,000	J	360	U
Benzo(b)fluoranthene	24,000	J	360	U
Chrysene	66,000	J	360	U
Indeno(1,2,3-cd)pyrene	16,000	J	360	U

SB-76				
Sample Interval (ft bgs)	44-44.5'		58-58.5'	
Date	12/7/2001		12/7/2001	
BTEX (ug/kg)				
Benzene	870,000		6	U
Toluene	2,100,000		6	U
Ethylbenzene	1,300,000		1	J
Xylene (total)	1,700,000		6	U
PAHs (ug/kg)				
Acenaphthylene	1,300,000	J	920	
Anthracene	780,000	J	670	J
Fluoranthene	1,600,000	J	1,100	
Fluorene	1,200,000	J	1,100	
Naphthalene	13,000,000		3,900	
Phenanthrene	4,100,000		3,000	
Pyrene	2,000,000		1,400	
Benz(a)anthracene	890,000	J	550	J
Benzo(a)pyrene	550,000	J	420	J
Benzo(b)fluoranthene	250,000	J	190	J
Benzo(k)fluoranthene	400,000	J	300	J
Chrysene	650,000	J	570	J
Dibenz(a,h)anthracene	1,800,000	U	740	U

FPM-SB-09				
Sample Interval (ft bgs)	12'		16'	
Date	1/10/1998		1/10/1998	
PAHs (ug/kg)				
Benz(a)anthracene	1,100		14,000	
Benzo(a)pyrene	1,100		11,000	
Benzo(b)fluoranthene	870		6,300	
Dibenz(a,h)anthracene	385	U	2,900	J
Indeno(1,2,3-cd)pyrene	1,000		7,100	

GP-07		
Sample Interval (ft bgs)	12-16'	16-20'
Date	11/19/2001	11/20/2001
BTEX (ug/kg)		
Benzene	5,100	87,000

SB-23				
Sample Interval (ft bgs)	29-31'		92-94'	109-111'
Date	3/4/1999		3/10/1999	3/11/1999
PAHs (ug/kg)				
Benzo(a)pyrene	NA		2,400 JB	380 U

SB-80	
Sample Interval (ft bgs)	52-56'
Date	6/3/2002
RCRA Metals (mg/kg)	
Chromium	13.20

Contaminant	NYSDEC Restricted Commercial Use SCOs	NYSDEC Unrestricted Use SCOs
BTEX (ug/kg)		
Benzene	44,000	60
Ethylbenzene	390,000	1,000
Xylene	500,000	260
Toluene	500,000	700
PAHs (ug/kg)		
Acenaphthene	500,000	20,000
Anthracene	500,000	100,000
Fluoranthene	500,000	100,000
Fluorene	500,000	30,000
Naphthalene	500,000	12,000
Phenanthrene	500,000	100,000
Pyrene	500,000	100,000
Benz(a)anthracene	5,600	1,000
Benzo(a)pyrene	1,000	1,000
Benzo(k)fluoranthene	5,600	800
Chrysene	56,000	1,000
Acenaphthylene	500,000	100,000
Dibenz(a,h)anthracene	560	330
Indeno(1,2,3-cd)pyrene	5,600	500
RCRA Metals(mg/kg)		
Arsenic	16	13
Barium	400	350
Chromium	1,500	30
Lead	400	63
Mercury	2.8	0.18

NOTE: ANALYTICAL EXCEEDANCES SHOWN FOR MGP CONSTITUENTS ONLY (BTEX, PAHS, RCRA METALS, AND CYANIDE)

AECOM

NATIONAL GRID
FORMER CLIFTON MANUFACTURED GAS PLANT
SITE MANAGEMENT PLAN

DATE: 12/30/2015 | DRWN: FL | JOB NO.: 60137363-540

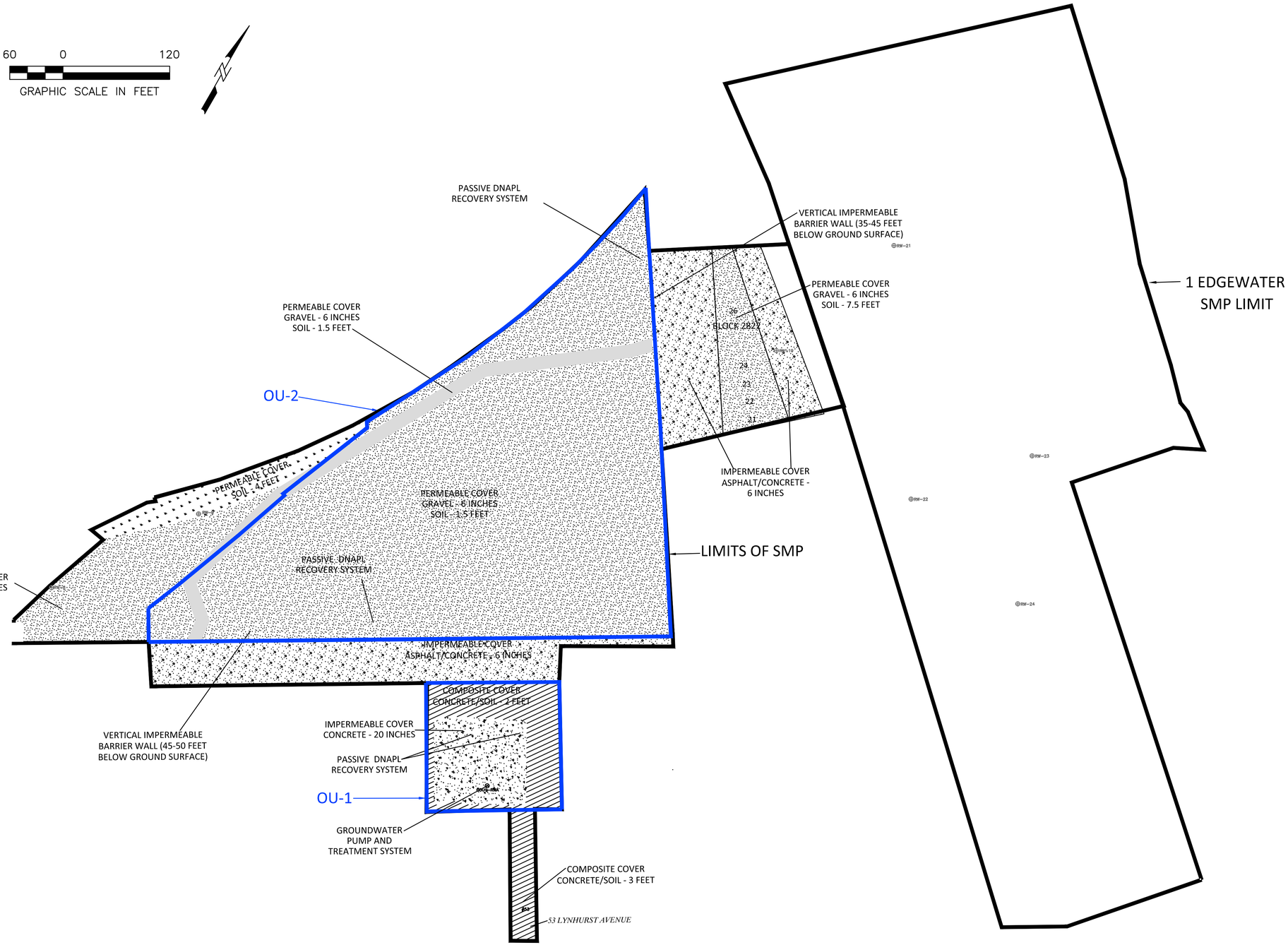
EXTENT OF REMAINING SOIL CONTAMINATION (MORE THAN 10' BELOW GROUND SURFACE)

FIGURE 1-11B

LEGEND

- LIMIT OF OPERABLE UNIT (OU)
- LIMITS OF SITE MANAGEMENT PLAN (SMP)
- PERMEABLE COVER, GRAVEL/SOIL
- IMPERMEABLE COVER, ASPHALT/CONCRETE
- PERMEABLE COVER, SOIL
- COMPOSITE CONCRETE/SOIL
- IMPERMEABLE COVER, CONCRETE
- SEWER BUFFER ZONE
- PROPERTY LINE
- FENCE
- SIRTOA RAILWAY TRACKS
- BUTTRESS SHALLOW SLURRY WALL
- BARRIER SLURRY WALL
- DNAPL RECOVERY WELL LOCATION
- DNAPL RECOVERY WELL TO BE REMOVED
- CATCH BASIN
- C.C. CURB
- RW-1 MONITORING WELL LOCATION
- DNAPL DENSE NONAQUEDUS PHASE LIQUID
- COU1-RWA GROUNDWATER PUMP AND TREATMENT SYSTEM

60 0 120
GRAPHIC SCALE IN FEET



ENGINEERING CONTROL

CITY OF NEW RIGHT OF WAY AREAS:

1. 6-INCH ASPHALT/CONCRETE COVER.
2. DNAPL RECOVERY SYSTEM.

BLOCK 2822 LOTS 20-24 AND 25 PROPERTIES:

1. 8-FEET GRAVEL/SOIL COVER.

40 WILLOW AVENUE PROPERTY

1. 20-INCH CONCRETE COVER.
2. 2-FEET CONCRETE/SOIL COVER.
3. DNAPL RECOVERY SYSTEM.
4. GROUNDWATER PUMP AND TREATMENT SYSTEM.
5. 125-FEET CONTAINMENT CELL.

53 LYNHURST AVENUE PROPERTY:

1. 3-FEET CONCRETE/SOIL COVER.

25 WILLOW AVENUE PROPERTY:

1. 2-FEET GRAVEL/SOIL COVER.
2. 30-50-FEET VERTICAL BARRIER WALL.
3. DNAPL RECOVERY SYSTEM.

89 WILLOW AVENUE PROPERTY:

1. 2-FEET GRAVEL/SOIL COVER.
1. 4-FEET SOIL COVER.

AECOM

NATIONAL GRID FORMER CLIFTON MANUFACTURED GAS PLANT SITE MANAGEMENT PLAN			ENGINEERING CONTROL LOCATIONS
DATE: 01/31/2014	DRWN: XW	JOB NO.: 60137363-540	FIGURE 2-1A

File: \\aecom201\environment\National Grid\Clifton 60137363\CADD\SMP\FIGURE 2-1A.dwg Layout: 2-1A User: lizarazf Plotted: Apr 20, 2015 - 10:59am Xref's:

LIMITS OF SITE MANAGEMENT PLAN (SMP)

PERMEABLE COVER SYSTEM

IMPERMEABLE COVER SYSTEM

COMPOSITE COVER SYSTEM

50 0 100

GRAPHIC SCALE IN FEET

N

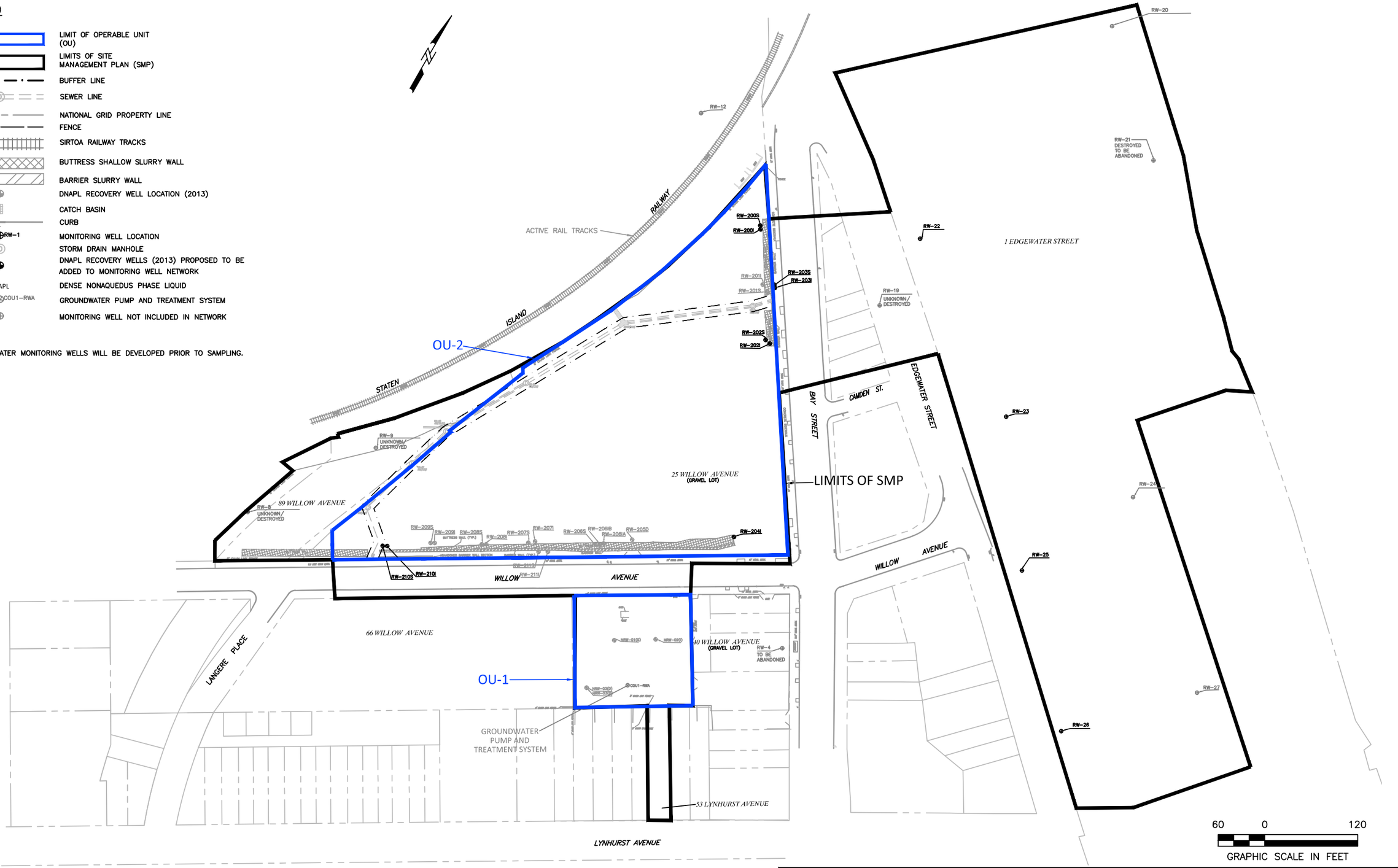
NATIONAL GRID FORMER CLIFTON MANUFACTURED GAS PLANT SITE MANAGEMENT PLAN			ENGINEERING CONTROL LOCATIONS
DATE: 01/31/2014	DRWN: XW	JOB NO.: 60137363-540	FIGURE 2-1B

LEGEND

- LIMIT OF OPERABLE UNIT (OU)
- LIMITS OF SITE MANAGEMENT PLAN (SMP)
- BUFFER LINE
- SEWER LINE
- NATIONAL GRID PROPERTY LINE
- FENCE
- SIRTOA RAILWAY TRACKS
- BUTTRESS SHALLOW SLURRY WALL
- BARRIER SLURRY WALL
- DNAPL RECOVERY WELL LOCATION (2013)
- CATCH BASIN
- CURB
- RW-1 — MONITORING WELL LOCATION
- STORM DRAIN MANHOLE
- DNAPL RECOVERY WELLS (2013) PROPOSED TO BE ADDED TO MONITORING WELL NETWORK
- DNAPL — DENSE NONAQUEDUS PHASE LIQUID
- COU1-RWA — GROUNDWATER PUMP AND TREATMENT SYSTEM
- MONITORING WELL NOT INCLUDED IN NETWORK

NOTE:

ALL EDGEWATER MONITORING WELLS WILL BE DEVELOPED PRIOR TO SAMPLING.



AECOM

NATIONAL GRID FORMER CLIFTON MANUFACTURED GAS PLANT SITE MANAGEMENT PLAN			GROUNDWATER MONITORING NETWORK
DATE: 12/30/2015	DRWN: SNP	JOB NO.: 60137363-540	FIGURE 3-1

Appendices

Appendix A

1 Edgewater Street Site Management Plan (Electronic Format)

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway, Albany, New York 12233-7014
Phone: (518) 402-9662 • **Fax:** (518) 402-9679
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Joe Martens
Commissioner

January 14, 2014

Katherine Vater, PE
Project Engineer
Site Investigation and Remediation
National Grid
Fleet Services Building/Administrative Office
287 Maspeth Avenue
Brooklyn, NY 11211

Re: Revisions to March 2010 Final Site Management Plan, received January 7, 2013 for One Edgewater Plaza offsite property
Clifton MGP Site
Site No. 243023, Clifton, Richmond County

Dear Ms. Vater:

The New York State Department of Environmental Conservation has reviewed the Revisions, received January 7, 2012, to the March 2010 Final Site Management Plan for the off site property at One Edgewater Plaza for the Clifton MGP Site. The revised document, including the revisions to "Appendix A, Soil Management and Excavation Plan," is hereby approved with the following modifications:

On page 13 of the main text and page 3 of Appendix A, Amen Omorogbe's name and email address needs to be replaced with mine; and

The date of the document needs to be updated.

If you have any questions concerning this matter, please contact me at 518-402-9662 .

Richard H. Dana, CPG
Engineering Geologist
MGP Remediation Section

ec: Stephanie Selmer, NYSDOH
Andrew Prophete, National Grid

Geotechnical
Environmental
Water Resources
Ecological

Final
Site Management Plan

One Edgewater Street
Staten Island, Richmond County, New York

In association with:
Clifton Former Manufactured Gas Plant
Operable Unit 2
ACO Index No. D2-0001-98-04
Site ID: 2-43-023

Prepared for:
National Grid
287 Maspeth Avenue
Brooklyn, New York

Prepared by:
GEI Consultants, Inc., P.C.
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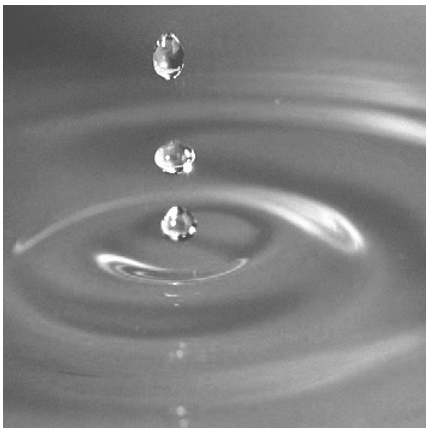
Woburn, MA 01801

March 2014
093100-1-1104



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C Field Sampling Plan (FSP) (Electronic only)
D Quality Assurance Project Plan (QAPP) (Electronic only)
E Environmental Easement (To Be Developed)
F Annual Inspection Checklist
G Monitoring Well Installation Logs (Electronic only)

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Abbreviations and Acronyms

AOC	Administrative Order On Consent
AWQS	Ambient Water Quality Standards, Criteria, and Guidance
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
BUG	Brooklyn Union Gas Company
CSO	Combined Sewer Overflow
DER	Division of Environmental Remediation
EC	Engineering Controls
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
EPA	United States Environmental Protection Agency
FSP	Field Sampling Plan
GEI	GEI Consultants, Inc., P.C.
HASP	Health and Safety Plan
IC	Institutional Controls
MGP	Manufactured Gas Plant
NAVD	North American Vertical Datum
NYCRR	New York Codes, Rules, Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable Unit
PAHs	Polycyclic Aromatic Hydrocarbons
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QHHEA	Qualitative Human Health Exposure Assessment
RI	Remedial Investigation
SCO	Soil Clean-up Objective
SRI	Supplemental Remedial Investigation
SMP	Site Management Plan
SVOCs	Semivolatile Organic Compounds
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

Professional Engineer Certification

I, Matthew J. O'Neil, certify that I am currently a NYS registered professional engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

3/4/14

Date

Matthew J. O'Neil
GEI Consultants, Inc., P.C.
New York State Professional Engineer
License Number 091317

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

1. Introduction

On behalf of National Grid, GEI Consultants, Inc., P.C. (GEI) has prepared this Site Management Plan (SMP) for One Edgewater Street (Site), Staten Island, Richmond County, New York (Figure 1). This SMP is required as an element of the remedial program by New York State Department of Environmental Conservation (NYSDEC) and was developed in accordance with the terms of Administrative Order on Consent (AOC) Index No. D2-0001-98-04 between Brooklyn Union Gas Company (BUG), (a predecessor company to National Grid), and NYSDEC that was executed on April 14, 1998. The AOC covers the operations of the former Richmond Gas Light Company manufactured gas plant (MGP) (Clifton Former MGP, Site [No. 2-43-023]) located at 25 and 40 Willow Avenue (Figure 1). National Grid has accepted responsibility for and is committed to the incremental environmental expense for the management of soils impacted with MGP residuals at the Site, and the expenses associated with the monitoring of impacted groundwater, and the maintenance of engineering and institutional controls at the Site, as more fully described in this SMP. National Grid will work with the property owner to prepare an Environmental Easement, which will be appended to this plan when finalized. The majority of the remaining impacts are in the deeper soils of the Site and do not have the potential for day-to-day contact.

1.1 General

This SMP was prepared to manage the residual MGP and petroleum-impacted soils and groundwater encountered at the Site during the off-site supplemental remedial investigation (SRI) of the Clifton Former MGP Operable Unit 2 (OU-2). The purpose of the SMP is to establish a set of procedures, controls and restrictions to prevent potential exposure to impacted soils and groundwater, thus protecting human health and the environment. The NYSDEC approved the preparation of this SMP to manage the residual impacts at the Site following the completion of the SRI activities at the property in a letter dated April 24, 2009.

This SMP was developed based upon guidance provided in:

- NYSDEC *Site Management Plan Template*
- NYSDEC Division of Environmental Remediation *Draft (DER)-10 Technical Guidance for Site Investigation and Remediation*, dated December 2002 [DER-10]
- Title 6 of the Official Compilation of New York Codes, Rules, Regulations (NYCRR) Part 375 Environmental Remedial Programs, dated December 14, 2006 [6NYCRR Part 375]

1.2 Purpose

The Site contains residual MGP and petroleum impacts identified during the SRI at the property. Engineering Controls (ECs) are in place to provide proper management of the residual impacts in the future to ensure protection of public health and the environment (Figure 2). An Environmental Easement will be granted to the NYSDEC, and recorded with the appropriate Richmond County or Borough authorities that will provide an enforceable legal instrument to ensure compliance with this SMP and all ECs and institutional controls (ICs) placed on the Site. The ICs place restrictions on Site use, and mandate maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for impacts that remain at the Site. Once approved by the NYSDEC, compliance with this plan is required by National Grid, the grantor of the Environmental Easement and the grantor's successors and assigns, to the extent of their respective obligations as provided herein. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage residual impacts documented at the Site during the completion of the SRI, including: (1) implementation and management of all IC/ECs; (2) monitoring; and (3) performance of periodic inspections, certification of results, and submittal of periodic review reports. To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of IC/ECs (Section 2 of this SMP); (2) a Monitoring Plan for implementation of Site monitoring activities (Section 3 of this SMP); and (3) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC (Section 4 of this SMP).

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law (ECL), 6NYCRR Part 375, and the AOC Index No. D2-0001-98-04 for the Site, and thereby subject to applicable penalties.
- At the time the SMP was prepared, the SMP and all Site documents related to the SRI activities completed at the property are maintained at the NYSDEC office in Albany, New York, and at the following locations:

Community Board 1 One Edgewater Plaza	Staten Island Borough President's Office Borough Hall

Room 311 Staten Island, New York 10305 718-981-6900	c/o Nicholas Dmytryszyn, P.E. Staten Island, New York 10301 718-816-2000

Repository Hours: Monday through Friday, 9:00 A.M. - 5:00 P.M

The SMP also includes example health and safety practices, field sampling procedures, and quality assurance/quality control procedures that need to be followed during the implementation of groundwater monitoring and excavation activities conducted below the composite cover within the limits of impacted material. These are discussed in detail in the following plans:

- Soil Management and Excavation Work Plan (Appendix A) – provides the detailed procedures to be followed for excavation of soils and intrusive activities in areas with impacted materials.

- Health and Safety Plan (HASP) (Appendix B) – provides guidance on the minimal health and safety practices to maintain safe working conditions during handling of soils and groundwater in affected areas of the property. Contractors or individuals undertaking work on the property should develop a site specific HASP to address all Site activities.

- Field Sampling Plan (FSP) (Appendix C) – provides the details for obtaining field samples in support of monitoring and excavation activities.

- Quality Assurance Project Plan (QAPP) (Appendix D) – presents field inspection and laboratory quality assurance/quality control (QA/QC) procedures, as well as standards and guidelines regarding sample analysis, validation, and reporting.

1.3 Limits of Impacted Material

In general, MGP and petroleum-related impacts at the Site are deeper than 7 feet except in the areas identified in Figure 3 and Plate 6. Therefore, the majority of activities less than 6 feet deep, such as landscaping and shallow utility excavations, at the Site will not likely encounter MGP or petroleum-related impacts; however, landscaping and maintenance personnel should be aware of the potential. If any impacts are uncovered during any excavation, regardless of depth or location, this plan should be followed. Five feet was selected as a conservative warning depth providing a two- foot buffer between work and potential impacts.

1.4 Site Location and Description

The Site address is One Edgewater Street, Staten Island, Richmond County, New York, and is identified as Block 2820 and Lot 95 on the City of New York Department of Finance Tax Map for the Borough of Staten Island. The location of the Site is shown on Figure 1. The property encompasses approximately 18.29-acres; 7.41 acres is located on the landside and 10.88 acres are submerged beneath the Narrows of the New York Harbor (Plate 1). The Site is owned by IPC New York Properties, LLC.

The property is zoned M2-1, manufacturing and commercial. The property is bounded by The Narrows of New York Harbor to the northeast and east, Staten Island Railroad MTA New City Transit repair facility to the northwest, the former NYC Transit Authority property to the south (125 Edgewater Street), and Edgewater Street to the west. The Site topography is relatively flat, with elevations ranging from approximately 10 feet North American Vertical Datum (NAVD) at Edgewater Street to 8 feet NAVD at the boundary with New York Harbor (Plate 1).

The property is developed with a seven-story commercial office building referred to as Edgewater Plaza on the southeastern portion of the property. The remainder of the property includes a fenced-in, paved sidewalk and concrete and asphalt parking lot. Beyond the paved parking lot to the northeast is a limited area of soil fill and associated bulkhead/rip rap covering the shoreline slope to the Narrows of New York Harbor. The property is secured with a chain-link fence and a guarded entrance at the Willow Avenue/Edgewater Street intersection. A permitted stormwater outfall is located along the northern portion of the Site, and a large combined sewer overflow (CSO) is located on the adjacent property to the south.

1.5 Site History

The One Edgewater Street property was originally part of The Narrows. A former stream flowed adjacent to the nearby Clifton Former MGP that discharged to The Narrows at the western boundary of the current One Edgewater Street property. Prior to being filled sometime before 1885, the stream carried limited amounts of tar from the Clifton Former MGP property and discharged into The Narrows.

In 1921, the Pouch Terminal Company extended and developed the shoreline by placing 5 to 21 feet of fill material in The Narrows to create the property that currently includes One Edgewater Street. The property was developed as a warehousing operation with a seven-story warehouse, numerous one-story warehouses and a deep water pier (Pier 19). By 1983, a number of the one-story warehouses were removed. The property was redeveloped after 1988 for its current commercial use.

1.6 Environmental Setting

The following section provides a brief summary of the geology and hydrogeology beneath the One Edgewater Street property encountered during SRI investigations completed by GEI on behalf of National Grid. A complete description of the geology and hydrogeology findings is provided in the NYSDEC-approved SRI report.

The property is underlain by (1) fill materials, (2) harbor/marsh deposits, and (3) glacial deposits. Geologic cross-sections M-M′, N-N′, O-O′ and P-P′ (Plates 3 and 4) were developed to illustrate the geology underlying the Site. Potential excavations or disturbance of soils at the property will primarily encounter fill materials which range from approximately 5 feet in the vicinity of Edgewater Plaza to over 21 feet thick in the vicinity of New York Harbor (Plate 4). The fill materials consisted of silt, sand, and gravel mixed with fragments of slag, coal, brick, asphalt, concrete, wood, metal, ash, and clinkers, and was loose and non-cohesive.

Groundwater was encountered at approximately 4 feet below ground surface (bgs) to 8 feet bgs. Groundwater flow is generally to the northeast towards The Narrows; however, groundwater is locally affected by a storm drain that transverses the parking lot area of the property and a nearby CSO to the south. A summary of groundwater levels and groundwater flow are provided on Plate 7. Tidal changes were also observed in wells adjacent to The Narrows.

1.7 Summary of Supplemental Remedial Investigations

National Grid has completed a comprehensive NYSDEC-approved SRI to characterize the nature and extent of the MGP-related impacts. The following work plans and reports were submitted to the NYSDEC in connection with the SRI:

- *Clifton, Staten Island Former Manufactured Gas Plant (MGP) Site, Supplemental Remedial Investigation (RI) Work Plan, 1 Edgewater Street* (October 20, 2003) prepared by GEI.
- *Soil Vapor Sampling Work Plan, Clifton Former Manufactured Gas Plant Operable Unit 2, 1 Edgewater Street/Edgewater Plaza, Staten Island, New York* (December 8, 2004) prepared by GEI.
- *Clifton, Staten Island Former MGP Site Supplemental Remedial Investigation (RI) Work Plan, 1 Edgewater Street [Edgewater Plaza], Staten Island, New York* (July 27, 2005) prepared by GEI.
- *Final Supplemental Remedial Investigation Report, Off-Site Area [One Edgewater Street] Clifton Former MGP Site Operable Unit 2 (OU-2), Staten Island, New York* (December 2008) prepared by GEI

The SRI documents that limited amounts of tar were released from the Clifton Former MGP operations to a small stream that flowed across the MGP property, sometime after the plant began operation in 1850, and prior to the stream being filled prior to 1885. The former stream carried tar residuals into The Narrows at Edgewater Street, at which point the residuals were re-distributed by natural processes in the area of the current parking area on the northern portion of the Site, prior to it being land-filled and developed in 1921 as the Pouch Terminal warehousing operation. As a result, the impacted soils and groundwater are located within or beneath fill and underneath pavement (Figure 3). Plate 2 provides a summary of the depths of residual impacts that were encountered beneath the paved parking lot of the Site.

A qualitative human health exposure assessment (QHHEA) was completed as part of the SRI to evaluate potential exposure pathways to the compounds in soils, groundwater and soil vapor at the Site. The QHHEA determined that a potential exposure pathway exists for current and future construction and utility workers who would encounter soils and groundwater during intrusive excavations. This SMP will address the potential exposure pathways to the residual impacts in soil and groundwater.

The remainder of this section provides a summary of the findings for soils, groundwater, soil vapor and ambient air testing completed during the SRI.

1.7.1 Subsurface Soils

The bulk of the residual tar impacts are located within subsurface soils between 7 and 25 feet bgs beneath the paved parking lot area of the Site (Plate 2). The majority of the residual impacts were located below fill materials. Tar impacts included lenses of viscous tar-coated soils, as well as soils with tar blebs and globs, staining, sheens, and odors. A limited amount of suspected purifier material, wood chips with sulfur odors used in the purification of manufactured gas, was found from approximately 1.5 feet to 13 feet beneath the northwest portion of the parking lot. No residual tar impacts were identified at the southern portion of the property adjacent to Edgewater Plaza. However, soils with petroleum-like odors with staining and sheen were also observed adjacent to the building.

Laboratory analytical testing indicates that elevated concentrations of certain volatile organic compounds (VOCs), specifically benzene, ethylbenzene, toluene, and xylene (BTEX), semivolatile organic compounds (SVOCs), specifically polycyclic aromatic hydrocarbons (PAHs), metals and cyanide were present in areas where residual tar impacts were encountered. A summary of compounds detected in subsurface soils is provided in Table 1. Concentrations of BTEX, PAHs, metals and cyanide were detected in subsurface soils above the 6NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (Unrestricted Use SCOs) as shown in Plate 5. Concentrations of PAH compounds and metals were detected at concentrations above the Restricted Use Commercial SCOs (Plate 6).

1.7.2 Groundwater

Groundwater was sampled to evaluate impacts from the tar residuals. Laboratory analysis shows that dissolved phase BTEX and/or light-end PAHs (naphthalene and acenaphthene) were present at concentrations that exceed New York State Ambient Groundwater Standards and Guidance Values (NYS AWQSs) at two monitoring well locations (RW-20 and RW-24) (Plate 7, Table 2). Groundwater generally flows to the northeast into The Narrows. Dissolved phase contaminants that enter New York Harbor will be mitigated by processes of biodegradation, volatilization, and dilution. Metals and cyanide were detected well below the NYS AWQSs. Public water is supplied to the Site and properties in the area, therefore there is no complete exposure pathway to consumption of water.

1.7.3 Soil Vapor Intrusion Sampling

Soil vapor intrusion into Edgewater Plaza was evaluated during the SRI. Soil vapor was initially evaluated adjacent to the building. Laboratory testing of exterior soil vapor adjacent to the building revealed that concentrations of VOCs were detected above the Upper 95th Percentile Values of the New York State Department of Health (NYSDOH) Background Outdoor Air Values Table 3. However, soil vapor concentrations upgradient of Edgewater Plaza suggest that the detected soil vapors may be associated with a historic gasoline spill at the adjacent Hess convenience store underground storage tanks (USTs) in 1994. The USTs are located approximately 100 feet to the southwest, upgradient of the Site. Inside Edgewater Plaza, vapor intrusion sampling of the sub-slab soil vapor and indoor air determined that the indoor air quality is not being adversely affected (Table 4).

2. Engineering and Institutional Control Plan

Since impacted soil and groundwater exists beneath the Site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the Site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1 Purpose

The purpose of this Engineering and Institutional Control Plan is to provide:

- A description of all EC/ICs on the Site
- The basic operation and intended role of each implemented EC/IC
- A description of the key components of the ICs as stated in the Environmental Easement
- A description of the features that should be evaluated during each periodic inspection and compliance certification period
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Soil Management and Excavation Work Plan (Appendix A) for the safe handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site
- Any other provisions necessary to identify or establish methods for implementing the required EC/ICs, as determined by the NYSDEC

2.2 Engineering Control

2.2.1 Composite Cover System

The One Edgewater Street property is currently developed with a seven-story commercial office building and includes a fenced-in paved sidewalk and parking lot that consists of bituminous pavement and concrete foundations that are collectively referred to as a composite cover system. Figure 2 provides a summary of the cover system present at the property. The composite cover system is an EC that provides a physical barrier that limits potential human and environmental exposures to impacted subsurface soils and groundwater at the Site. The composite cover system at the property is a permanent control that must remain intact above residual impacts (Figure 3). The quality and integrity of the composite cover system will be inspected annually by National Grid in accordance with the Monitoring Plan provided below in Section 3 and reported and certified annually as indicated below in Section 4.

In the event that the composite cover system is disturbed or penetrated, the property owner will provide notice to National Grid and the NYSDEC as described below in subsection 2.4. The property owner will provide advanced notice to National Grid and the NYSDEC if excavations or construction activities are anticipated to be completed in areas with, and at depths that contain residual impacts (Figure 3). The Soil Management and Excavation Work Plan provided in Appendix A outlines the procedures for handling of soils and groundwater with residual impacts. Excavation and disturbance of soils will be completed in accordance with a site-specific HASP (Appendix B) to limit exposure to workers conducting the activities and the surrounding community.

2.2.2 Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will be completed annually by National Grid following the implementation of the proposed re-sampling of select monitoring wells that is currently proposed by National Grid for the Site. Monitoring will continue until groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over two consecutive years of monitoring; however, monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. The details of the groundwater monitoring program are provided below in Section 3.

2.3 Institutional Controls

A series of Institutional Controls are required at the Site to (1) implement, maintain and monitor the composite cover system (Figure 2); (2) prevent future exposure to remaining contamination by controlling disturbances of the residual impacts within the subsurface (Figure 3 and Plate 6); and (3) limit the use and development of the Site solely for commercial use until actions are taken to accommodate a higher level of use consistent with NYSDEC regulations. Adherence to these ICs on the Site will be required by the Environmental Easement and will be implemented under this SMP. Institutional Controls may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

These Institutional Controls are:

- National Grid and the property owner and their agents must comply with the Environmental Easement and with all elements of this SMP, to the extent of their respective obligations. If the property is sold, the Grantor (property seller) and the Grantor's successors and assigns (future property owners) must comply with the Environmental Easement and all elements of this SMP, to the extent of their respective obligations.

- The composite cover system must be maintained, inspected and certified in accordance with this SMP. This is the joint responsibility of the property owner and National Grid, as more specifically detailed in this SMP.

- Sampling of the groundwater monitoring well network (Figure 4) will be completed by National Grid on an annual basis as described below in Section 3.

- Data and information pertinent to Site Management will be reported annually by National Grid. The details on the certification are provided in Section 4.

The Site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the property are:

- Vegetable gardens and farming on the property are prohibited.

- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended purpose.

- All future activities on the property that will disturb remaining impacted materials are prohibited unless they are conducted in accordance with this SMP.

- The property may only be used for commercial use provided that the long-term EC and ICs included in this SMP are employed. The property may not be used for a higher level of use, such as residential or restricted residential use until actions are taken to accommodate a higher level of use consistent with NYSDEC regulations, including the amendment of the Environmental Easement.

- National Grid will provide, under penalty of perjury, an annual certification for purposes of this SMP and the Environmental Easement by a professional engineer or qualified environmental professional that the IC/ECs are (1) in place and unchanged from the previous certification, (2) that any changes to the controls were approved by the NYSDEC, and (3) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. The details on the certification are provided in Section 4.

NYSDEC retains the right to access the Site at any time in order to evaluate the continued maintenance of any and all controls.

2.4 Notifications

The property owner must provide notifications to NYSDEC and National Grid for changes in ownership or use and disturbance of the composite cover system at the Site. Notifications will be provided to the National Grid and NYSDEC contacts provided below within the timeframes provided in subsections 2.4.1 and 2.4.2.

National Grid Project Manager:

Name: Andrew Prophete

Address: 287 Maspeth Avenue, Brooklyn, New York 11211

Telephone: 718-963-5412

Fax: 718-963-5611

Email: Andrew.Prophete@nationalgrid.com

NYSDEC Project Manager:

Name: Richard Dana

Address: New York State Department of Environmental Conservation

Division of Environmental Remediation, Remedial Bureau C

625 Broadway Albany, New York 12233-7014

Telephone: 518-402-9662

Fax: 518-402-9679

Email: rhdana@gw.dec.state.ny.us

2.4.1 Change in Ownership or Change in Use

The property owner will notify NYSDEC and National Grid if the following ownership or use changes have occurred:

- If all or part of the property is transferred, the property owner will provide new property owner's name and contact information in writing within 15 business days of the transaction.
- If there is a change in ownership or responsibility for implementing the property owner's obligations under this SMP, the property owner will provide a 14-day notice after the change. This notice will include a certification that the prospective purchaser or responsible party has been provided with a copy of the Environmental Easement, this SMP, copies of the Annual Site Management Report(s) and NYSDEC-approved SRI report.

- After there is a change in use of the property, the property owner will provide a 14-day notice of any changes that are required under the terms of the Environmental Easement, 6NYCRR Part 375, and/or ECL.

2.4.2 Disturbance of the Composite Cover System

The property owner shall use reasonable efforts to provide notice to National Grid and NYSDEC in the event that it becomes aware of damage to the composite cover system that has compromised the integrity of such system. The property owner shall also provide advanced notice to National Grid and NYSDEC in the event that intrusive activities are to be completed at the Site within areas and at depths that are anticipated to encounter impacted soils or groundwater containing concentrations of constituents of concern (COCs) above applicable regulatory criteria.

2.4.2.1 Intrusive Work

The property owner will provide notification to National Grid at least 15 business days in advance of any planned, non-emergency intrusive activities that could potentially involve the disturbance of impacted soils and/or groundwater (Figure 3). In the event of any unplanned work or emergency work, the property owner will provide a notification to National Grid at the time any emergency work will occur/is occurring.

The Site owner's notification to National Grid and NYSDEC will include:

- A brief, detailed description of the work to be performed, including the location and areal extent, staging of excavated soils, plans for Site re-grading and composite cover restoration, intrusive elements or utilities to be installed.
- A schedule for the work, detailing the start and completion of all intrusive activity.
- A copy of the contractor's HASP, in electronic format.
- Selection of National Grid-approved disposal facility for potential soil and fluids.
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

National Grid will review and provide comments on all planned activities. National Grid may have a representative on-site, as appropriate, during any intrusive work activities to observe activities and document compliance with this plan.

2.4.2.2 Natural Disasters

The property owner will notify NYSDEC and National Grid if the composite cover system is affected by natural disaster, such as a flood, fire, or earthquake that reduces or has the potential to reduce the effectiveness of the composite cover EC. Within five business days of a natural disaster, the property owner will notify the NYSDEC and National Grid of the impact of the event on the composite cover system. If the composite cover system is

damaged during a natural disaster, National Grid will develop a restoration plan with the reasonable approval of the property owner to restore the composite cover system. The restoration plan will be submitted to the NYSDEC and NYSDOH for review within 45 days of the incident.

3. Monitoring Plan

The purpose of this Monitoring Plan is to describe the annual composite cover inspection and groundwater monitoring that are required as part of this SMP and will be completed by National Grid. The monitoring is proposed to document that the composite cover EC is in place and to monitor groundwater concentrations at the property. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1 Composite Cover System Monitoring

The composite cover EC will be inspected annually by National Grid and its contractors. The inspection will be completed by a New York State-licensed professional engineer or qualified environmental professional to confirm that the composite cover system is intact, remains unchanged, and continues to be protective of human health and the environment. The inspection will be completed by an individual that is familiar with the composite cover system and property (Figure 2). The annual inspections will be documented on the Annual Inspection and Certification Checklist provided in Appendix F. The form provides a checklist to document if there are any changes since the previous year's inspection and that the EC continues to operate as intended. A survey of the composite cover will be completed if changes in the composite cover occur during the year or if changes are noted in the annual inspection. The survey will be completed by the New York State-licensed surveyor and referenced NAVD 88 vertical datum to an accuracy of 0.01 ±foot and referenced to North American Datum (NAD 83).

If an emergency, such as a natural disaster or unforeseen failure of the EC occurs, an inspection of the property will be conducted by a qualified environmental professional within five business days of the event to verify the effectiveness of the composite cover.

The Site inspection information will be certified and reported in accordance with Section 4 below.

3.2 Groundwater Monitoring

National Grid and its contractors will annually gauge and sample monitoring wells (RW-20 through RW-24). Groundwater monitoring wells are shown on Figure 4. The Monitoring construction well logs are provided in Appendix G of this SMP. Each monitoring well will be inspected and evaluated to determine if the wells are serviceable and will be documented on the Annual Inspection and Certification Checklist provided in Appendix F during the annual Site inspection completed by National Grid.

Each sample will be collected utilizing low flow groundwater sampling collection methods provided in the FSP (Appendix C). Each groundwater sample will be analyzed for VOCs (specifically BTEX), via Environmental Protection Agency (EPA) Method 8260B, and PAHs, via EPA Method 8270, by a NYSDOH environmental laboratory approval program (ELAP)-certified laboratory. A list of NYSDOH ELAP-certified laboratories can be obtained from the NYSDOH internet web site (http://www.wadsworth.org/labcert/elap/elap.html). The groundwater samples will also be collected, handled, and analyzed according to the example QAPP (Appendix D). Groundwater samples will be collected for a minimum of two years. Groundwater monitoring will be discontinued in monitoring wells if concentrations decrease below NYS AWQSs for two consecutive sampling events. If monitoring is to be discontinued, National Grid will submit a request to NYSDEC and NYSDOH for review. Upon approval, National Grid will suspend groundwater monitoring and will notify the property owner, NYSDEC, and NYSDOH as part of Site management reporting discussed below in Section 4.

The results of the annual groundwater monitoring sampling activities, monitoring well inspection and analytical results will be reported in accordance with Section 4 below.

4. Site Management Reporting

A Periodic Review Report including certification of IC/ECs will be submitted annually by National Grid following the Site inspection and monitoring activities, for as long as Site management activities are conducted, to satisfy the required reporting and certification obligations under this SMP and the Environmental Easement. The Periodic Review Report will be prepared in accordance with DER-10 requirements. The frequency of submittal of the Periodic Review Report may be modified with the approval of the NYSDEC.

This report will include the following:

- Identification of all EC/ICs for the Site
- An assessment of the effectiveness of all IC/ECs for the Site
- An evaluation of the Engineering and Institutional Control Plan (Section 2) and Monitoring Plan (Section 3)
- Results of the required annual Site inspections and severe condition inspections, if any
- A compilation of all deliverables generated during the reporting period, as specified in Section 2 Engineering and Institutional Control Plan, Section 3 Monitoring Plan
- Certification of the EC/ICs.

In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site as described in Plate 1.

A brief description of the annual certification and reporting requirements is provided below.

4.1 Certification of IC/ ECs

The IC/ECs will be certified by National Grid annually in a written statement prepared by a New York State-licensed professional engineer or qualified environmental professional that is familiar with the IC/ECs and existing Site conditions. Site conditions will be documented in the Annual Inspection and Certification Checklist (Appendix F) during the annual Site inspection described in Section 3.

The certification will indicate that:

- EC/ICs remain in-place, effective and unchanged from the baseline or previous annual certification

- Nothing has occurred that would impair the ability of such controls to protect public health and the environment or constitute a violation or failure to comply with this SMP
- Any changes to the IC/ECs at the Site were approved by the NYSDEC
- Site use is compliant with the Environmental Easement

A signed certification statement will be provided that indicates to the belief of the certifying party that the information provided is accurate and complete and the conclusions provided are in accordance with the requirements of the SMP.

If certification of IC/ECs cannot be made due to a failure of an IC/EC, then a corrective measure plan will be prepared by National Grid in consultation with the property owner and submitted to the NYSDEC for review and approval. The plan will provide an explanation of the failure, corrective steps to address the failure, and a proposed schedule. Unless an emergency condition exists, the corrective measure plan will not be implemented until approval is received from the NYSDEC.

4.2 Periodic Review Report

The periodic review report will include (at a minimum) the following information:

- A description of all Site management activities during that period.
- All deliverables completed and submitted during the reporting period.
- Identification of all relevant correspondence and deliverables issued and during the reporting period.
- An electronic data deliverable in NYSDEC-approved format that contains the validated laboratory analytical data forms and chain of custody for all samples collected during the reporting period.
- Summary tables of analytical testing results of monitoring completed during the period along with previous testing results. Monitoring data will be compared against applicable standards with exceedances of the standards highlighted.
- Results of annual inspection findings and completed annual inspection forms.
- An as-built Site plan noting any changes, findings or intrusive activities.
- Identification of all actions, including, but not limited to, data collection and implementation of the SMP that are scheduled for the next reporting period.
- An assessment of the overall effectiveness and certification of the IC/ECs and provide recommendations for any changes to the SMP (if necessary).

The Site Management Report will be submitted annually by National Grid approximately 60 days following the end of the certification period in hard-copy format to the NYSDEC office located at 625 Broadway, Albany, New York and the document repositories provided in Section 1. Electronic copies in PDF form will also be provided to the NYSDEC and NYSDOH.

References

GEI Consultants, Inc. 2008. Final Supplemental Remedial Investigation Report Off-Site Area [One Edgewater Street] Clifton Former MGP Operable Unit 2 (OU-2) December 2008.

New York State Department of Environmental Conservation. 2009. Site Management Plan Template. (April 2009)

New York State Department of Environmental Conservation Division of Environmental Remediation, 2006. 6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 &375-6, Effective December 14, 2006.

New York State Department of Environmental Conservation Division of Environmental Remediation, 2002, Draft DER-10 Technical Guidance For Site Investigation and Remediation, December 25, 2002.

New York State Department of Environmental Conservation, 1998, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, (TOGS 1.1.1), June 1998.

References

GEI Consultants, Inc. 2008. Final Supplemental Remedial Investigation Report Off-Site Area [One Edgewater Street] Clifton Former MGP Operable Unit 2 (OU-2) December 2008.

New York State Department of Environmental Conservation. 2009. Site Management Plan Template. (April 2009)

New York State Department of Environmental Conservation Division of Environmental Remediation, 2006. 6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 &375-6, Effective December 14, 2006.

New York State Department of Environmental Conservation Division of Environmental Remediation, 2002, Draft DER-10 Technical Guidance For Site Investigation and Remediation, December 25, 2002.

New York State Department of Environmental Conservation, 1998, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, (TOGS 1.1.1), June 1998.

Tables

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-95 (10-15) 4/28/2004	Duplicate of CF-SB-95 (10-15) 4/28/2004	CF-SB-95 (25-30) 4/28/2004	CF-SB-96 (5-10) 4/27/2004	CF-SB-96 (20-25) 4/27/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.006 U	0.006 U	0.006 U	0.007 U	0.006 U
Ethylbenzene	1	390	0.006 U	0.006 U	**0.001 J**	0.007 U	**0.001 J**
Toluene	0.7	500	0.006 U	0.006 U	**0.0008 J**	0.007 U	**0.0007 J**
Xylene, total	0.26	500	0.006 U	0.006 U	**0.005 J**	0.007 U	**0.003 J**
Total BTEX	NE	NE	ND	ND	**0.0068**	ND	**0.0047**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	1.9 UJ	**0.032 J**	0.36 UJ	6.9 UJ	0.36 UJ
Acenaphthylene	100	500	**0.58 J**	**0.12 J**	0.36 U	**6.3 J**	0.36 U
Anthracene	100	500	**1.3 J**	**0.17 J**	0.36 U	**5.3 J**	0.36 U
Benzo[g,h,i]perylene	100	500	**2.7**	**0.51**	0.36 U	**9.3**	0.36 U
Fluoranthene	100	500	**11 J**	**0.99 J**	0.36 U	**21**	**0.031 J**
Fluorene	30	500	1.9 UJ	0.39 UJ	0.36 UJ	6.9 UJ	0.36 UJ
Methylnaphthalene,2-	NE	NE	1.9 UJ	0.39 UJ	0.36 UJ	6.9 UJ	0.36 UJ
Naphthalene	12	500	1.9 U	0.39 U	0.36 U	6.9 U	0.36 U
Phenanthrene	100	500	**2.2**	**0.49**	0.36 U	**8.8**	0.36 U
Pyrene	100	500	**9 J**	**0.87 J**	0.36 U	**19**	0.36 U
Total Noncarcinogenic PAHs	NE	NE	**26.78**	**3.182**	ND	**69.7**	**0.031**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**5.5 J**	**0.58 J**	0.36 U	**11**	**0.017 J**
Benzo[a]pyrene	1	1	**5 J**	**0.62 J**	0.36 U	**12**	0.36 U
Benzo[b]fluoranthene	1	5.6	**7.4 J**	**0.47 J**	0.36 U	**8.8**	0.36 U
Benzo[k]fluoranthene	0.8	56	1.9 UJ	**0.54**	0.36 U	**10 J**	0.36 U
Chrysene	1	56	**4.8 J**	**0.68 J**	0.36 U	**12**	0.36 U
Dibenz[a,h]anthracene	0.33	0.56	**1 J**	**0.15 J**	0.36 U	**3.1 J**	0.36 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	**2.5**	**0.39 J**	0.36 U	**7.1 J**	0.36 U
Total Carcinogenic PAHs	NE	NE	**26.2**	**3.43**	ND	**64**	**0.017**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**52.98**	**6.612**	ND	**133.7**	**0.048**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**6.3 J**	1.7 U	**2.2 J**	**5.6 J**	**3.7 J**
Barium	350	400	**14.1**	**5.1**	**58.2**	**12.7**	**59.7**
Cadmium	2.5	9.3	1.3 U	1.4 U	1.3 U	**4.4**	1.4 U
Chromium	NE	NE	**12.1**	**6.6**	**41.5**	**19.4**	**26.4**
Lead	63	1000	**346 J**	**51.5 J**	**4.6 J**	**534 J**	**4.2 J**
Mercury	0.18	2.8	**0.068 J**	0.016 UJ	0.016 UJ	**0.17 J**	0.016 UJ
Selenium	3.9	1500	2.1 UJ	2.2 UJ	2.1 UJ	**4.4 J**	2.2 UJ
Silver	2	1500	0.41 U	0.44 U	0.41 U	**0.89**	0.45 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	**5.16 J**	**12.6 J**	0.387 UJ	0.475 UJ	0.39 UJ
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-96A (30-35) 4/27/2004	CF-SB-97 (5-10) 4/26/2004	CF-SB-97 (25-30) 4/26/2004	CF-SB-98A (16.5-17.5) 4/28/2004	CF-SB-98A (25-30) 4/28/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.006 U	0.006 U	0.006 U	0.67 U	0.006 U
Ethylbenzene	1	390	**0.002 J**	0.006 U	0.006 U	**4.4**	0.006 U
Toluene	0.7	500	0.006 U	0.006 U	0.006 U	**0.19 J**	0.006 U
Xylene, total	0.26	500	**0.002 J**	0.006 U	0.006 U	**7.7**	0.006 U
Total BTEX	NE	NE	**0.004**	ND	ND	**12.29**	ND
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	0.36 UJ	**0.24 J**	0.38 UJ	**100 J**	0.35 U
Acenaphthylene	100	500	0.36 U	**10**	0.38 U	**200**	0.35 U
Anthracene	100	500	0.36 U	**6.9**	0.38 U	**210**	0.35 U
Benzo[g,h,i]perylene	100	500	0.36 U	14	0.38 U	74 J	0.35 U
Fluoranthene	100	500	0.033 J	11	0.38 U	580	0.35 U
Fluorene	30	500	0.36 UJ	2.9 UJ	0.38 UJ	**200**	0.35 U
Methylnaphthalene,2-	NE	NE	0.36 UJ	**0.34 J**	0.38 UJ	**200**	0.35 UJ
Naphthalene	12	500	0.36 U	**0.72 J**	0.38 U	**1300**	0.35 U
Phenanthrene	100	500	0.36 U	**2.7 J**	0.38 U	**780**	0.35 U
Pyrene	100	500	**0.029 J**	**13**	0.38 U	**440**	0.35 U
Total Noncarcinogenic PAHs	NE	NE	**0.062**	**58.9**	ND	**4084**	ND
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**0.017 J**	**12**	0.38 U	**190**	0.35 U
Benzo[a]pyrene	1	1	0.36 U	**15**	0.38 U	**170 J**	0.35 U
Benzo[b]fluoranthene	1	5.6	0.36 U	**11**	0.38 U	**250 J**	0.35 U
Benzo[k]fluoranthene	0.8	56	0.36 U	**9.9 J**	0.38 U	180 UJ	0.35 UJ
Chrysene	1	56	**0.02 J**	**15**	0.38 U	**180 J**	0.35 U
Dibenz[a,h]anthracene	0.33	0.56	0.36 U	**5.2 J**	0.38 U	**34 J**	0.35 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.36 U	**9.7 J**	0.38 U	**70 J**	0.35 U
Total Carcinogenic PAHs	NE	NE	**0.037**	**77.8**	ND	**894**	ND
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**0.099**	**136.7**	ND	**4978**	ND
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**1.8 J**	**6.1 J**	**3.4 J**	**2 J**	**3.5 J**
Barium	350	400	**44.1**	**24.7**	**51.6**	**11.7**	**71**
Cadmium	2.5	9.3	1.3 U	1.3 U	1.3 U	1.4 U	1.3 U
Chromium	NE	NE	**24**	**16.5**	**31.4**	**15.1**	**37.1**
Lead	63	1000	**2.6 J**	**457 J**	**4.2 J**	**2.6 J**	**3.3 J**
Mercury	0.18	2.8	0.014 UJ	**0.18 J**	0.013 UJ	0.013 UJ	0.014 UJ
Selenium	3.9	1500	2.1 UJ	2.1 UJ	2.1 UJ	2.3 UJ	2.1 UJ
Silver	2	1500	0.42 U	0.42 U	0.42 U	0.46 U	0.41 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.386 UJ	0.384 UJ	0.403 UJ	0.447 UJ	0.386 UJ
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-98A (45-50) 4/29/2004	CF-SB-99 (25-27) 4/29/2004	CF-SB-99 (45-50) 4/29/2004	CF-SB-100 (3-5) 5/3/2004	CF-SB-100 (8-10) 5/3/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.006 U	0.006 U	0.006 U	8.7 U	7.6 U
Ethylbenzene	1	390	**0.014**	0.006 U	**0.021**	**27**	**4.1 J**
Toluene	0.7	500	**0.0009 J**	0.006 U	**0.0009 J**	**8.9**	7.6 U
Xylene, total	0.26	500	**0.009**	0.006 U	**0.006**	**320**	7.6 U
Total BTEX	NE	NE	**0.0239**	ND	**0.0279**	**355.9**	**4.1**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	0.37 U	0.36 U	0.36 U	**16 J**	**0.31 J**
Acenaphthylene	100	500	0.37 U	0.36 U	0.36 U	**39 J**	**1.4**
Anthracene	100	500	0.37 U	0.36 U	0.36 U	**8.6 J**	**1.1**
Benzo[g,h,i]perylene	100	500	0.37 U	0.36 U	0.36 U	**4.4 J**	**0.27 J**
Fluoranthene	100	500	***0.37 U***	0.36 U	0.36 U	**24 J**	**1.5**
Fluorene	30	500	0.37 U	0.36 U	0.36 U	**21 J**	**0.53**
Methylnaphthalene,2-	NE	NE	0.37 UJ	0.36 UJ	0.36 UJ	**260**	0.49 U
Naphthalene	12	500	**0.32 J**	0.36 U	**0.34 J**	**53 J**	**0.29 J**
Phenanthrene	100	500	0.37 U	0.36 U	0.36 U	**59**	**3.2**
Pyrene	100	500	0.37 U	0.36 U	0.36 U	**30 J**	**2.1**
Total Noncarcinogenic PAHs	NE	NE	**0.32**	ND	**0.34**	**515**	**10.7**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	0.37 U	0.36 U	0.36 U	**14 J**	**0.88**
Benzo[a]pyrene	1	1	0.37 U	0.36 U	0.36 U	**4.4 J**	**0.71**
Benzo[b]fluoranthene	1	5.6	0.37 U	0.36 U	0.36 U	**6.6 J**	**0.71 J**
Benzo[k]fluoranthene	0.8	56	0.37 UJ	0.36 UJ	0.36 UJ	57 U	0.49 UJ
Chrysene	1	56	0.37 U	0.36 U	0.36 U	**18 J**	**0.89**
Dibenz[a,h]anthracene	0.33	0.56	0.37 U	0.36 U	0.36 U	57 U	**0.12 J**
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.37 U	0.36 U	0.36 U	**3.8 J**	**0.21 J**
Total Carcinogenic PAHs	NE	NE	ND	ND	ND	**46.8**	**3.52**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**0.32**	ND	**0.34**	**561.8**	**14.22**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**3.7 J**	1.5 U	**7 J**	**27.4 J**	**15.3 J**
Barium	350	400	**72.2**	**37.8**	**64.1**	**96.3**	**101**
Cadmium	2.5	9.3	1.3 U	1.3 U	1.4 U	2 U	1.9 U
Chromium	NE	NE	**38**	**14.5**	**80.4**	**60.4**	**20.2**
Lead	63	1000	**4.4 J**	**4 J**	**4.7 J**	**225 J**	**242 J**
Mercury	0.18	2.8	0.014 UJ	0.016 UJ	0.017 UJ	**1.5 J**	**0.24 J**
Selenium	3.9	1500	2.1 UJ	2 UJ	2.2 UJ	3.2 UJ	**3.4 J**
Silver	2	1500	0.42 U	0.4 U	0.44 U	0.64 U	0.59 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.37 UJ	0.394 UJ	0.379 UJ	**61.4**	0.51 U
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-100 (15-17) 5/3/2004	CF-SB-101 (3-5) 5/3/2004	CF-SB-101 (10-11) 5/3/2004	CF-SB-101 (15-16) 5/3/2004	CF-SB-102 (1-5) 5/3/2004	CF-SB-102 (10-12) 5/3/2004
BTEX (mg/kg)								
Benzene	0.06	44	0.007 U	16 U	35 U	0.006 U	15 U	0.006 U
Ethylbenzene	1	390	0.007 U	**10 J**	**50**	**0.001 J**	**1.1 J**	0.006 U
Toluene	0.7	500	0.007 U	**3.4 J**	**2.8 J**	0.006 U	**2.6 J**	0.006 U
Xylene, total	0.26	500	0.007 U	**350**	**53**	**0.003 J**	**9.5 J**	0.006 U
Total BTEX	NE	NE	ND	**363.4**	**105.8**	**0.004**	**13.2**	ND
Other VOCs (mg/kg)								
Acetone	0.05	500	NA	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)								
Acenaphthene	20	500	0.46 U	**86 J**	**46 J**	**0.041 J**	**45 J**	**2.3 J**
Acenaphthylene	100	500	**0.078 J**	**120 J**	**230**	**0.12 J**	**100 J**	**20**
Anthracene	100	500	**0.03 J**	**26 J**	**120 J**	**0.13 J**	**14 J**	**14 J**
Benzo[g,h,i]perylene	100	500	0.46 U	260 U	**25 J**	0.38 U	**14 J**	**16 J**
Fluoranthene	100	500	**0.49**	**98 J**	**170 J**	**0.5 J**	**86 J**	**65**
Fluorene	30	500	0.46 U	**110 J**	**110 J**	**0.17 J**	**55 J**	16 U
Methylnaphthalene,2-	NE	NE	0.46 U	**2100**	**360**	**0.21 J**	**560**	16 U
Naphthalene	12	500	0.46 U	**260 J**	**1100**	**0.33 J**	**200**	**2.7 J**
Phenanthrene	100	500	0.46 U	**300**	**300**	**0.39**	**250**	**20**
Pyrene	100	500	**0.96**	**140 J**	**230**	**0.55**	**130**	**110**
Total Noncarcinogenic PAHs	NE	NE	**1.558**	**3240**	**2691**	**2.441**	**1454**	**250**
Carcinogenic PAHs (mg/kg)								
Benz[a]anthracene	1	5.6	0.46 U	**47 J**	**88 J**	**0.063 J**	**46 J**	**28**
Benzo[a]pyrene	1	1	0.46 U	**18 J**	**71 J**	**0.042 J**	**5.2 J**	**40**
Benzo[b]fluoranthene	1	5.6	0.46 U	**37 J**	**37 J**	**0.045 J**	**21 J**	**24**
Benzo[k]fluoranthene	0.8	56	0.46 U	260 UJ	**53 J**	0.38 UJ	**22 J**	**24**
Chrysene	1	56	0.46 U	**60 J**	**87 J**	**0.066 J**	**67 J**	**34**
Dibenz[a,h]anthracene	0.33	0.56	0.46 U	260 U	**11 J**	0.38 U	**7.2 J**	**7.3 J**
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.46 U	260 U	**23 J**	0.38 U	**12 J**	**14 J**
Total Carcinogenic PAHs	NE	NE	ND	**162**	**370**	**0.216**	**180.4**	**171.3**
Total PAHs (mg/kg)								
Total PAHs	NE	NE	**1.558**	**3402**	**3061**	**2.657**	**1634.4**	**421.3**
Other SVOCs (mg/kg)								
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)								
Arsenic	13	16	1.9 U	**39.8 J**	**7.5 J**	1.5 U	**39.2 J**	**13.4 J**
Barium	350	400	**7.9**	**70.1**	**37.6**	**4.8**	**78**	**58.4**
Cadmium	2.5	9.3	1.5 U	1.9 U	1.6 U	1.2 U	1.8 U	1.5 U
Chromium	NE	NE	**7.4**	**94.6**	**16.4**	**6.3**	**116**	**34.8**
Lead	63	1000	**1.9 J**	**66 J**	**217 J**	**1.2 J**	**45.6 J**	**572 J**
Mercury	0.18	2.8	0.02 UJ	**1.1 J**	**0.77 J**	0.016 UJ	**1.2 J**	**0.58 J**
Selenium	3.9	1500	2.5 UJ	3 UJ	2.5 UJ	2 UJ	2.9 UJ	2.3 UJ
Silver	2	1500	0.49 U	0.61 U	0.51 U	0.4 U	0.58 U	0.47 U
Total Cyanide (mg/kg)								
Cyanide, Total	27	27	0.468 U	**134**	0.479 U	0.394 U	**160**	0.411 U
Other (mg/kg)								
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-102 (28-30) 5/3/2004	CF-SB-103 (12-13) 5/4/2004	CF-SB-103 (20-25) 5/4/2004	CF-SB-104 (12-13) 5/5/2004	Duplicate of: CF-SB-104 (12-13) 5/5/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.006 U	0.62 U	0.017 UJ	1.6 U	3.9 U
Ethylbenzene	1	390	0.006 U	**1.9**	**0.002 J**	**4.4 J**	**11 J**
Toluene	0.7	500	0.006 U	**0.073 J**	0.017 UJ	**0.31 J**	**0.55 J**
Xylene, total	0.26	500	0.006 U	**1.6**	**0.007 J**	**4.5 J**	**14 J**
Total BTEX	NE	NE	ND	**3.573**	**0.009**	**9.21**	**25.55**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	0.37 U	**21**	4.3 UJ	**76**	**110**
Acenaphthylene	100	500	0.37 U	**6.1 J**	4.3 UJ	**32 J**	**49 J**
Anthracene	100	500	0.37 U	**19**	4.3 UJ	**98**	**130**
Benzo[g,h,i]perylene	100	500	0.37 U	**3.4 J**	4.3 UJ	**29 J**	**42 J**
Fluoranthene	100	500	0.37 U	**31**	4.3 UJ	**200**	**260**
Fluorene	30	500	0.37 U	**12**	4.3 UJ	**31 J**	**45 J**
Methylnaphthalene,2-	NE	NE	0.37 U	**14**	4.3 UJ	**81**	**140**
Naphthalene	12	500	0.37 U	**28**	4.3 UJ	**100**	**150**
Phenanthrene	100	500	0.37 U	**54**	4.3 UJ	**250**	**340**
Pyrene	100	500	0.37 U	**31**	4.3 UJ	**150**	**210**
Total Noncarcinogenic PAHs	NE	NE	ND	**219.5**	ND	**1047**	**1476**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	0.37 U	**18**	4.3 UJ	**78**	**110**
Benzo[a]pyrene	1	1	0.37 U	**10**	4.3 UJ	**60**	**83 J**
Benzo[b]fluoranthene	1	5.6	0.37 U	**11 J**	4.3 UJ	**50 J**	**52 J**
Benzo[k]fluoranthene	0.8	56	0.37 U	8.2 UJ	4.3 UJ	**45 J**	**74 J**
Chrysene	1	56	0.37 U	**19**	4.3 UJ	**66**	**91 J**
Dibenz[a,h]anthracene	0.33	0.56	0.37 U	**1.7 J**	4.3 UJ	**10 J**	**21 J**
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.37 U	**3.2 J**	4.3 UJ	**30 J**	**42 J**
Total Carcinogenic PAHs	NE	NE	ND	**62.9**	ND	**339**	**473**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	ND	**282.4**	ND	**1386**	**1949**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**1.9 J**	**7.4 J**	4.8 UJ	**21.5 J**	**22.9 J**
Barium	350	400	**58.2**	**33.8**	**77.4 J**	**69.9**	**72.8**
Cadmium	2.5	9.3	1.3 U	1.4 U	3.9 UJ	1.7 U	1.7 U
Chromium	NE	NE	**43.7**	**25.1**	**21.4 J**	**43.9**	**48.2**
Lead	63	1000	**4.3 J**	**50.7 J**	**4.5 J**	**140 J**	**154 J**
Mercury	0.18	2.8	0.015 UJ	**0.44 J**	0.048 UJ	**0.25 J**	**1.2 J**
Selenium	3.9	1500	2.1 UJ	2.2 UJ	6.3 UJ	2.7 UJ	2.7 UJ
Silver	2	1500	0.41 U	0.44 U	1.3 UJ	0.55 U	**0.57**
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.397 U	0.436 U	1.2 UJ	0.565 U	0.54 U
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-104 (28-30) 5/5/2004	CF-SB-105 (12-13) 5/5/2004	CF-SB-105 (27-30) 5/5/2004	CF-SB-106 (12-13) 5/6/2004	CF-SB-106 (15-17) 5/6/2004	CF-SB-107 (9-10) 5/6/2004
BTEX (mg/kg)								
Benzene	0.06	44	0.006 U	0.55 U	0.006 U	0.57 U	0.007 U	0.013 U
Ethylbenzene	1	390	**0.002 J**	**5.4**	0.006 U	**0.35 J**	0.007 U	**0.003 J**
Toluene	0.7	500	0.006 U	**0.2 J**	0.006 U	0.57 U	0.007 U	0.013 U
Xylene, total	0.26	500	**0.007**	**6.3**	0.006 U	**0.13 J**	0.007 U	**0.007 J**
Total BTEX	NE	NE	**0.009**	**11.9**	ND	**0.48**	ND	**0.01**
Other VOCs (mg/kg)								
Acetone	0.05	500	NA	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)								
Acenaphthene	20	500	0.36 U	**69**	0.38 U	**52**	**0.48**	**2.2 J**
Acenaphthylene	100	500	0.36 U	**18 J**	0.38 U	**16**	**0.036 J**	**13**
Anthracene	100	500	**0.027 J**	**62**	0.38 U	**50**	**0.037 J**	**11**
Benzo[g,h,i]perylene	100	500	0.36 U	**17 J**	0.38 U	**7.7 J**	0.43 U	**4.3**
Fluoranthene	100	500	**0.06 J**	**120**	0.38 U	**77**	**0.049 J**	**15**
Fluorene	30	500	0.36 U	**16 J**	0.38 U	14 U	0.43 U	**3.5**
Methylnaphthalene,2-	NE	NE	0.36 U	**20 J**	0.38 U	14 U	0.43 U	**7**
Naphthalene	12	500	0.36 U	**29**	0.38 U	**1.4 J**	0.43 U	**8**
Phenanthrene	100	500	**0.053 J**	**180**	0.38 U	**28**	**0.037 J**	**24**
Pyrene	100	500	**0.057 J**	**150**	0.38 U	**100**	**0.038 J**	**24**
Total Noncarcinogenic PAHs	NE	NE	**0.197**	**681**	ND	**332.1**	**0.677**	**112**
Carcinogenic PAHs (mg/kg)								
Benz[a]anthracene	1	5.6	**0.028 J**	**72**	0.38 U	**43**	0.43 U	**9.9**
Benzo[a]pyrene	1	1	**0.023 J**	**50**	0.38 U	**27**	0.43 U	**10**
Benzo[b]fluoranthene	1	5.6	0.36 U	**60 J**	0.38 U	**25 J**	0.43 UJ	**4.6**
Benzo[k]fluoranthene	0.8	56	0.36 U	27 UJ	0.38 U	14 UJ	0.43 U	**6.2 J**
Chrysene	1	56	**0.031 J**	**71**	0.38 U	**47**	0.43 U	**11**
Dibenz[a,h]anthracene	0.33	0.56	0.36 U	**11 J**	0.38 U	**5.3 J**	0.43 U	**1.9 J**
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.36 U	**19 J**	0.38 U	**7.8 J**	0.43 U	**3.7**
Total Carcinogenic PAHs	NE	NE	**0.082**	**283**	ND	**155.1**	ND	**47.3**
Total PAHs (mg/kg)								
Total PAHs	NE	NE	**0.279**	**964**	ND	**487.2**	**0.677**	**159.3**
Other SVOCs (mg/kg)								
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)								
Arsenic	13	16	1.5 U	**5.1 J**	**2.3 J**	**9.6 J**	2 UJ	**10.1**
Barium	350	400	**45.1**	**12.1**	**61.5**	**25.9**	**14.3**	**107**
Cadmium	2.5	9.3	1.3 U	1.3 U	1.2 U	1.4 U	1.6 U	1.6 U
Chromium	NE	NE	**8.1**	**22.1**	**39.5**	**16.9**	**11.5**	**21.4**
Lead	63	1000	**9.9 J**	**21 J**	**3 J**	**53.4 J**	**2.8 J**	**184**
Mercury	0.18	2.8	0.016 UJ	**0.18 J**	0.015 UJ	**0.26 J**	0.018 UJ	**0.12**
Selenium	3.9	1500	2 UJ	2.1 UJ	1.9 UJ	2.2 UJ	2.6 UJ	**4.3**
Silver	2	1500	0.41 U	0.42 U	0.39 U	0.44 U	0.52 U	0.6 U
Total Cyanide (mg/kg)								
Cyanide, Total	27	27	0.394 U	0.375 U	0.39 U	0.402 U	0.441 U	**20.7**
Other (mg/kg)								
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-107 (12-13) 5/6/2004	CF-SB-107 (15-18) 5/6/2004	CF-SB-108 (13-15) 5/7/2004	CF-SB-108 (20-25) 5/7/2004	CF-SB-109A (12-15) 5/7/2004
BTEX (mg/kg)							
Benzene	0.06	44	**1.2 J**	**0.003 J**	1.6 U	0.007 U	8.9 U
Ethylbenzene	1	390	**92**	**0.48 J**	**8.4**	**0.011 J**	**44**
Toluene	0.7	500	**1.2 J**	**0.024 J**	**0.42 J**	**0.006 J**	**1.6 J**
Xylene, total	0.26	500	**34**	**0.78 J**	**9.9**	**0.034 J**	**57**
Total BTEX	NE	NE	**128.4**	**1.287**	**18.72**	**0.051**	**102.6**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**540**	**1.1 J**	**8.4**	1.8 U	**13**
Acenaphthylene	100	500	**91 J**	**0.27 J**	**1.1 J**	1.8 U	**0.75 J**
Anthracene	100	500	**280**	**0.83 J**	**4.2 J**	1.8 U	**5.6**
Benzo[g,h,i]perylene	100	500	**29 J**	**0.14 J**	**0.58 J**	1.8 U	**0.6 J**
Fluoranthene	100	500	**260**	**0.92 J**	**4 J**	1.8 U	**5.1**
Fluorene	30	500	**210 J**	**0.63 J**	**2.5 J**	1.8 U	**3.6 J**
Methylnaphthalene,2-	NE	NE	**100 J**	2 UJ	**14**	1.8 U	**20**
Naphthalene	12	500	**1200**	**0.51 J**	**34**	1.8 U	**35**
Phenanthrene	100	500	**850**	**2.2 J**	**13**	1.8 U	**18**
Pyrene	100	500	**360**	**1.1 J**	**6.2**	1.8 U	**7.7**
Total Noncarcinogenic PAHs	NE	NE	**3920**	**7.7**	**87.98**	ND	**109.35**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**130 J**	**0.45 J**	**2.2 J**	1.8 U	**2.7 J**
Benzo[a]pyrene	1	1	**87 J**	**0.37 J**	**1.5 J**	1.8 U	**1.7 J**
Benzo[b]fluoranthene	1	5.6	**45 J**	2 UJ	**0.69 J**	1.8 U	**0.94 J**
Benzo[k]fluoranthene	0.8	56	**56 J**	**0.3 J**	**1.1 J**	1.8 U	**1.2 J**
Chrysene	1	56	**150 J**	**0.48 J**	**2.1 J**	1.8 U	**2.8 J**
Dibenz[a,h]anthracene	0.33	0.56	**14 J**	2 UJ	**0.29 J**	1.8 U	4.7 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	**26 J**	**0.14 J**	**0.46 J**	1.8 U	**0.51 J**
Total Carcinogenic PAHs	NE	NE	**508**	**1.74**	**8.34**	ND	**9.85**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**4428**	**9.44**	**96.32**	ND	**119.2**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**17.8**	4.4 UJ	**24.7**	**9**	**32.7**
Barium	350	400	**95.1**	**418 J**	**77.6**	**169**	**104**
Cadmium	2.5	9.3	1.8 U	3.6 UJ	1.9 U	1.7 U	2.1 U
Chromium	NE	NE	**49.2**	**30.2 J**	**49.1**	**13.5**	**67.4**
Lead	63	1000	**533**	**6.9 J**	**141**	**2.4 J**	**195**
Mercury	0.18	2.8	**2.8**	0.041 UJ	**2.8 J**	0.018 U	**2.8**
Selenium	3.9	1500	2.9 U	5.8 UJ	3 U	2.7 U	3.4 U
Silver	2	1500	0.58 U	1.2 UJ	0.74 U	0.53 U	0.93 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.558 U	1.059 UJ	0.553 U	0.481 U	0.621 U
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-109A (15-20) 5/7/2004	CF-SB-109A (20-25) 5/7/2004	CF-SB-110 (10-15) 5/10/2004	CF-SB-110 (15-16) 5/10/2004	CF-SB-110 (19.5-20) 5/10/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.57 U	0.015 UJ	**0.044**	3.1 U	6 U
Ethylbenzene	1	390	**0.22 J**	**0.002 J**	**1**	**2.7 J**	**5.8 J**
Toluene	0.7	500	0.57 U	0.015 UJ	**0.065**	3.1 U	6 U
Xylene, total	0.26	500	**0.16 J**	**0.006 J**	**1.9**	**5.3**	**8.3**
Total BTEX	NE	NE	**0.38**	**0.008**	**3.009**	**8**	**14.1**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**85**	3.8 UJ	**59.1**	**14.3 J**	NA
Acenaphthylene	100	500	**24**	3.8 UJ	**14.5**	**2.22 J**	NA
Anthracene	100	500	**77**	3.8 UJ	**42.1 J**	**8.2 J**	NA
Benzo[g,h,i]perylene	100	500	**13 J**	3.8 UJ	**12.7**	**3.79**	NA
Fluoranthene	100	500	**110**	3.8 UJ	**49.9**	**13.1 J**	NA
Fluorene	30	500	15 U	3.8 UJ	**28.9**	**6.63 J**	NA
Methylnaphthalene,2-	NE	NE	**5.4 J**	3.8 UJ	**87.2**	**18.9 J**	NA
Naphthalene	12	500	**6.4 J**	3.8 UJ	**89.1**	**29.9**	NA
Phenanthrene	100	500	**110**	3.8 UJ	**114**	**25.5**	NA
Pyrene	100	500	**120**	3.8 UJ	**65.9**	**15.2 J**	NA
Total Noncarcinogenic PAHs	NE	NE	**550.8**	ND	**563.4**	**137.74**	NA
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**55**	3.8 UJ	**32**	**7.17 J**	NA
Benzo[a]pyrene	1	1	**40**	3.8 UJ	**24.7**	**5.71 J**	NA
Benzo[b]fluoranthene	1	5.6	**18**	3.8 UJ	**12.7**	**3.52 J**	NA
Benzo[k]fluoranthene	0.8	56	**28 J**	3.8 UJ	**13.2**	**3.34 J**	NA
Chrysene	1	56	**52**	3.8 UJ	**30.8**	**6.77 J**	NA
Dibenz[a,h]anthracene	0.33	0.56	**7 J**	3.8 UJ	**4.85**	**1.15 J**	NA
Indeno[1,2,3-cd]pyrene	0.5	5.6	**12 J**	3.8 UJ	**9.35**	**2.64 J**	NA
Total Carcinogenic PAHs	NE	NE	**212**	ND	**127.6**	**30.3**	NA
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**762.8**	ND	**691**	**168.04**	NA
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	**10.7**	**2.03 J**	NA
Benzo[e]pyrene	NE	NE	NA	NA	**13.7 J**	**3.3 J**	NA
Dibenzofuran	7	350	NA	NA	**3.32**	**1.12 J**	NA
Methylnaphthalene,1-	NE	NE	NA	NA	**86**	**18.8**	NA
Perylene	NE	NE	NA	NA	**4.05 J**	**1.06 J**	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**2.4 J**	4.4 UJ	**26.4**	**7.6**	NA
Barium	350	400	**9**	**36.9 J**	**82.9**	**38.1**	NA
Cadmium	2.5	9.3	1.3 U	3.6 UJ	2 U	1.4 U	NA
Chromium	NE	NE	**10.7**	**13.9 J**	**50.9**	**16.8**	NA
Lead	63	1000	**6.4**	2.7 UJ	**153**	**187**	NA
Mercury	0.18	2.8	**0.014**	0.036 UJ	**2.6**	**0.042**	NA
Selenium	3.9	1500	2.1 U	5.8 UJ	3.2 U	2.2 U	NA
Silver	2	1500	0.43 U	1.2 UJ	0.67 U	0.44 U	NA
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.386 U	0.99 UJ	0.567 U	0.418 U	NA
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-110 (23-25) 5/10/2004	CF-SB-111 (14.5-15) 5/10/2004	CF-SB-111 (15-17.5) 5/10/2004	CF-SB-112 (13-14) 5/10/2004	CF-SB-112 (16-20) 5/10/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.007 U	NA	**0.003 J**	1.1 U	0.006 U
Ethylbenzene	1	390	**0.004 J**	NA	**0.007**	**2.7**	0.006 U
Toluene	0.7	500	0.007 U	NA	**0.003 J**	**0.27 J**	0.006 U
Xylene, total	0.26	500	**0.009**	NA	**0.024**	**3.7**	0.006 U
Total BTEX	NE	NE	**0.013**	NA	**0.037**	**6.67**	ND
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	8.6 U	**92**	**0.13 J**	**91.1**	0.38 U
Acenaphthylene	100	500	8.6 U	**15.7**	0.86 U	**43.8**	0.38 U
Anthracene	100	500	8.6 U	**75.4**	0.86 U	**78.9 J**	0.38 U
Benzo[g,h,i]perylene	100	500	8.6 U	**16.7**	0.86 U	**21.2**	0.38 U
Fluoranthene	100	500	8.6 U	**57.8**	0.86 U	**106**	0.38 U
Fluorene	30	500	8.6 U	**46.6**	0.86 U	**32.8**	0.38 U
Methylnaphthalene,2-	NE	NE	8.6 U	**110**	0.86 U	**107**	0.38 U
Naphthalene	12	500	8.6 U	**108**	0.86 U	**143**	0.38 U
Phenanthrene	100	500	8.6 U	**182**	0.86 U	**147**	0.38 U
Pyrene	100	500	8.6 U	**77.9**	0.86 U	**128**	0.38 U
Total Noncarcinogenic PAHs	NE	NE	ND	**782.1**	**0.13**	**898.8**	ND
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	8.6 U	**37.5**	0.86 U	**55.2**	0.38 U
Benzo[a]pyrene	1	1	8.6 U	**29.4**	0.86 U	**40.6**	0.38 U
Benzo[b]fluoranthene	1	5.6	8.6 U	**14**	0.86 U	**25.3**	0.38 U
Benzo[k]fluoranthene	0.8	56	8.6 U	**15.3**	0.86 U	**19.7**	0.38 U
Chrysene	1	56	8.6 U	**35.7**	0.86 U	**50.2**	0.38 U
Dibenz[a,h]anthracene	0.33	0.56	8.6 U	**5.57**	0.86 U	**8.33**	0.38 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	8.6 U	**11.5**	0.86 U	**16.5**	0.38 U
Total Carcinogenic PAHs	NE	NE	ND	**148.97**	ND	**215.83**	ND
Total PAHs (mg/kg)							
Total PAHs	NE	NE	ND	**931.07**	**0.13**	**1114.63**	ND
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	**16.3**	NA	**15.8**	NA
Benzo[e]pyrene	NE	NE	NA	**15.9 J**	NA	**21.7 J**	NA
Dibenzofuran	7	350	NA	**6.86**	NA	**12.8**	NA
Methylnaphthalene,1-	NE	NE	NA	**73.6**	NA	**94.8**	NA
Perylene	NE	NE	NA	**4.67 J**	NA	**7.89 J**	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**3.6 J**	NA	1.8 UJ	NA	1.7 UJ
Barium	350	400	**14.4**	NA	**14.4**	NA	**102**
Cadmium	2.5	9.3	1.5 U	NA	1.5 U	NA	1.4 U
Chromium	NE	NE	**11.9**	NA	**8.2**	NA	**30.9**
Lead	63	1000	**4 J**	NA	**2.3 J**	NA	**7**
Mercury	0.18	2.8	0.017 U	NA	0.018 U	NA	0.015 U
Selenium	3.9	1500	2.4 U	NA	2.4 U	NA	2.2 U
Silver	2	1500	0.48 U	NA	0.48 U	NA	0.44 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.441 U	NA	0.445 U	NA	0.392 U
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-113 (14.5-15) 5/11/2004
BTEX (mg/kg)			
Benzene	0.06	44	1.5 U
Ethylbenzene	1	390	**2.8**
Toluene	0.7	500	1.5 U
Xylene, total	0.26	500	**1.9**
Total BTEX	NE	NE	**4.7**
Other VOCs (mg/kg)			
Acetone	0.05	500	NA
Butanone,2-	0.12	500	NA
Carbon disulfide	NE	NE	NA
Styrene	NE	NE	NA
Trichloroethene	0.47	200	NA
Non-carcinogenic PAHs (mg/kg)			
Acenaphthene	20	500	NA
Acenaphthylene	100	500	NA
Anthracene	100	500	NA
Benzo[g,h,i]perylene	100	500	NA
Fluoranthene	100	500	NA
Fluorene	30	500	NA
Methylnaphthalene,2-	NE	NE	NA
Naphthalene	12	500	NA
Phenanthrene	100	500	NA
Pyrene	100	500	NA
Total Noncarcinogenic PAHs	NE	NE	NA
Carcinogenic PAHs (mg/kg)			
Benz[a]anthracene	1	5.6	NA
Benzo[a]pyrene	1	1	NA
Benzo[b]fluoranthene	1	5.6	NA
Benzo[k]fluoranthene	0.8	56	NA
Chrysene	1	56	NA
Dibenz[a,h]anthracene	0.33	0.56	NA
Indeno[1,2,3-cd]pyrene	0.5	5.6	NA
Total Carcinogenic PAHs	NE	NE	NA
Total PAHs (mg/kg)			
Total PAHs	NE	NE	NA
Other SVOCs (mg/kg)			
Trimethylbenzene,1,2,4-	3.6	190	NA
Benzo[e]pyrene	NE	NE	NA
Dibenzofuran	7	350	NA
Methylnaphthalene,1-	NE	NE	NA
Perylene	NE	NE	NA
RCRA-8 Metals (mg/kg)			
Arsenic	13	16	NA
Barium	350	400	NA
Cadmium	2.5	9.3	NA
Chromium	NE	NE	NA
Lead	63	1000	NA
Mercury	0.18	2.8	NA
Selenium	3.9	1500	NA
Silver	2	1500	NA
Total Cyanide (mg/kg)			
Cyanide, Total	27	27	NA
Other (mg/kg)			
Total Petroleum Hydrocarbons	NE	NE	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-113 (15-15.5) 5/11/2004	CF-SB-113 (20-25) 5/11/2004	CF-SB-114A (13-14) 5/11/2004	CF-SB-114B (15-20) 5/11/2004	CF-SB-115 (14-15) 5/11/2004
BTEX (mg/kg)							
Benzene	0.06	44	NA	0.012 UJ	1.4 U	0.007 U	0.74 U
Ethylbenzene	1	390	NA	**0.005 J**	**0.64 J**	0.007 U	**0.85**
Toluene	0.7	500	NA	0.012 UJ	1.4 U	0.007 U	0.74 U
Xylene, total	0.26	500	NA	**0.005 J**	**0.73 J**	0.007 U	**2**
Total BTEX	NE	NE	NA	**0.01**	**1.37**	ND	**2.85**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	NA	30 UJ	**15**	**0.027 J**	**38.2**
Acenaphthylene	100	500	NA	30 UJ	**2.2 J**	0.44 U	**6.48**
Anthracene	100	500	NA	30 UJ	**10**	0.44 U	**23.2 J**
Benzo[g,h,i]perylene	100	500	NA	30 UJ	**1.5 J**	0.44 U	**7.34**
Fluoranthene	100	500	NA	30 UJ	**13**	0.44 U	**27.1**
Fluorene	30	500	NA	30 UJ	**6.8**	0.44 U	**16.3**
Methylnaphthalene,2-	NE	NE	NA	30 UJ	**5.7**	0.44 U	**51.6**
Naphthalene	12	500	NA	30 UJ	**12**	0.44 UJ	**62.3**
Phenanthrene	100	500	NA	30 UJ	**29**	0.44 U	**70.4**
Pyrene	100	500	NA	30 UJ	**15**	0.44 U	**34.4**
Total Noncarcinogenic PAHs	NE	NE	NA	ND	**110.2**	**0.027**	**337.32**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	NA	30 UJ	**6.3**	0.44 U	**15.8**
Benzo[a]pyrene	1	1	NA	30 UJ	**4.3**	0.44 U	**12.2**
Benzo[b]fluoranthene	1	5.6	NA	30 UJ	**1.9 J**	0.44 U	**6.28**
Benzo[k]fluoranthene	0.8	56	NA	30 UJ	**3.1 J**	0.44 U	**7.2**
Chrysene	1	56	NA	30 UJ	**6.6**	0.44 U	**14.9**
Dibenz[a,h]anthracene	0.33	0.56	NA	30 UJ	**0.77 J**	0.44 U	**2.33**
Indeno[1,2,3-cd]pyrene	0.5	5.6	NA	30 UJ	**1.2 J**	0.44 U	**5.21**
Total Carcinogenic PAHs	NE	NE	NA	ND	**24.17**	ND	**63.92**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	NA	ND	**134.37**	**0.027**	**401.24**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	**4.68**
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	**6.9 J**
Dibenzofuran	7	350	NA	NA	NA	NA	**2.65**
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	**44.4**
Perylene	NE	NE	NA	NA	NA	NA	**2.09 J**
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**6.1 J**	**3.8 J**	**11.8**	2 U	**27.8**
Barium	350	400	**39.7**	**85.9 J**	**80.8**	**19.2**	**139**
Cadmium	2.5	9.3	1.3 U	2.8 UJ	1.5 U	1.6 U	1.7 U
Chromium	NE	NE	**38**	**33.1 J**	**34.8**	**8.1**	**64.9**
Lead	63	1000	**104**	**7.2 J**	**123**	**2.2 J**	**459**
Mercury	0.18	2.8	**0.12**	0.034 UJ	**0.85**	0.017 UJ	**0.95 J**
Selenium	3.9	1500	2.1 U	4.5 UJ	2.4 U	2.6 U	2.7 U
Silver	2	1500	0.43 U	0.89 UJ	0.47 U	0.51 U	0.54 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.389 U	0.788 UJ	0.477 U	0.471 UJ	0.51 UJ
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-115 (18-20) 5/11/2004	CF-SB-116 (12.5-15) 5/11/2004	CF-SB-116 (15-15.5) 5/11/2004	CF-SB-116 (19-20) 5/11/2004	CF-SB-117 (10-12) 5/12/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.006 U	0.91 U	NA	0.008 U	0.74 U
Ethylbenzene	1	390	0.006 U	**2.4**	NA	**0.002 J**	0.74 U
Toluene	0.7	500	0.006 U	**0.14 J**	NA	0.008 U	0.74 U
Xylene, total	0.26	500	**0.003 J**	**3.1**	NA	**0.013 J**	0.74 U
Total BTEX	NE	NE	**0.003**	**5.64**	NA	**0.015**	ND
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**0.11 J**	**8.2**	**86.6**	0.99 U	**53.1**
Acenaphthylene	100	500	0.37 U	**1.1 J**	**16.6 J**	0.99 U	**29.6**
Anthracene	100	500	**0.028 J**	**3.4 J**	**50.4 J**	0.99 U	**54.3 J**
Benzo[g,h,i]perylene	100	500	0.37 U	**0.61 J**	**13.7 J**	0.99 U	**13**
Fluoranthene	100	500	**0.048 J**	**3.5 J**	**59.2 J**	0.99 U	**55.8**
Fluorene	30	500	0.37 U	**2.7 J**	**32.1 J**	0.99 U	**15.9**
Methylnaphthalene,2-	NE	NE	0.37 U	**13**	**133**	0.99 U	**111**
Naphthalene	12	500	**0.42 J**	**22 J**	**168**	0.99 UJ	**5.28**
Phenanthrene	100	500	**0.076 J**	**9.9**	**146**	0.99 U	**133**
Pyrene	100	500	**0.04 J**	**5.2**	**72.6 J**	0.99 U	**71.8**
Total Noncarcinogenic PAHs	NE	NE	**0.722**	**69.61**	**778.2**	ND	**542.78**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	0.37 U	**2.1 J**	**34.2 J**	0.99 U	**33**
Benzo[a]pyrene	1	1	0.37 U	**1.5 J**	**25.2 J**	0.99 U	**23.2**
Benzo[b]fluoranthene	1	5.6	0.37 U	**0.62 J**	**15.6 J**	0.99 U	**13.2**
Benzo[k]fluoranthene	0.8	56	0.37 U	**0.93 J**	**11.9 J**	0.99 U	**12**
Chrysene	1	56	0.37 U	**2.4 J**	**31.8 J**	0.99 U	**32**
Dibenz[a,h]anthracene	0.33	0.56	0.37 U	4.7 U	**4.8 J**	0.99 U	**4.62**
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.37 U	4.7 U	**10.1 J**	0.99 U	**9.49**
Total Carcinogenic PAHs	NE	NE	ND	**7.55**	**133.6**	ND	**127.51**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**0.722**	**77.16**	**911.8**	ND	**670.29**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	**21.3 J**	NA	**0.44**
Benzo[e]pyrene	NE	NE	NA	NA	**14 J**	NA	**12.4 J**
Dibenzofuran	7	350	NA	NA	**5.11 J**	NA	**2.99**
Methylnaphthalene,1-	NE	NE	NA	NA	**132**	NA	**2.07**
Perylene	NE	NE	NA	NA	**4.67 J**	NA	**4.39 J**
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	1.7 U	**34.4**	NA	2.1 U	**7.6**
Barium	350	400	**7.4**	**108**	NA	**46.7**	**18.8**
Cadmium	2.5	9.3	1.4 U	2.1 U	NA	1.7 U	1.8 U
Chromium	NE	NE	**10.7**	**63.1**	NA	**14.2**	**5.9**
Lead	63	1000	**2.6 J**	**198**	NA	**4 J**	**21.1**
Mercury	0.18	2.8	0.012 UJ	**2.3 J**	NA	0.022 UJ	**0.12 J**
Selenium	3.9	1500	2.3 U	3.4 U	NA	2.8 U	2.8 U
Silver	2	1500	0.45 U	**0.89**	NA	0.56 U	0.56 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.393 UJ	0.633 UJ	NA	0.518 UJ	0.506 UJ
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-117 (24-25) 5/12/2004
BTEX (mg/kg)			
Benzene	0.06	44	0.006 U
Ethylbenzene	1	390	0.006 U
Toluene	0.7	500	0.006 U
Xylene, total	0.26	500	0.006 U
Total BTEX	NE	NE	ND
Other VOCs (mg/kg)			
Acetone	0.05	500	NA
Butanone,2-	0.12	500	NA
Carbon disulfide	NE	NE	NA
Styrene	NE	NE	NA
Trichloroethene	0.47	200	NA
Non-carcinogenic PAHs (mg/kg)			
Acenaphthene	20	500	0.36 U
Acenaphthylene	100	500	0.36 U
Anthracene	100	500	0.36 U
Benzo[g,h,i]perylene	100	500	0.36 U
Fluoranthene	100	500	0.36 U
Fluorene	30	500	0.36 U
Methylnaphthalene,2-	NE	NE	0.36 U
Naphthalene	12	500	0.36 UJ
Phenanthrene	100	500	0.36 U
Pyrene	100	500	0.36 U
Total Noncarcinogenic PAHs	NE	NE	ND
Carcinogenic PAHs (mg/kg)			
Benz[a]anthracene	1	5.6	0.36 U
Benzo[a]pyrene	1	1	0.36 U
Benzo[b]fluoranthene	1	5.6	0.36 U
Benzo[k]fluoranthene	0.8	56	0.36 U
Chrysene	1	56	0.36 U
Dibenz[a,h]anthracene	0.33	0.56	0.36 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.36 U
Total Carcinogenic PAHs	NE	NE	ND
Total PAHs (mg/kg)			
Total PAHs	NE	NE	ND
Other SVOCs (mg/kg)			
Trimethylbenzene,1,2,4-	3.6	190	NA
Benzo[e]pyrene	NE	NE	NA
Dibenzofuran	7	350	NA
Methylnaphthalene,1-	NE	NE	NA
Perylene	NE	NE	NA
RCRA-8 Metals (mg/kg)			
Arsenic	13	16	**2.8**
Barium	350	400	**124**
Cadmium	2.5	9.3	1.2 U
Chromium	NE	NE	**13.6**
Lead	63	1000	**5.4**
Mercury	0.18	2.8	0.014 UJ
Selenium	3.9	1500	2 U
Silver	2	1500	0.39 U
Total Cyanide (mg/kg)			
Cyanide, Total	27	27	0.375 UJ
Other (mg/kg)			
Total Petroleum Hydrocarbons	NE	NE	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-118 (16-17) 5/12/2004	CF-SB-118 (17-17.5) 5/10/2004	CF-SB-118 (32.5-35) 5/12/2004	CF-SB-119 (17-18.5) 5/12/2004	CF-SB-119 (25-27.5) 5/12/2004	CF-SB-120 (10-15) 5/13/2004
BTEX (mg/kg)								
Benzene	0.06	44	NA	NA	0.006 U	**2.5 J**	0.006 U	**0.049**
Ethylbenzene	1	390	NA	NA	**0.004 J**	**47**	**0.0006 J**	**0.05 J**
Toluene	0.7	500	NA	NA	0.006 U	**4.4 J**	**0.0009 J**	**0.005 J**
Xylene, total	0.26	500	NA	NA	**0.006**	**74**	0.006 U	**0.12 J**
Total BTEX	NE	NE	NA	NA	**0.01**	**127.9**	**0.0015**	**0.224**
Other VOCs (mg/kg)								
Acetone	0.05	500	NA	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)								
Acenaphthene	20	500	**758**	**1790 J**	**0.062 J**	**46**	**0.048 J**	**8.3 J**
Acenaphthylene	100	500	**105 J**	**394 J**	0.39 U	**5.3 J**	0.76 U	**0.97 J**
Anthracene	100	500	**560**	**1910 J**	**0.067 J**	**25**	**0.049 J**	**6.7 J**
Benzo[g,h,i]perylene	100	500	**113 J**	**730 J**	0.39 U	**6.2 J**	0.76 U	**1.5 J**
Fluoranthene	100	500	**690**	**3680 J**	**0.17 J**	**38**	**0.069 J**	**9.3 J**
Fluorene	30	500	**452**	**1790 J**	**0.059 J**	**25**	0.76 U	2.2 U
Methylnaphthalene,2-	NE	NE	**658**	**1090 J**	0.39 U	**48**	0.76 U	**1.3 J**
Naphthalene	12	500	**1390**	**5580**	**0.075 J**	**130**	0.76 U	**4 J**
Phenanthrene	100	500	**1650**	**6620**	**0.26 J**	**84**	**0.14 J**	**16 J**
Pyrene	100	500	**817**	**2820 J**	**0.14 J**	**38**	**0.081 J**	**13 J**
Total Noncarcinogenic PAHs	NE	NE	**7193**	**26404**	**0.833**	**445.5**	**0.387**	**61.07**
Carcinogenic PAHs (mg/kg)								
Benz[a]anthracene	1	5.6	**344**	**1610 J**	**0.073 J**	**17 J**	0.76 U	**4.9 J**
Benzo[a]pyrene	1	1	**283**	**1490 J**	**0.055 J**	**12 J**	0.76 U	**3.7 J**
Benzo[b]fluoranthene	1	5.6	**228**	**1620 J**	0.39 U	**7.4 J**	0.76 U	**2 J**
Benzo[k]fluoranthene	0.8	56	**94.3 J**	**576 J**	**0.06 J**	**9.7 J**	0.76 U	**2.2 J**
Chrysene	1	56	**328**	**1730 J**	**0.063 J**	**16 J**	0.76 U	**4.7 J**
Dibenz[a,h]anthracene	0.33	0.56	**47.1 J**	**208 J**	0.39 U	19 U	0.76 U	**0.52 J**
Indeno[1,2,3-cd]pyrene	0.5	5.6	**93.4 J**	**873 J**	0.39 U	**6.2 J**	0.76 U	**1.2 J**
Total Carcinogenic PAHs	NE	NE	**1417.8**	**8107**	**0.251**	**68.3**	ND	**19.22**
Total PAHs (mg/kg)								
Total PAHs	NE	NE	**8610.8**	**34511**	**1.084**	**513.8**	**0.387**	**80.29**
Other SVOCs (mg/kg)								
Trimethylbenzene,1,2,4-	3.6	190	**70.6 J**	**150 J**	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	**145 J**	**814 J**	NA	NA	NA	NA
Dibenzofuran	7	350	**111 J**	**1470 J**	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	**728**	**1460 J**	NA	NA	NA	NA
Perylene	NE	NE	**50.6 J**	**421 J**	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)								
Arsenic	13	16	NA	NA	**13.6**	**10.2**	1.6 U	**22**
Barium	350	400	NA	NA	**344**	**37.8**	**8.8**	**88.2**
Cadmium	2.5	9.3	NA	NA	1.3 U	1.4 U	1.3 U	1.9 U
Chromium	NE	NE	NA	NA	**51.7**	**20.3**	**10.1**	**46.7**
Lead	63	1000	NA	NA	**7.2**	**76.7**	**2.2 J**	**115**
Mercury	0.18	2.8	NA	NA	0.015 UJ	**0.28 J**	0.013 UJ	**0.87 J**
Selenium	3.9	1500	NA	NA	2.1 UJ	2.3 U	2 U	3.1 U
Silver	2	1500	NA	NA	0.43 U	**0.64**	0.41 U	0.62 U
Total Cyanide (mg/kg)								
Cyanide, Total	27	27	NA	NA	0.402 UJ	0.417 UJ	0.41 UJ	0.579 UJ
Other (mg/kg)								
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-120 (17-18) 5/13/2004	Duplicate of: CF-SB-120 (17-18) 5/13/2004	CF-SB-120 (32.5-35) 5/13/2004	CF-SB-121 (18.0-19.5) 5/13/2004	CF-SB-121 (19.5-20) 5/13/2004
BTEX (mg/kg)							
Benzene	0.06	44	**6.8 J**	**2.6 J**	0.006 U	**9.1**	NA
Ethylbenzene	1	390	**38 J**	**11 J**	0.006 U	**40**	NA
Toluene	0.7	500	**18 J**	**6.1 J**	0.006 U	**19**	NA
Xylene, total	0.26	500	**89 J**	**27 J**	0.006 U	**71**	NA
Total BTEX	NE	NE	**151.8**	**46.7**	ND	**139.1**	NA
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**2200 J**	**410 J**	0.37 U	**851**	**176**
Acenaphthylene	100	500	**960 J**	**110 J**	0.37 U	**167**	**277**
Anthracene	100	500	**2600 J**	**300 J**	0.37 U	**594**	**253**
Benzo[g,h,i]perylene	100	500	**780 J**	**67 J**	0.37 U	**155 J**	**129 J**
Fluoranthene	100	500	**4500 J**	**390 J**	0.37 U	**996**	**712**
Fluorene	30	500	**2000 J**	**280 J**	0.37 U	**535**	**299**
Methylnaphthalene,2-	NE	NE	**2700 J**	**650 J**	0.37 U	**531**	**229**
Naphthalene	12	500	**14000 J**	**1300 J**	0.37 U	**3000**	**1830**
Phenanthrene	100	500	**7400 J**	**990 J**	0.37 U	**1810**	**1020**
Pyrene	100	500	**3800 J**	**480 J**	**0.027 J**	**933**	**542**
Total Noncarcinogenic PAHs	NE	NE	**40940**	**4977**	**0.027**	**9572**	**5467**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**1700 J**	**200 J**	0.37 U	**370**	**266**
Benzo[a]pyrene	1	1	**1500 J**	**140 J**	0.37 U	**329**	**249**
Benzo[b]fluoranthene	1	5.6	**1200 J**	**110 J**	0.37 U	**309**	**268**
Benzo[k]fluoranthene	0.8	56	**1000 J**	**100 J**	0.37 U	**119**	**92.3**
Chrysene	1	56	**1800 J**	**210 J**	0.37 U	**352**	**209**
Dibenz[a,h]anthracene	0.33	0.56	3100 UJ	220 U	0.37 U	**55**	**49.4**
Indeno[1,2,3-cd]pyrene	0.5	5.6	**790 J**	**69 J**	0.37 U	**171**	**151**
Total Carcinogenic PAHs	NE	NE	**7990**	**829**	ND	**1705**	**1284.7**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**48930**	**5806**	**0.027**	**11277**	**6751.7**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	**70.8 J**	**60.1 J**
Benzo[e]pyrene	NE	NE	NA	NA	NA	**173 J**	**134 J**
Dibenzofuran	7	350	NA	NA	NA	**273**	**289**
Methylnaphthalene,1-	NE	NE	NA	NA	NA	**895**	**440**
Perylene	NE	NE	NA	NA	NA	**75.2 J**	**67.4 J**
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**51.4 J**	**16.3**	**1.8**	**37.6**	NA
Barium	350	400	**211 J**	**94.9**	**64.1**	**142**	NA
Cadmium	2.5	9.3	3.1 UJ	1.5 U	1.4 U	1.9 U	NA
Chromium	NE	NE	**72.7 J**	**23.5**	**27.3**	**53.6**	NA
Lead	63	1000	**627 J**	**391**	**4.9**	**323**	NA
Mercury	0.18	2.8	**0.097 J**	**1.3 J**	0.014 UJ	**4.2 J**	NA
Selenium	3.9	1500	4.9 UJ	2.4 U	2.2 U	3 U	NA
Silver	2	1500	**1.2 J**	0.47 U	0.44 U	**0.84**	NA
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.841 UJ	0.471 UJ	0.384 UJ	0.597 UJ	NA
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-121 (33-35) 5/13/2004	CF-SB-122 (17.5-20) 5/13/2004	CF-SB-122 (25-27.5) 5/13/2004	CF-SB-123 (15-17) 5/14/2004	CF-SB-123 (27-30) 5/14/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.006 U	**0.57 J**	**0.005 J**	**1.2 J**	0.006 U
Ethylbenzene	1	390	**0.004 J**	**2.7**	**0.031 J**	**4.5**	0.006 U
Toluene	0.7	500	**0.002 J**	**0.14 J**	**0.002 J**	**1.2 J**	0.006 U
Xylene, total	0.26	500	**0.015**	**3**	**0.012 J**	**12**	0.006 U
Total BTEX	NE	NE	**0.021**	**6.41**	**0.05**	**18.9**	ND
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**0.043 J**	**280 J**	**0.069 J**	**74**	0.38 U
Acenaphthylene	100	500	**0.018 J**	**140 J**	1.1 U	**13 J**	0.38 U
Anthracene	100	500	**0.059 J**	**320 J**	**0.063 J**	**59 J**	0.38 U
Benzo[g,h,i]perylene	100	500	**0.029 J**	**74 J**	1.1 U	**18 J**	0.38 U
Fluoranthene	100	500	**0.15 J**	**640**	1.1 U	**81**	**0.03 J**
Fluorene	30	500	**0.047 J**	**300 J**	1.1 U	**33**	0.38 U
Methylnaphthalene,2-	NE	NE	**0.037 J**	**430**	1.1 U	**100**	0.38 U
Naphthalene	12	500	0.37 U	**2400**	**0.77 J**	**170**	**0.049 J**
Phenanthrene	100	500	**0.23 J**	**1100**	1.1 U	**140**	**0.045 J**
Pyrene	100	500	**0.13 J**	**510**	**0.095 J**	**100**	**0.024 J**
Total Noncarcinogenic PAHs	NE	NE	**0.743**	**6194**	**0.997**	**788**	**0.148**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**0.058 J**	**230 J**	1.1 U	**39**	0.38 U
Benzo[a]pyrene	1	1	**0.053 J**	**190 J**	1.1 U	**33**	**0.53**
Benzo[b]fluoranthene	1	5.6	0.37 U	**130 J**	1.1 U	**19 J**	0.38 U
Benzo[k]fluoranthene	0.8	56	**0.051 J**	**170 J**	1.1 U	**17 J**	0.38 U
Chrysene	1	56	**0.058 J**	**210 J**	1.1 U	**40**	0.38 U
Dibenz[a,h]anthracene	0.33	0.56	0.37 U	**41 J**	1.1 U	26 U	0.38 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	**0.024 J**	**76 J**	1.1 U	**14 J**	0.38 U
Total Carcinogenic PAHs	NE	NE	**0.244**	**1047**	ND	**162**	**0.53**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**0.987**	**7241**	**0.997**	**950**	**0.678**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**3.3**	**12.9**	**3.9**	**37**	**3.2 J**
Barium	350	400	**56.3**	**52.9**	**66.7**	**196**	**41.1**
Cadmium	2.5	9.3	1.3 U	1.5 U	1.9 U	1.9 U	1.2 U
Chromium	NE	NE	**27.6**	**26.6**	**25.3**	**54.7**	**36.4 J**
Lead	63	1000	**6.1**	**135**	**10.8**	**383**	**5.6 J**
Mercury	0.18	2.8	0.014 UJ	**2 J**	0.021 UJ	**3.1 J**	0.013 U
Selenium	3.9	1500	2.1 U	2.5 U	3.1 U	3.1 U	2 U
Silver	2	1500	0.42 U	0.49 U	0.61 U	**0.95**	0.4 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.416 UJ	R	0.601 UJ	0.579 UJ	0.398 U
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-124 (13-15) 5/14/2004	CF-SB-124 (35-40) 5/14/2004	CF-SB-125 (20-21) 5/14/2004	CF-SB-125 (30-35) 5/14/2004	CF-SB-126 (20-22) 5/14/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.006 U	0.006 U	**1.9**	**0.022 J**	**3**
Ethylbenzene	1	390	**0.0009 J**	0.006 U	**9.2**	**0.004 J**	**88**
Toluene	0.7	500	**0.002 J**	0.006 U	**2.3**	0.012 UJ	**4.6**
Xylene, total	0.26	500	**0.002 J**	0.006 U	**18**	**0.005 J**	**110**
Total BTEX	NE	NE	**0.0049**	ND	**31.4**	**0.031**	**205.6**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**0.18**	0.36 U	NA	1.5 UJ	**754**
Acenaphthylene	100	500	0.08 U	0.36 U	NA	1.5 UJ	**200**
Anthracene	100	500	**0.23**	0.36 U	NA	1.5 UJ	**751**
Benzo[g,h,i]perylene	100	500	**1.98**	0.36 U	NA	1.5 UJ	**81.3 J**
Fluoranthene	100	500	**1.17**	0.36 U	NA	1.5 UJ	**589**
Fluorene	30	500	**0.27**	0.36 U	NA	1.5 UJ	**487**
Methylnaphthalene,2-	NE	NE	**0.16**	0.36 U	NA	1.5 UJ	**631**
Naphthalene	12	500	**0.86**	0.36 U	NA	1.5 UJ	**2160**
Phenanthrene	100	500	**1.2**	0.36 U	NA	1.5 UJ	**1380**
Pyrene	100	500	**0.87**	0.36 U	NA	1.5 UJ	**652**
Total Noncarcinogenic PAHs	NE	NE	**6.92**	ND	NA	ND	**7685.3**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**0.67**	0.36 U	NA	1.5 UJ	**245**
Benzo[a]pyrene	1	1	**0.76**	0.36 U	NA	1.5 UJ	**207**
Benzo[b]fluoranthene	1	5.6	**2.58**	0.36 U	NA	1.5 UJ	**177**
Benzo[k]fluoranthene	0.8	56	**0.84**	0.36 U	NA	1.5 UJ	**69.5**
Chrysene	1	56	**1.26**	0.36 U	NA	1.5 UJ	**228**
Dibenz[a,h]anthracene	0.33	0.56	**0.77**	0.36 U	NA	1.5 UJ	**34**
Indeno[1,2,3-cd]pyrene	0.5	5.6	**2.05**	0.36 U	NA	1.5 UJ	**90.4**
Total Carcinogenic PAHs	NE	NE	**8.93**	ND	NA	ND	**1050.9**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**15.85**	ND	NA	ND	**8736.2**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	**0.05 J**	NA	NA	NA	**56.2 J**
Benzo[e]pyrene	NE	NE	**1.39 J**	NA	NA	NA	**101 J**
Dibenzofuran	7	350	**0.27**	NA	NA	NA	**129**
Methylnaphthalene,1-	NE	NE	**0.32**	NA	NA	NA	**1050**
Perylene	NE	NE	**0.27 J**	NA	NA	NA	**37.4 J**
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**9.1 J**	**1.9 J**	NA	3.4 UJ	**9.4 J**
Barium	350	400	**62**	**85.9**	NA	**17.5 J**	**31.1**
Cadmium	2.5	9.3	1.5 U	1.3 U	NA	2.8 UJ	1.4 U
Chromium	NE	NE	**17.7 J**	**95.6 J**	NA	**24.8 J**	**18.1 J**
Lead	63	1000	**59.2 J**	**5.8 J**	NA	**8.7 J**	**94.8 J**
Mercury	0.18	2.8	**0.1 J**	0.014 U	NA	0.028 UJ	**0.91 J**
Selenium	3.9	1500	2.4 UJ	2 U	NA	4.4 UJ	2.3 U
Silver	2	1500	0.47 U	0.41 U	NA	0.88 UJ	0.46 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.427 U	0.37 U	NA	0.803 UJ	0.396 U
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-126A (33-34) 5/17/2004	CF-SB-126A (43-44) 5/17/2004	CF-SB-127 (19-20) 5/17/2004	CF-SB-127 (40-45) 5/17/2004	CF-SB-128 (17-18) 5/18/2004
BTEX (mg/kg)							
Benzene	0.06	44	0.006 U	0.006 U	**20**	0.006 U	**0.23 J**
Ethylbenzene	1	390	0.006 U	0.006 U	**91**	**0.022**	**2.4**
Toluene	0.7	500	0.006 U	0.006 U	**37**	0.006 U	**0.27 J**
Xylene, total	0.26	500	0.006 U	0.006 U	**150**	**0.02**	**3.4**
Total BTEX	NE	NE	ND	ND	**298**	**0.042**	**6.3**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	0.37 U	0.39 U	**709**	0.39 U	**140**
Acenaphthylene	100	500	**0.032 J**	0.39 U	**275**	0.39 U	**28 J**
Anthracene	100	500	0.37 U	0.39 U	**638**	**0.037 J**	**110**
Benzo[g,h,i]perylene	100	500	0.37 U	0.39 U	**155 J**	0.39 U	**18 J**
Fluoranthene	100	500	**0.025 J**	0.39 U	**919**	0.39 U	**120**
Fluorene	30	500	0.37 U	0.39 U	**511**	0.39 U	48 U
Methylnaphthalene,2-	NE	NE	0.37 U	0.39 U	**544**	0.39 U	**14 J**
Naphthalene	12	500	**0.067 J**	**0.042 J**	**2930**	0.39 U	**52**
Phenanthrene	100	500	**0.038 J**	0.39 U	**1720**	**0.063 J**	**300**
Pyrene	100	500	**0.045 J**	0.39 U	**875**	0.39 U	**160**
Total Noncarcinogenic PAHs	NE	NE	**0.207**	**0.042**	**9276**	**0.1**	**942**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	0.37 U	0.39 U	**396**	0.39 U	**69**
Benzo[a]pyrene	1	1	0.37 U	0.39 U	**338**	**0.032 J**	**50**
Benzo[b]fluoranthene	1	5.6	0.37 U	0.39 U	**324**	0.39 U	**28 J**
Benzo[k]fluoranthene	0.8	56	0.37 U	0.39 U	**102**	0.39 U	**25 J**
Chrysene	1	56	0.37 U	0.39 U	**375**	0.39 U	**72**
Dibenz[a,h]anthracene	0.33	0.56	0.37 U	0.39 U	**60.1**	0.39 U	48 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.37 U	0.39 U	**169**	0.39 U	**20 J**
Total Carcinogenic PAHs	NE	NE	ND	ND	**1764.1**	**0.032**	**264**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**0.207**	**0.042**	**11040.1**	**0.132**	**1206**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	**96 J**	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	**177 J**	NA	NA
Dibenzofuran	7	350	NA	NA	**301**	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	**957**	NA	NA
Perylene	NE	NE	NA	NA	**64.9 J**	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**2.3 J**	1.5 UJ	**35.9 J**	1.7 UJ	**30.3 J**
Barium	350	400	**8.1**	**83**	**127**	**31.4**	**136**
Cadmium	2.5	9.3	1.2 U	1.2 U	1.8 U	1.4 U	1.7 U
Chromium	NE	NE	**10.4 J**	**30.3 J**	**51.2 J**	**19.3 J**	**35.9 J**
Lead	63	1000	**3.8 J**	**4.8 J**	**335 J**	**2.9 J**	**849 J**
Mercury	0.18	2.8	0.012 U	0.014 U	**3.1 J**	0.013 U	**1.8 J**
Selenium	3.9	1500	1.9 U	2 U	2.8 U	2.3 U	2.7 U
Silver	2	1500	0.39 U	0.39 U	**1.2**	0.45 U	**0.84**
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.378 U	0.42 U	0.513 U	0.405 U	0.487 U
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-128 (33-35) 5/18/2004	CF-SB-129 (18-20) 5/18/2004	CF-SB-129 (25-30) 5/18/2004	CF-SB-130 (22-25) 5/19/2004	CF-SB-130 (25-30) 5/19/2004	CF-SB-131 (17-18) 5/19/2004
BTEX (mg/kg)								
Benzene	0.06	44	0.006 U	0.71 U	0.006 U	**0.46 J**	**0.016 J**	**1.9 J**
Ethylbenzene	1	390	0.006 U	**1.5**	**0.003 J**	**6.8**	**0.041 J**	**67**
Toluene	0.7	500	0.006 U	0.71 U	**0.003 J**	1.1 U	**0.004 J**	**5.5**
Xylene, total	0.26	500	0.006 U	**0.33 J**	**0.008 J**	**3.1**	**0.023 J**	**99**
Total BTEX	NE	NE	ND	**1.83**	**0.014**	**10.36**	**0.084**	**173.4**
Other VOCs (mg/kg)								
Acetone	0.05	500	NA	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)								
Acenaphthene	20	500	0.39 U	**40**	0.81 U	**25**	**0.086 J**	**585**
Acenaphthylene	100	500	0.39 U	**9 J**	0.81 U	**4.5 J**	1 U	**59.8**
Anthracene	100	500	0.39 U	**31**	0.81 U	**16 J**	1 U	**313**
Benzo[g,h,i]perylene	100	500	0.39 U	**4.9 J**	0.81 U	**7 J**	1 U	**38.2**
Fluoranthene	100	500	0.39 U	**36**	0.81 U	**45**	1 UJ	**263**
Fluorene	30	500	0.39 U	**4.9 J**	0.81 U	**18**	1 U	**291**
Methylnaphthalene,2-	NE	NE	0.39 U	**1.1 J**	0.81 U	**13 J**	1 UJ	**667**
Naphthalene	12	500	0.39 U	**7.2 J**	0.81 U	**24**	1 U	**1060**
Phenanthrene	100	500	0.39 U	**53**	0.81 U	**77**	1 UJ	**858**
Pyrene	100	500	0.39 U	**51**	0.81 U	**41**	1 UJ	**375**
Total Noncarcinogenic PAHs	NE	NE	ND	**238.1**	ND	**270.5**	**0.086**	**4510**
Carcinogenic PAHs (mg/kg)								
Benz[a]anthracene	1	5.6	0.39 U	**20**	0.81 U	**18 J**	1 UJ	**149**
Benzo[a]pyrene	1	1	0.39 U	**14**	0.81 U	**15 J**	1 UJ	**104**
Benzo[b]fluoranthene	1	5.6	0.39 U	**14**	0.81 U	**11 J**	1 UJ	**74.8**
Benzo[k]fluoranthene	0.8	56	0.39 U	12 UJ	0.81 U	**12 J**	1 U	**23**
Chrysene	1	56	0.39 U	**21**	0.81 U	**13 J**	1 UJ	**156**
Dibenz[a,h]anthracene	0.33	0.56	0.39 U	**2.1 J**	0.81 U	**3.5 J**	1 UJ	**13.1**
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.39 U	**5.1 J**	0.81 U	**7.1 J**	1 UJ	**38.5**
Total Carcinogenic PAHs	NE	NE	ND	**76.2**	ND	**79.6**	ND	**558.4**
Total PAHs (mg/kg)								
Total PAHs	NE	NE	ND	**314.3**	ND	**350.1**	**0.086**	**5068.4**
Other SVOCs (mg/kg)								
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA	**73.5 J**
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA	**66.9 J**
Dibenzofuran	7	350	NA	NA	NA	NA	NA	**37.3**
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA	**932**
Perylene	NE	NE	NA	NA	NA	NA	NA	**18.7 J**
RCRA-8 Metals (mg/kg)								
Arsenic	13	16	1.6 UJ	**17.8 J**	**7 J**	**4.8**	**4.2**	**7.8**
Barium	350	400	**51.7**	**52.6**	**133**	**11.4**	**37.8**	**78.7**
Cadmium	2.5	9.3	1.3 U	1.7 U	1.3 U	1.4 U	1.8 U	1.7 U
Chromium	NE	NE	**43.9 J**	**22.8 J**	**17.1 J**	**16.5 J**	**26 J**	**17.3 J**
Lead	63	1000	**4.2 J**	**349 J**	**8.2 J**	**6.3 J**	**5.9 J**	**256 J**
Mercury	0.18	2.8	0.013 U	**0.077 J**	0.016 U	0.015 UJ	0.016 UJ	**1.8 J**
Selenium	3.9	1500	2.1 U	2.7 U	2.1 U	2.2 U	2.8 U	2.7 U
Silver	2	1500	0.41 U	0.53 U	0.43 U	0.45 U	0.57 U	0.54 U
Total Cyanide (mg/kg)								
Cyanide, Total	27	27	0.408 U	0.496 U	0.416 U	0.364 UJ	0.543 UJ	0.472 UJ
Other (mg/kg)								
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-131 (18-19) 5/19/2004	CF-SB-131 (25-30) 5/19/2004	CF-SB-132 (10-11) 5/19/2004	CF-SB-132 (15-18) 5/19/2004	Duplicate of: CF-SB-132 (15-18) 5/19/2004
BTEX (mg/kg)							
Benzene	0.06	44	NA	0.006 U	**2.5**	0.013 UJ	0.014 UJ
Ethylbenzene	1	390	NA	**0.015 J**	**0.31 J**	0.013 UJ	**0.005 J**
Toluene	0.7	500	NA	0.006 U	**1.4**	0.013 UJ	**0.005 J**
Xylene, total	0.26	500	NA	**0.014 J**	**2.7**	0.013 UJ	**0.015 J**
Total BTEX	NE	NE	NA	**0.029**	**6.91**	ND	**0.025**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**20.9 J**	0.78 UJ	NA	R	R
Acenaphthylene	100	500	**2.88**	0.78 UJ	NA	R	R
Anthracene	100	500	**11.3 J**	0.78 UJ	NA	R	R
Benzo[g,h,i]perylene	100	500	**2.68**	0.78 UJ	NA	R	R
Fluoranthene	100	500	**18.7 J**	0.78 UJ	NA	R	R
Fluorene	30	500	**12.5**	0.78 UJ	NA	R	R
Methylnaphthalene,2-	NE	NE	**17.7 J**	0.78 UJ	NA	R	R
Naphthalene	12	500	**38.6 J**	**0.084 J**	NA	R	R
Phenanthrene	100	500	**40.8 J**	0.78 UJ	NA	R	R
Pyrene	100	500	**19.3 J**	0.78 UJ	NA	R	R
Total Noncarcinogenic PAHs	NE	NE	**185.36**	**0.084**	NA	ND	ND
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**8.09**	0.78 UJ	NA	R	R
Benzo[a]pyrene	1	1	**6.37**	0.78 UJ	NA	R	R
Benzo[b]fluoranthene	1	5.6	**6.06**	0.78 UJ	NA	R	R
Benzo[k]fluoranthene	0.8	56	**1.85**	0.78 UJ	NA	R	R
Chrysene	1	56	**6.83**	0.78 UJ	NA	R	R
Dibenz[a,h]anthracene	0.33	0.56	**0.31**	0.78 UJ	NA	R	R
Indeno[1,2,3-cd]pyrene	0.5	5.6	**2.89**	0.78 UJ	NA	R	R
Total Carcinogenic PAHs	NE	NE	**32.4**	ND	NA	ND	ND
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**217.76**	**0.084**	NA	ND	ND
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	**1.67 J**	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	**3.33 J**	NA	NA	NA	NA
Dibenzofuran	7	350	**4.92**	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	**23.6 J**	NA	NA	NA	NA
Perylene	NE	NE	**1.25 J**	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	NA	**3.3**	NA	**11.9 J**	**7.1 J**
Barium	350	400	NA	**38.2**	NA	**169 J**	**206 J**
Cadmium	2.5	9.3	NA	1.3 U	NA	3 UJ	3.4 UJ
Chromium	NE	NE	NA	**9.9 J**	NA	**30.4 J**	**31.4 J**
Lead	63	1000	NA	**2.9 J**	NA	**6.7 J**	**7.2 J**
Mercury	0.18	2.8	NA	0.015 UJ	NA	0.037 UJ	0.037 UJ
Selenium	3.9	1500	NA	2.1 U	NA	4.9 UJ	5.4 UJ
Silver	2	1500	NA	0.43 U	NA	0.97 UJ	1.1 UJ
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	NA	0.413 UJ	NA	0.877 UJ	0.935 UJ
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-133 (9.5-10) 5/19/2004	CF-SB-133 (16-18) 5/19/2004	CF-SB-134 (11-11.5) 5/19/2004	CF-SB-134 (17-18) 5/19/2004	CF-SB-135 (14.5-15) 5/19/2004
BTEX (mg/kg)							
Benzene	0.06	44	**14**	0.006 U	**0.66 J**	0.006 U	**0.09 J**
Ethylbenzene	1	390	**2.8**	0.006 U	**1.8**	**0.0006 J**	**0.28 J**
Toluene	0.7	500	**10**	0.006 U	**1.2 J**	0.006 U	**0.094 J**
Xylene, total	0.26	500	**24**	0.006 U	**1.6**	**0.002 J**	**0.33 J**
Total BTEX	NE	NE	**50.8**	ND	**5.26**	**0.0026**	**0.794**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**1700 J**	0.36 U	**4.5 J**	0.39 U	**42**
Acenaphthylene	100	500	**382 J**	0.36 U	**10**	0.39 U	**10 J**
Anthracene	100	500	**2450 J**	0.36 U	**12**	0.39 U	**27**
Benzo[g,h,i]perylene	100	500	**755**	0.36 U	**5.7 J**	0.39 U	**4 J**
Fluoranthene	100	500	**5100**	0.36 UJ	**35 J**	0.39 UJ	**26 J**
Fluorene	30	500	**1860 J**	0.36 U	**1.3 J**	0.39 U	11 U
Methylnaphthalene,2-	NE	NE	**890 J**	0.36 UJ	**2 J**	0.39 UJ	**5.9 J**
Naphthalene	12	500	**4200**	0.36 U	**6.2 J**	0.39 U	**9.6 J**
Phenanthrene	100	500	**7140**	0.36 UJ	**22 J**	0.39 UJ	**79 J**
Pyrene	100	500	**3710**	0.36 UJ	**43 J**	0.39 UJ	**41 J**
Total Noncarcinogenic PAHs	NE	NE	**28187**	ND	**141.7**	ND	**244.5**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**1790 J**	0.36 UJ	**20 J**	0.39 UJ	**18 J**
Benzo[a]pyrene	1	1	**1660**	0.36 UJ	**15 J**	0.39 UJ	**9.3 J**
Benzo[b]fluoranthene	1	5.6	**1850 J**	0.36 UJ	**9.1 J**	0.39 UJ	**8.8 J**
Benzo[k]fluoranthene	0.8	56	**567**	0.36 U	**9.1**	0.39 U	11 UJ
Chrysene	1	56	**1430**	0.36 UJ	**23 J**	0.39 UJ	**21 J**
Dibenz[a,h]anthracene	0.33	0.56	**374 J**	0.36 UJ	**3.1 J**	0.39 UJ	**2 J**
Indeno[1,2,3-cd]pyrene	0.5	5.6	**964**	0.36 UJ	**4.9 J**	0.39 UJ	**3.3 J**
Total Carcinogenic PAHs	NE	NE	**8635**	ND	**84.2**	ND	**62.4**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**36822**	ND	**225.9**	ND	**306.9**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	**79.8 J**	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	**887 J**	NA	NA	NA	NA
Dibenzofuran	7	350	**1580 J**	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	**1190**	NA	NA	NA	NA
Perylene	NE	NE	**458 J**	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	NA	**2.2**	**15.3**	**3.5**	**33.1**
Barium	350	400	NA	**42.1**	**139**	**61.1**	**122**
Cadmium	2.5	9.3	NA	1.4 U	1.7 U	1.4 U	2 U
Chromium	NE	NE	NA	**41.4 J**	**19.4 J**	**33.4 J**	**65.9 J**
Lead	63	1000	NA	**2.4 J**	**478 J**	**4.3 J**	**358 J**
Mercury	0.18	2.8	NA	0.012 UJ	**0.15 J**	0.016 UJ	**1.4 J**
Selenium	3.9	1500	NA	2.2 U	**3.4**	2.2 U	3.3 U
Silver	2	1500	NA	0.45 U	0.55 U	0.45 U	**0.78**
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	NA	0.391 UJ	**1.08 J**	0.409 UJ	0.579 UJ
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-135 (21-25) 5/19/2004	CF-SB-136 (13-14) 5/19/2004	CF-SB-136 (23-25) 5/19/2004	CF-SB-137 (18.5-20) 5/20/2004	CF-SB-137 (22.5-23.5) 5/20/2004	CF-SB-137 (27.5-28) 5/20/2004
BTEX (mg/kg)								
Benzene	0.06	44	0.01 UJ	0.014 U	0.006 U	0.007 U	3.9 U	NA
Ethylbenzene	1	390	**0.014 J**	**0.002 J**	**0.001 J**	0.007 U	**66**	NA
Toluene	0.7	500	**0.009 J**	0.014 U	0.006 U	0.007 U	**1.2 J**	NA
Xylene, total	0.26	500	**0.043 J**	**0.004 J**	**0.004 J**	0.007 U	**29**	NA
Total BTEX	NE	NE	**0.066**	**0.006**	**0.005**	ND	**96.2**	NA
Other VOCs (mg/kg)								
Acetone	0.05	500	NA	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)								
Acenaphthene	20	500	11 UJ	**1.1 J**	0.37 U	**77 J**	**867**	**32.4**
Acenaphthylene	100	500	11 UJ	**5.7 J**	0.37 U	**92 J**	**130**	**34.9**
Anthracene	100	500	11 UJ	**4.1 J**	0.37 U	**190**	**519**	**72.6**
Benzo[g,h,i]perylene	100	500	11 UJ	**4.9 J**	0.37 U	**36 J**	**112**	**15.6**
Fluoranthene	100	500	11 UJ	**2.8 J**	0.37 UJ	**220 J**	**558**	**72.1**
Fluorene	30	500	11 UJ	**1.4 J**	0.37 U	**22 J**	**444**	**19.9**
Methylnaphthalene,2-	NE	NE	11 UJ	**2.5 J**	0.37 UJ	93 UJ	**865**	**18.3**
Naphthalene	12	500	11 UJ	**5.4 J**	0.37 U	**15 J**	**999**	**0.32**
Phenanthrene	100	500	11 UJ	**5.3 J**	0.37 UJ	**380 J**	**1400**	**83.8**
Pyrene	100	500	11 UJ	**49 J**	0.37 UJ	**390 J**	**735**	**98.3**
Total Noncarcinogenic PAHs	NE	NE	ND	**82.2**	ND	**1422**	**6629**	**448.22**
Carcinogenic PAHs (mg/kg)								
Benz[a]anthracene	1	5.6	11 UJ	**11 J**	0.37 UJ	**140 J**	**301**	**46**
Benzo[a]pyrene	1	1	**1.2 J**	**13 J**	0.37 UJ	**93 J**	**251**	**37.5**
Benzo[b]fluoranthene	1	5.6	11 UJ	**6.4 J**	0.37 UJ	**49 J**	**189**	**28.9**
Benzo[k]fluoranthene	0.8	56	11 UJ	**7.4 J**	0.37 U	**55 J**	**66.2**	**8.53**
Chrysene	1	56	11 UJ	**12 J**	0.37 UJ	**160 J**	**318**	**47**
Dibenz[a,h]anthracene	0.33	0.56	11 UJ	**2.3 J**	0.37 UJ	**17 J**	**50.8**	**4.26**
Indeno[1,2,3-cd]pyrene	0.5	5.6	11 UJ	**3.9 J**	0.37 UJ	**28 J**	**115**	**14.6**
Total Carcinogenic PAHs	NE	NE	**1.2**	**56**	ND	**542**	**1291**	**186.79**
Total PAHs (mg/kg)								
Total PAHs	NE	NE	**1.2**	**138.2**	ND	**1964**	**7920**	**635.01**
Other SVOCs (mg/kg)								
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	**50.6 J**	0.1 U
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	**139 J**	**19.4 J**
Dibenzofuran	7	350	NA	NA	NA	NA	**65.1**	**1.84**
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	**343**	0.1 U
Perylene	NE	NE	NA	NA	NA	NA	**47.4 J**	**6.05 J**
RCRA-8 Metals (mg/kg)								
Arsenic	13	16	**5.6 J**	**18**	**1.9**	**29.4**	**25.6**	NA
Barium	350	400	**95.6 J**	**124**	**9.5**	**102**	**108**	NA
Cadmium	2.5	9.3	2.5 UJ	1.8 U	1.3 U	1.7 U	2 U	NA
Chromium	NE	NE	**25.6 J**	**16 J**	**16.9 J**	**43.4 J**	**36.5 J**	NA
Lead	63	1000	**6.6 J**	**426 J**	**3.7 J**	**141 J**	**336 J**	NA
Mercury	0.18	2.8	0.03 UJ	**0.59 J**	0.013 UJ	**1.5 J**	**2.3 J**	NA
Selenium	3.9	1500	4 UJ	**3.3**	2.1 U	2.7 U	3.1 U	NA
Silver	2	1500	0.8 UJ	0.57 U	0.41 U	**0.66**	0.62 U	NA
Total Cyanide (mg/kg)								
Cyanide, Total	27	27	0.69 UJ	0.492 UJ	0.384 UJ	0.512 UJ	0.536 UJ	NA
Other (mg/kg)								
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-137 (32-34) 5/20/2004	CF-SB-138 (18-20) 5/20/2004	CF-SB-138 (30-35) 5/20/2004	CF-SB-139 (7.5-10) 5/20/2004	CF-SB-139 (13-15) 5/20/2004	CF-SB-139 (16.5-18) 5/20/2004
BTEX (mg/kg)								
Benzene	0.06	44	0.006 U	**2.3 J**	0.006 U	0.007 U	**0.46 J**	0.009 U
Ethylbenzene	1	390	0.006 U	**73**	0.006 U	0.007 U	**58**	**0.001 J**
Toluene	0.7	500	0.006 U	**7.9**	0.006 U	0.007 U	**0.48 J**	**0.002 J**
Xylene, total	0.26	500	0.006 U	**91**	0.006 U	0.007 U	**22**	**0.006 J**
Total BTEX	NE	NE	ND	**174.2**	ND	ND	**80.94**	**0.009**
Other VOCs (mg/kg)								
Acetone	0.05	500	NA	NA	NA	NA	NA	NA
Butanone,2-	0.12	500	NA	NA	NA	NA	NA	NA
Carbon disulfide	NE	NE	NA	NA	NA	NA	NA	NA
Styrene	NE	NE	NA	NA	NA	NA	NA	NA
Trichloroethene	0.47	200	NA	NA	NA	NA	NA	NA
Non-carcinogenic PAHs (mg/kg)								
Acenaphthene	20	500	0.39 U	**300**	0.38 U	**8.1**	**572**	1.1 U
Acenaphthylene	100	500	0.39 U	**42.8**	0.38 U	**1.3 J**	**64.2**	1.1 U
Anthracene	100	500	0.39 U	**211**	0.38 U	**7**	**958**	1.1 U
Benzo[g,h,i]perylene	100	500	0.39 U	**42.3**	0.38 U	**2.9 J**	**107 J**	1.1 U
Fluoranthene	100	500	0.39 UJ	**248**	0.38 UJ	**13**	**541**	1.1 U
Fluorene	30	500	0.39 U	**172**	0.38 U	3.6 U	**301**	1.1 U
Methylnaphthalene,2-	NE	NE	0.39 UJ	**336**	0.38 UJ	3.6 U	**327**	1.1 U
Naphthalene	12	500	0.39 U	**482**	0.38 U	**0.4 J**	**901**	1.1 U
Phenanthrene	100	500	0.39 UJ	**593**	0.38 UJ	**1.5 J**	**1200**	1.1 U
Pyrene	100	500	0.39 UJ	**306**	0.38 UJ	**19**	**666**	1.1 U
Total Noncarcinogenic PAHs	NE	NE	ND	**2733.1**	ND	**53.2**	**5637.2**	ND
Carcinogenic PAHs (mg/kg)								
Benz[a]anthracene	1	5.6	0.39 UJ	**133**	0.38 UJ	**7.9**	**284**	1.1 U
Benzo[a]pyrene	1	1	0.39 UJ	**107**	0.38 UJ	**6.3**	**233**	1.1 U
Benzo[b]fluoranthene	1	5.6	0.39 UJ	**88.8**	0.38 UJ	**3.5 J**	**182**	1.1 U
Benzo[k]fluoranthene	0.8	56	0.39 U	**26.1**	0.38 U	**3.4 J**	**62.8**	1.1 U
Chrysene	1	56	0.39 UJ	**129**	0.38 UJ	**7.8**	**337**	1.1 U
Dibenz[a,h]anthracene	0.33	0.56	0.39 UJ	**20.9**	0.38 UJ	**1.2 J**	**36.5**	1.1 UJ
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.39 UJ	**47.2**	0.38 UJ	**2.3 J**	**96.6**	1.1 UJ
Total Carcinogenic PAHs	NE	NE	ND	**552**	ND	**32.4**	**1231.9**	ND
Total PAHs (mg/kg)								
Total PAHs	NE	NE	ND	**3285.1**	ND	**85.6**	**6869.1**	ND
Other SVOCs (mg/kg)								
Trimethylbenzene,1,2,4-	3.6	190	NA	**34.7 J**	NA	NA	**17.8 J**	NA
Benzo[e]pyrene	NE	NE	NA	**60.4 J**	NA	NA	**125 J**	NA
Dibenzofuran	7	350	NA	**39.9**	NA	NA	**24.1**	NA
Methylnaphthalene,1-	NE	NE	NA	**425**	NA	NA	**533**	NA
Perylene	NE	NE	NA	**20.8 J**	NA	NA	**36.6 J**	NA
RCRA-8 Metals (mg/kg)								
Arsenic	13	16	1.8 U	**50**	**2.1**	**3.8**	NA	2.5 U
Barium	350	400	**83.2**	**269**	**104**	**50.4**	NA	**41.9**
Cadmium	2.5	9.3	1.5 U	2.3 U	1.5 U	1.4 U	NA	2 U
Chromium	NE	NE	**23.9 J**	**69.5 J**	**225 J**	**25.9**	NA	**14.9**
Lead	63	1000	**6.2 J**	**624 J**	**7.6 J**	**8.8 J**	NA	**4.1 J**
Mercury	0.18	2.8	0.012 UJ	**3.4 J**	0.013 UJ	**0.043 J**	NA	0.022 UJ
Selenium	3.9	1500	2.4 U	3.7 U	2.4 U	2.3 U	NA	3.2 U
Silver	2	1500	0.47 U	**1.8**	0.48 U	0.46 U	NA	0.64 U
Total Cyanide (mg/kg)								
Cyanide, Total	27	27	**9.48 J**	0.619 UJ	0.396 UJ	0.465 UJ	NA	0.597 UJ
Other (mg/kg)								
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-140 (8.3-10') 11/21/2006	CF-SB-140 (11.5-12.5) 11/21/2006	CF-SB-140A (27.5-30) 11/21/2006	CF-SB-141 (8-10') 11/21/2006	CF-SB-141 (14-15) 11/21/2006
BTEX (mg/kg)							
Benzene	0.06	44	NA	**0.0011 J**	**0.0011 J**	NA	0.0085 U
Ethylbenzene	1	390	NA	0.0062 U	**0.003 J**	NA	**0.012**
Toluene	0.7	500	NA	**0.0019 J**	0.0056 U	NA	0.0085 U
Xylene, total	0.26	500	NA	0.0062 U	0.0056 U	NA	0.0086 U
Total BTEX	NE	NE	NA	**0.003**	**0.0041**	NA	**0.012**
Other VOCs (mg/kg)							
Acetone	0.05	500	NA	0.07 UJ	**0.12 J**	NA	**0.23 J**
Butanone,2-	0.12	500	NA	**0.017**	**0.032**	NA	**0.053**
Carbon disulfide	NE	NE	NA	**0.0022 J**	**0.0017 J**	NA	**0.0024 J**
Styrene	NE	NE	NA	0.0062 U	0.0056 U	NA	0.0085 U
Trichloroethene	0.47	200	NA	0.0062 U	0.0056 U	NA	0.0085 U
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	NA	19 U	0.35 U	NA	**5.5**
Acenaphthylene	100	500	NA	**7.3 J**	0.35 U	NA	**0.54**
Anthracene	100	500	NA	**27**	0.35 U	NA	**3.8**
Benzo[g,h,i]perylene	100	500	NA	**44**	0.35 U	NA	**1.2**
Fluoranthene	100	500	NA	**140**	0.35 U	NA	**4.9**
Fluorene	30	500	NA	**5.3 J**	0.35 U	NA	**0.82**
Methylnaphthalene,2-	NE	NE	NA	19 U	0.35 U	NA	**0.84**
Naphthalene	12	500	NA	19 U	0.35 U	NA	**3.8**
Phenanthrene	100	500	NA	**41**	0.35 U	NA	**8.9**
Pyrene	100	500	NA	**120**	0.35 U	NA	**6.5**
Total Noncarcinogenic PAHs	NE	NE	NA	**384.6**	ND	NA	**36.8**
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	NA	**62**	0.35 U	NA	**3**
Benzo[a]pyrene	1	1	NA	**53**	0.35 U	NA	**1.9**
Benzo[b]fluoranthene	1	5.6	NA	**39**	0.35 U	NA	**0.94**
Benzo[k]fluoranthene	0.8	56	NA	**39**	0.35 U	NA	**1.2**
Chrysene	1	56	NA	**54**	0.35 U	NA	**2.6**
Dibenz[a,h]anthracene	0.33	0.56	NA	**9.4 J**	0.35 U	NA	**0.32 J**
Indeno[1,2,3-cd]pyrene	0.5	5.6	NA	**48**	0.35 U	NA	**1.2**
Total Carcinogenic PAHs	NE	NE	NA	**304.4**	ND	NA	**11.16**
Total PAHs (mg/kg)							
Total PAHs	NE	NE	NA	**689**	ND	NA	**47.96**
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	NA	**6.2**	9.8 U	NA	**31.4**
Barium	350	400	NA	**57.8**	**70.1**	NA	**98.5**
Cadmium	2.5	9.3	NA	3.0 U	3.7 U	NA	5.2 U
Chromium	NE	NE	NA	**190**	**43.6**	NA	**57.0**
Lead	63	1000	NA	**406**	**4.8**	NA	**217**
Mercury	0.18	2.8	NA	**3.1**	2.0 U	NA	**2.5**
Selenium	3.9	1500	NA	16.1 UJ	19.6 UJ	NA	27.6 UJ
Silver	2	1500	NA	3.0 U	3.7 U	NA	**0.95 J**
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	NA	NA	**0.159 J**	NA	0.838 U
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	**6100**	NA	NA	**1000**	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-141 (23-25) 11/21/2006	CF-SB-142 (13.5-15) 11/20/2006	CF-SB-142 (22-23) 11/20/2006	CF-SB-143 (10-12) 11/21/2006	CF-SB-143 (23-25) 11/21/2006
BTEX (mg/kg)							
Benzene	0.06	44	0.013 UJ	**0.0034 J**	0.0061 U	0.007 U	0.0063 U
Ethylbenzene	1	390	0.013 UJ	**0.003 J**	0.0061 U	0.007 U	0.0063 U
Toluene	0.7	500	0.013 UJ	**0.0025 J**	**0.0012 J**	0.007 U	**0.0011 J**
Xylene, total	0.26	500	0.013 UJ	**0.014**	0.0061 U	0.007 U	0.0063 U
Total BTEX	NE	NE	ND	**0.0229**	**0.0012**	ND	**0.0011**
Other VOCs (mg/kg)							
Acetone	0.05	500	**0.11 J**	**0.22 J**	0.024 UJ	0.028 UJ	0.039 UJ
Butanone,2-	0.12	500	**0.016 J**	**0.059**	0.012 U	0.014 U	0.013 U
Carbon disulfide	NE	NE	**0.014 J**	**0.21**	**0.013**	**0.0015 J**	0.0063 U
Styrene	NE	NE	0.013 UJ	0.0083 U	0.0061 U	0.007 U	0.0063 U
Trichloroethene	0.47	200	0.013 UJ	0.0083 U	**0.00085 J**	0.007 U	0.0063 U
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	8.5 UJ	**13**	0.38 U	0.46 U	0.41 U
Acenaphthylene	100	500	8.5 UJ	**3.2**	0.38 U	**0.34 J**	0.41 U
Anthracene	100	500	8.5 UJ	**15**	0.38 U	**0.23 J**	0.41 U
Benzo[g,h,i]perylene	100	500	8.5 UJ	**5.8**	0.38 U	**1.2**	0.41 U
Fluoranthene	100	500	8.5 UJ	**24**	0.38 U	**1.5**	0.41 U
Fluorene	30	500	8.5 UJ	**2.4**	0.38 U	0.46 U	0.41 U
Methylnaphthalene,2-	NE	NE	8.5 UJ	**1.3 J**	0.38 U	**0.094 J**	0.41 U
Naphthalene	12	500	8.5 UJ	**3.1**	0.38 U	**0.17 J**	0.41 U
Phenanthrene	100	500	8.5 UJ	**34**	0.38 U	**0.72**	0.41 U
Pyrene	100	500	8.5 UJ	**34**	0.38 U	**1.5**	0.41 U
Total Noncarcinogenic PAHs	NE	NE	ND	**135.8**	ND	**5.754**	ND
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	8.5 UJ	**15**	0.38 U	**1.1**	0.41 U
Benzo[a]pyrene	1	1	8.5 UJ	**11**	0.38 U	**1.2**	0.41 U
Benzo[b]fluoranthene	1	5.6	8.5 UJ	**5.1**	0.38 U	**0.94**	0.41 U
Benzo[k]fluoranthene	0.8	56	8.5 UJ	**8.6**	0.38 U	**0.95**	0.41 U
Chrysene	1	56	8.5 UJ	**15**	0.38 U	**1.2**	0.41 U
Dibenz[a,h]anthracene	0.33	0.56	8.5 UJ	**1.3 J**	0.38 U	**0.33 J**	0.41 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	8.5 UJ	**4.5**	0.38 U	**1.3**	0.41 U
Total Carcinogenic PAHs	NE	NE	ND	**60.5**	ND	**7.02**	ND
Total PAHs (mg/kg)							
Total PAHs	NE	NE	ND	**196.3**	ND	**12.774**	ND
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**8.9 J**	**37.9**	8.8 U	**2.7 J**	**4.8 J**
Barium	350	400	**272 J**	**124**	**17.5 J**	**35.9 J**	**63.5**
Cadmium	2.5	9.3	8.7 UJ	4.5 U	3.3 U	3.7 U	3.8 U
Chromium	NE	NE	**26.1 J**	**175**	**16.9**	**39.6**	**147**
Lead	63	1000	**5.0 J**	**1480**	**4.0**	**15.4**	**4.5**
Mercury	0.18	2.8	**0.13 J**	**1.4**	2.3 U	**0.043**	**0.016**
Selenium	3.9	1500	46.3 UJ	23.9 UJ	17.5 UJ	19.5 UJ	20.2 UJ
Silver	2	1500	8.7 UJ	**2.1 J**	3.3 U	3.7 U	3.8 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	1.27 UJ	**0.371 J**	**0.0941 J**	**0.511 J**	**0.262 J**
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	**550**	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-144 (7.5-8.5) 11/20/2006	CF-SB-144 (20-25) 11/20/2006	CF-SB-145 (10-12) 11/20/2006	CF-SB-145 (17.5-20) 11/20/2006	CF-SB-146 (12-13) 11/21/2006
BTEX (mg/kg)							
Benzene	0.06	44	0.0065 U	0.0057 U	0.0079 U	0.0067 U	0.0062 U
Ethylbenzene	1	390	0.0065 U	0.0057 U	0.0079 U	0.0067 U	0.0062 U
Toluene	0.7	500	0.0065 U	0.0057 U	0.0079 U	0.0067 U	0.0062 U
Xylene, total	0.26	500	0.0065 U	0.0057 U	0.0079 U	0.0067 U	0.0062 U
Total BTEX	NE	NE	ND	ND	ND	ND	ND
Other VOCs (mg/kg)							
Acetone	0.05	500	0.05 UJ	0.023 UJ	0.032 UJ	0.027 UJ	0.025 UJ
Butanone,2-	0.12	500	**0.011 J**	0.011 U	0.016 U	0.013 U	0.012 U
Carbon disulfide	NE	NE	**0.0019 J**	0.0057 U	0.0079 U	0.0067 U	0.0062 U
Styrene	NE	NE	0.0065 U	0.0057 U	0.0079 U	0.0067 U	0.0062 U
Trichloroethene	0.47	200	0.0065 U	0.0057 U	0.0079 U	0.0067 U	0.0062 U
Non-carcinogenic PAHs (mg/kg)							
Acenaphthene	20	500	**3.5**	0.37 U	**8.7 J**	0.43 U	0.39 U
Acenaphthylene	100	500	**1.5 J**	0.37 U	**0.6 J**	0.43 U	0.39 U
Anthracene	100	500	**2**	0.37 U	**4.5 J**	0.43 U	0.39 U
Benzo[g,h,i]perylene	100	500	**2.2 J**	0.37 U	**1.3 J**	0.43 U	0.39 U
Fluoranthene	100	500	**13**	0.37 U	**7.1 J**	0.43 U	0.39 U
Fluorene	30	500	**0.36 J**	0.37 U	**0.48 J**	0.43 U	0.39 U
Methylnaphthalene,2-	NE	NE	**0.26 J**	0.37 U	**1 J**	0.43 U	0.39 U
Naphthalene	12	500	**0.97 J**	0.37 U	**3.2 J**	0.43 U	0.39 U
Phenanthrene	100	500	**1.8**	0.37 U	**9.1 J**	0.43 U	0.39 U
Pyrene	100	500	**22**	0.37 U	**9.5 J**	0.43 U	0.39 U
Total Noncarcinogenic PAHs	NE	NE	**47.59**	ND	**45.48**	ND	ND
Carcinogenic PAHs (mg/kg)							
Benz[a]anthracene	1	5.6	**7.2**	0.37 U	**3.6 J**	0.43 U	0.39 U
Benzo[a]pyrene	1	1	**4.7**	0.37 U	**2.9 J**	0.43 U	0.39 U
Benzo[b]fluoranthene	1	5.6	**2.2**	0.37 U	**1.8 J**	0.43 U	0.39 U
Benzo[k]fluoranthene	0.8	56	**3.4**	0.37 U	**1.8 J**	0.43 U	0.39 U
Chrysene	1	56	**7**	0.37 U	**3.6 J**	0.43 U	0.39 U
Dibenz[a,h]anthracene	0.33	0.56	**0.48 J**	0.37 U	**0.39 J**	0.43 U	0.39 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	**2.4 J**	0.37 U	**1.4 J**	0.43 U	0.39 U
Total Carcinogenic PAHs	NE	NE	**27.38**	ND	**15.49**	ND	ND
Total PAHs (mg/kg)							
Total PAHs	NE	NE	**74.97**	ND	**60.97**	ND	ND
Other SVOCs (mg/kg)							
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)							
Arsenic	13	16	**16.6**	**2.2 J**	**18 J**	**20.3**	9.8 U
Barium	350	400	**77.0**	**72.9**	**66 J**	**270**	**39.2 J**
Cadmium	2.5	9.3	4.4 U	3.0 U	**0.28 J**	4.9 U	3.7 U
Chromium	NE	NE	**45.2**	**53.3**	**37 J**	**41.2**	**73.6**
Lead	63	1000	**102**	**5.7**	**120 J**	**11.0**	**7.4**
Mercury	0.18	2.8	**0.42**	2.1 U	**1.1 J**	**0.021**	2.2 U
Selenium	3.9	1500	23.4 UJ	16.1 UJ	**0.65**	26.0 UJ	19.6 UJ
Silver	2	1500	**0.54 J**	3.0 U	**0.38**	4.9 U	3.7 U
Total Cyanide (mg/kg)							
Cyanide, Total	27	27	0.642 U	0.552 U	NA	0.65 U	**0.136 J**
Other (mg/kg)							
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	CF-SB-146 (23-25) 11/21/2006	CF-SB-147 (10.5-12) 11/21/2006	CF-SB-147 (16-18) 11/21/2006	CF-SB-148 (9-10') 11/20/2006	CF-SB-148 (10-13) 11/20/2006	CF-SB-148 (21.5-25) 11/20/2006
BTEX (mg/kg)								
Benzene	0.06	44	0.0056 U	0.0059 U	0.0061 U	NA	0.0066 U	0.0058 U
Ethylbenzene	1	390	0.0056 U	0.0059 U	0.0061 U	NA	0.0066 U	0.0058 U
Toluene	0.7	500	0.0056 U	0.0059 U	**0.0013 J**	NA	0.0066 U	**0.0034 J**
Xylene, total	0.26	500	0.0056 U	0.0059 U	0.0061 U	NA	0.0066 U	0.0058 U
Total BTEX	NE	NE	ND	ND	**0.0013**	NA	ND	**0.0034**
Other VOCs (mg/kg)								
Acetone	0.05	500	0.022 UJ	0.024 UJ	0.051 UJ	NA	0.026 UJ	0.048 UJ
Butanone,2-	0.12	500	0.011 U	0.012 U	**0.0082 J**	NA	0.013 U	**0.0082 J**
Carbon disulfide	NE	NE	0.0056 U	0.0059 U	0.0061 U	NA	0.0066 U	**0.0027 J**
Styrene	NE	NE	0.0056 U	0.0059 U	0.0061 U	NA	0.0066 U	0.0058 U
Trichloroethene	0.47	200	0.0056 U	0.0059 U	0.0061 U	NA	0.0066 U	**0.0036 J**
Non-carcinogenic PAHs (mg/kg)								
Acenaphthene	20	500	0.36 U	0.38 U	0.39 U	**5.5 J**	**0.77**	0.37 U
Acenaphthylene	100	500	0.36 U	0.38 U	0.39 U	**0.95 J**	**0.19 J**	0.37 U
Anthracene	100	500	0.36 U	0.38 U	0.39 U	**1.9 J**	**0.2 J**	0.37 U
Benzo[g,h,i]perylene	100	500	0.36 U	0.38 U	0.39 U	**2 J**	**0.35**	0.37 U
Fluoranthene	100	500	0.36 U	0.38 U	0.39 U	**8.7 J**	**1.3**	0.37 U
Fluorene	30	500	0.36 U	0.38 U	0.39 U	**0.26 J**	0.42 U	0.37 U
Methylnaphthalene,2-	NE	NE	0.36 U	0.38 U	0.39 U	**0.69 J**	0.42 U	0.37 U
Naphthalene	12	500	0.36 U	0.38 U	0.39 U	**2.1 J**	**0.15 J**	0.37 U
Phenanthrene	100	500	0.36 U	0.38 U	0.39 U	**1.7 J**	**0.18 J**	0.37 U
Pyrene	100	500	0.36 U	0.38 U	0.39 U	**11 J**	**1.6**	0.37 U
Total Noncarcinogenic PAHs	NE	NE	ND	ND	ND	**34.8**	**4.74**	ND
Carcinogenic PAHs (mg/kg)								
Benz[a]anthracene	1	5.6	0.36 U	0.38 U	0.39 U	**4.7 J**	**0.78**	0.37 U
Benzo[a]pyrene	1	1	0.36 U	0.38 U	0.39 U	**4.5 J**	**0.58**	0.37 U
Benzo[b]fluoranthene	1	5.6	0.36 U	0.38 U	0.39 U	**2.6 J**	**0.33 J**	0.37 U
Benzo[k]fluoranthene	0.8	56	0.36 U	0.38 U	0.39 U	**2.7 J**	**0.32 J**	0.37 U
Chrysene	1	56	0.36 U	0.38 U	0.39 U	**4.9 J**	**0.74**	0.37 U
Dibenz[a,h]anthracene	0.33	0.56	0.36 U	0.38 U	0.39 U	**0.61 J**	**0.092 J**	0.37 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.36 U	0.38 U	0.39 U	**2.2 J**	**0.37**	0.37 U
Total Carcinogenic PAHs	NE	NE	ND	ND	ND	**22.21**	**3.212**	ND
Total PAHs (mg/kg)								
Total PAHs	NE	NE	ND	ND	ND	**57.07**	**7.952**	ND
Other SVOCs (mg/kg)								
Trimethylbenzene,1,2,4-	3.6	190	NA	NA	NA	NA	NA	NA
Benzo[e]pyrene	NE	NE	NA	NA	NA	NA	NA	NA
Dibenzofuran	7	350	NA	NA	NA	NA	NA	NA
Methylnaphthalene,1-	NE	NE	NA	NA	NA	NA	NA	NA
Perylene	NE	NE	NA	NA	NA	NA	NA	NA
RCRA-8 Metals (mg/kg)								
Arsenic	13	16	8.4 U	**2.8 J**	**12.7 J**	**22 J**	**10.1**	9.5 U
Barium	350	400	**71.0**	**85.0**	**107**	**95 J**	**27.5 J**	**115 J**
Cadmium	2.5	9.3	3.1 U	3.6 U	4.3 U	**0.35 J**	3.5 U	3.6 U
Chromium	NE	NE	**12.0**	**45.7**	**38.2**	**69 J**	**31.0**	**36.6**
Lead	63	1000	**5.6**	**15.0**	**5.9**	**240 J**	**504**	**10.3**
Mercury	0.18	2.8	1.8 U	**0.018**	**0.020**	**1.9 J**	**0.77**	2.0 U
Selenium	3.9	1500	16.7 UJ	19.0 UJ	22.7 UJ	**0.76**	18.8 UJ	19.0 UJ
Silver	2	1500	3.1 U	3.6 U	4.3 U	**0.75**	**0.40 J**	3.6 U
Total Cyanide (mg/kg)								
Cyanide, Total	27	27	**0.134 J**	**0.165 J**	**0.19 J**	NA	**0.388 J**	**0.12 J**
Other (mg/kg)								
Total Petroleum Hydrocarbons	NE	NE	NA	NA	NA	NA	NA	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Location: Sample Depth (ft bgs): Sample Date:	6NYCRR Subpart 375 Unrestricted Use	6NYCRR Subpart 375 Restricted Use Commercial SCO	Duplicate of: CF-SB-148 (21.5-25) 11/20/2006
BTEX (mg/kg)			
Benzene	0.06	44	0.0059 U
Ethylbenzene	1	390	0.0059 U
Toluene	0.7	500	0.0059 U
Xylene, total	0.26	500	0.0059 U
Total BTEX	NE	NE	ND
Other VOCs (mg/kg)			
Acetone	0.05	500	0.024 UJ
Butanone,2-	0.12	500	0.012 U
Carbon disulfide	NE	NE	**0.00089 J**
Styrene	NE	NE	0.0059 U
Trichloroethene	0.47	200	0.0059 U
Non-carcinogenic PAHs (mg/kg)			
Acenaphthene	20	500	0.39 U
Acenaphthylene	100	500	0.39 U
Anthracene	100	500	0.39 U
Benzo[g,h,i]perylene	100	500	0.39 U
Fluoranthene	100	500	0.39 U
Fluorene	30	500	0.39 U
Methylnaphthalene,2-	NE	NE	0.39 U
Naphthalene	12	500	0.39 U
Phenanthrene	100	500	0.39 U
Pyrene	100	500	0.39 U
Total Noncarcinogenic PAHs	NE	NE	ND
Carcinogenic PAHs (mg/kg)			
Benz[a]anthracene	1	5.6	0.39 U
Benzo[a]pyrene	1	1	0.39 U
Benzo[b]fluoranthene	1	5.6	0.39 U
Benzo[k]fluoranthene	0.8	56	0.39 U
Chrysene	1	56	0.39 U
Dibenz[a,h]anthracene	0.33	0.56	0.39 U
Indeno[1,2,3-cd]pyrene	0.5	5.6	0.39 U
Total Carcinogenic PAHs	NE	NE	ND
Total PAHs (mg/kg)			
Total PAHs	NE	NE	ND
Other SVOCs (mg/kg)			
Trimethylbenzene,1,2,4-	3.6	190	NA
Benzo[e]pyrene	NE	NE	NA
Dibenzofuran	7	350	NA
Methylnaphthalene,1-	NE	NE	NA
Perylene	NE	NE	NA
RCRA-8 Metals (mg/kg)			
Arsenic	13	16	10.1 U
Barium	350	400	**222 J**
Cadmium	2.5	9.3	3.8 U
Chromium	NE	NE	**45.1**
Lead	63	1000	**12.0**
Mercury	0.18	2.8	2.0 U
Selenium	3.9	1500	20.3 UJ
Silver	2	1500	3.8 U
Total Cyanide (mg/kg)			
Cyanide, Total	27	27	**0.0919 J**
Other (mg/kg)			
Total Petroleum Hydrocarbons	NE	NE	NA

Table 1
Subsurface Soil Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Notes:

6NYCRR Subpart 375 SCO (UNRESTRICTED USE) – Chapter IV, Subpart 375-6: Remedial Program Soil Cleanup Objectives (SCO) [UNRESTRICTED USE]
6NYCRR Subpart 375 SCO (RESTRICTED USE - COMMERCIAL) – Chapter IV, Subpart 375-6: Remedial Program Soil Cleanup Objectives (SCO) [RESTRICTED USE - COMMERCIAL]
NA - not analyzed
NE- not established
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis, the limit shown is estimated
J - estimated value
R - anaytical result was rejected
BTEX - benzene, toluene, ethylbenzene, and xylene
VOCs - volatile organic compounds
SVOCs - semivolatile organic compounds
PAHs (mg/kg)
RCRA-Resource Conservation Recovery Act
ND - not detected; total concentration is listed as ND because no compounds were detected in the group
ft bgs - feet below ground surface
mg/kg = milligrams per kilogram
Bolding indicates a detected result value
Shading and bolding indicates that the detected result value exceeds established 6NYCRR Subpart 375 [UNRESTRICTED USE SCO]
Shading and bolding indicates that the detected result value exceeds established 6NYCRR Subpart 375 [RESTRICTED USE - COMMERCIAL]

Table 2
Groundwater Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

	NYS AWQS	RW-20 6/23/04	(Duplicate of RW-20) 6/22/04	RW-20 12/14/06	RW-21 6/22/04	RW-21 12/14/06	RW-22 6/22/04	RW-22 12/14/06	RW-23 12/14/06	RW-24 12/14/06	RW-25 12/13/06	(Duplicate of RW-25) 12/13/06	RW-26 12/13/06	RW-27 12/14/06
BTEX (ug/L)														
Benzene	1	5 U	5 U	5.0 U	**100**	**1.7**	5 U	5.0 U	5.0 U	**0.46 J**	5.0 U	5.0 U	5.0 U	5.0 U
Ethylbenzene	5	5 U	5 U	5.0 U	**59**	5.0 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Toluene	5	5 U	5 U	5.0 U	**3 J**	5.0 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Xylene, total	5	5 U	5 U	5.0 U	**34**	**2.0**	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Total BTEX	NE	ND	ND	ND	196	3.7	ND	ND	ND	0.46	ND	ND	ND	ND
PAHs (ug/L)														
Acenaphthene	20*	10 U	10 U	10 U	**9 J**	**26**	10 U	10 U	**2 J**	**25**	10 U	10 U	10 U	11 U
Anthracene	50*	10 U	10 U	10 U	40 U	42 U	10 U	10 U	**2 J**	**2 J**	10 U	10 U	10 U	11 U
Fluoranthene	50*	10 U	10 U	10 U	40 U	42 U	10 U	10 U	**8**	**2 J**	10 U	10 U	10 U	11 U
Fluorene	50*	10 U	10 U	10 U	**2 J**	**5 J**	10 U	10 U	**2 J**	10 U	10 U	10 U	10 U	11 U
Methylnaphthalene,2-	NE	10 U	10 U	10 U	**7 J**	**3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U
Naphthalene	10*	10 U	10 U	10 U	**170**	**230**	10 U	10 U	10 U	**2 J**	10 U	10 U	10 U	11 U
Phenanthrene	50*	10 U	10 U	10 U	**3 J**	**7 J**	10 U	10 U	**9**	**8**	10 U	10 U	10 U	11 U
Pyrene	50*	**0.8 J**	**0.8 J**	**2 J**	40 U	42 U	10 U	10 U	**7**	**2 J**	10 U	10 U	10 U	11 U
Total Noncarcinogenic PAHs	NE	0.8	0.8	2	191	271	ND	ND	30	41	ND	ND	ND	ND
RCRA-8 Metals (ug/L)														
Arsenic	25	3.9 U	3.9 U	40.0 U	3.9 U	40.0 U	3.9 U	40.0 U	40.0 U	**5.6 J**	40.0 U	40.0 U	40.0 U	40.0 U
Barium	1000	**37.3 J**	**33.9 J**	**38.0 J**	**44.8 J**	**61.8 J**	**52.9 J**	**46.7 J**	**204**	**51.2 J**	**158 J**	**162 J**	**732**	**37.8 J**
Cadmium	5	1.1 U	1.1 U	10.0 U	1.1 U	10.0 U	1.1 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	**0.84 J**	10.0 U
Chromium	50	1.3 U	1.3 U	10.0 U	1.3 U	10.0 U	1.3 U	**6.3 J**	10.0 U	**9.1 J**	10.0 U	10.0 U	10.0 U	**9.6 J**
Lead	25	3 U	3 U	10.0 U	3 U	10.0 U	**20.7 J**	**19.5 J**	10.0 U	**11.3 J**	10.0 U	10.0 U	10.0 U	10.0 U
Mercury	0.7	0.2 U	0.2 U	0.40 U	0.2 U	0.40 U	0.2 U	0.40 U	0.40 U	**0.14 J**	0.40 U	0.40 U	0.40 U	0.40 U
Total Cyanide (ug/L)														
Cyanide, Total	200	7 U	7 U	10.0 U	**8.7**	10.0 U	7 U	**1.5 J**	**6.1 J**	**1.9 J**	**2.1 J**	**1.5 J**	10.0 U	**5.3 J**

Notes:
NYS AWQSs - New York Ambient Water Quality Standards (GA) and guidance values
* indicates the value is a guidance value and not a standard
ND - not detected; total concentration is listed as ND because no compounds were detected in the group
NE- not established
J - estimated value
U - indicates not detected to the limit shown
UJ - indicates not detected to the limit shown and the limit shown is estimated
Bolding indicated a detected value
Shading indicates detected values exceeds the established NY AWQSs
ug/L - is micrograms per liter or parts per billion (ppb)
BTEX is benzene, toluene, ethylbenzene, and xylene
PAHs are polycyclic aromatic hydrocarbons

Table 2
Groundwater Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Notes:
NYS AWQSs - New York Ambient Water Quality Standards (GA) and guidance values
* indicates the value is a guidance value and not a standard
NE- not established
ND - not detected; total concentration is listed as ND because no compounds were detected in the group
J - estimated value
U - indicates not detected to the limit shown
UJ - indicates not detected to the limit shown and the limit shown is estimated
Bolding indicated a detected value
Shading indicates detected values exceeds the established NY AWQSs
ug/L - is micrograms per liter or parts per billion (ppb)
BTEX is benzene, toluene, ethylbenzene, and xylene
PAHs are polycyclic aromatic hydrocarbons

Table 3
Exterior Soil Vapor
Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Sample Name: **Sample Date:**	NYSDOH Background Outdoor Air 95th Percentile[1]	SG-14 12/13/2004	SG-16 12/13/2004	Duplicate of: SG-16 12/13/2004	SG-18 12/13/2004	SG-22 12/13/2004	SG-27 12/13/2004	SG-29 12/13/2004
BTEX (ug/m3)								
Benzene	5.8	**2.5**	67 U	67 U	2.3 U	2.7 U	2.8 U	5.4 U
Toluene	21	**754**	**79.2**	**82.9**	**8.3**	**4.1**	**15.5**	**2148.9**
Ethylbenzene	1.9	**69.4**	**160.6**	**164.9**	3.1 U	**4.2**	**4**	**303.8**
Xylene, m,p-	3.1	**247.4**	**824.6**	**868**	**11.7**	**18.7**	**18.7**	**1171.8**
Xylene, o-	2.5	**60.8**	**564.2**	**564.2**	**4.3**	**8.2**	**6.5**	**351.5**
Other VOCs (ug/m3)								
Acetone	58	**15.7**	204.7 U	199.9 U	**33.3**	**8.6**	**12.4**	**104.7**
Butadiene, 1,3-	NE	1.7 U	46.4 U	46.4 U	1.6 U	1.9 U	1.9 U	3.8 U
Butanone, 2-	17	**3**	62 U	62 U	**2.7**	2.5 U	2.6 U	**17.1**
Carbon disulfide	NE	2.5 U	65.3 U	65.3 U	**2.7**	2.7 U	2.7 U	**12.4**
Carbon tetrachloride	1	5 U	132.1 U	132.1 U	4.5 U	5.4 U	5.5 U	10.7 U
Chlorobenzene	<0.25	3.6 U	96.8 U	96.8 U	3.3 U	4 U	4.1 U	7.8 U
Chloroethane	0.4	2.1 U	55.4 U	55.4 U	1.9 U	2.3 U	2.3 U	**14**
Chloroform	0.5	**18.1**	102.5 U	102.5 U	3.5 U	4.2 U	4.3 U	8.3 U
Chloromethane	4.6	6.6 U	178 U	173.9 U	6 U	7 U	7.2 U	13.9 U
Cyclohexane	3	2.7 U	72.2 U	72.2 U	2.5 U	3 U	3 U	5.8 U
Dichlorobenzene, 1,4-	0.8	4.7 U	126.2 U	126.2 U	4.3 U	5.2 U	5.3 U	10.2 U
Dichlorodifluoromethane	11	3.9 U	104 U	104 U	**5**	4.3 U	4.4 U	8.4 U
Dichloroethene, cis-1,2-	<0.25	3.1 U	83.4 U	83.4 U	2.9 U	3.4 U	3.5 U	6.7 U
Dioxane, 1,4-	NE	11.5 U	309.6 U	302.4 U	10.4 U	12.2 U	12.6 U	24.1 U
Ethanol	220	6 U	162.5 U	158.8 U	5.5 U	6.4 U	**9.8**	12.7 U
Ethyltoluene, p-	NE	**20.7 J**	**1574.4 J**	**1574.4 J**	**14.8 J**	**54.1 J**	**17.7 J**	**93.5 J**
Heptane, n-	5.1	3.2 U	86.1 U	86.1 U	3 U	3.5 U	3.6 U	**10.2**
Hexachlorobutadiene	7	34.1 U	916.8 U	895.4 U	30.9 U	36.2 U	37.3 U	71.4 U
Hexane, n-	3.6	2.8 U	74.1 U	74.1 U	2.5 U	3 U	3.1 U	**8.5**
Hexanone, 2-	NE	13.1 U	352.6 U	344.4 U	11.9 U	13.9 U	14.3 U	27.5 U
Isopropyl benzene	0.4	3.9 U	103.3 U	103.3 U	3.5 U	4.2 U	4.3 U	**14.3**
Methyl tert-butyl ether	5.9	2.8 U	75.6 U	75.6 U	2.6 U	3.1 U	3.2 U	6.1 U
Methyl-2-pentanone, 4-	2.9	3.2 U	86.1 U	86.1 U	3 U	3.5 U	3.6 U	7 U
Methylene chloride	2.9	2.7 U	72.9 U	72.9 U	2.5 U	3 U	3.1 U	5.9 U
Naphthalene	10	16.8 U	**18864 J**	**19388 J**	15.2 U	17.8 U	18.3 U	35.1 U
Propanol, 2-	NE	7.9 U	211.6 U	206.6 U	7.1 U	8.4 U	8.6 U	16.5 U
Propylbenzene, n-	0.5	3.9 U	103.3 U	103.3 U	3.5 U	**7.9**	4.3 U	**15.7**
Styrene	0.6	3.4 U	89.5 U	89.5 U	3.1 U	3.7 U	3.7 U	7.2 U
Tetrachloroethene	1.6	5.4 U	142.4 U	142.4 U	4.9 U	5.8 U	6 U	11.5 U
Tetrahydrofuran	0.4	2.3 U	62 U	62 U	2.1 U	2.5 U	2.6 U	5 U
Trichloro-1,2,2-trifluoroethane, 1,1,2-	3.6	6.1 U	161.1 U	161.1 U	5.5 U	6.6 U	6.7 U	13 U
Trichloroethane, 1,1,1-	0.7	**4.6**	114.7 U	114.7 U	3.9 U	4.7 U	4.8 U	9.3 U
Trichloroethene	0.5	4.2 U	112.8 U	112.8 U	3.9 U	4.6 U	4.7 U	9.1 U
Trichlorofluoromethane	6.1	4.4 U	118 U	118 U	4 U	4.8 U	4.9 U	9.6 U
Trimethylbenzene, 1,2,4-	2.5	**17.2**	**1377.6**	**1377.6**	**11.8**	**73.8**	**18.2**	**78.7**
Trimethylbenzene, 1,3,5-	1	**7.9**	**984**	**984**	**5.4**	**19.7**	**5.9**	**30**
Trimethylpentane, 2,2,4-	2	3.7 U	98.1 U	98.1 U	3.4 U	4 U	4.1 U	7.9 U

Notes:

1 Source: New York State Department of Health (NYSDOH), October 2006. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes reported in various locations within sampled homes in NYS, 1997-2003. Background values for naphthalene are from the NYSDOH 1997 Control Home Database presented in Table C3 of the NYSDOH 2006 Guidance.

Samples analyzed by modified EPA Method TO-15

J - estimated value
U - indicates not detected to the reporting limit for organic analysis
NE - not established
Bolding indicates a detected result value
Shading and bolding indicates that the detected result value present above the NYSDOH screening value it was compared
ug/m^3 - micrograms per cubic meter
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds

Table 4
Soil Vapor and Indoor Air
Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

	EPA BASE Outdoor Air 90th Percentile[1]	**Outdoor Air Sample**	EPA BASE Indoor Air 90th Percentile[1]	**Indoor Air Samples**						**Sub-Slab Soil Vapor Samples**						
Sample ID:		CF-AS-04		CF-AS-01	CF-AS-02	CF-AS-03	CF-AS-05	CF-AS-06	CF-AS-07	CF-SG-30	CF-SG-31	CF-SG-32	CF-SG-33	Duplicate of: CF-SG-33	CF-SG-34	CF-SG-35
Sample Date:		3/9/2008		3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008	3/9/2008
BTEX (ug/m3)																
Benzene	6.6	**0.52 J**	9.4	**0.80**	**0.79**	**0.52 J**	**0.84**	**0.75**	**1.0**	**0.42 J**	**2.4**	**1.1**	**8.7 J**	**12 J**	**18**	**0.43 J**
Ethylbenzene	3.5	0.87 U	5.7	**0.30 J**	**0.36 J**	0.87 U	**0.32 J**	**0.22 J**	**0.30 J**	0.87 U	0.87 U	**0.53 J**	**2.6**	**3.1**	**0.39 J**	0.87 U
Toluene	33.7	**0.49 J**	43	**3.0**	**2.8**	**1.6**	**3.9**	**2.4**	**3.1**	**1.4**	**1.3**	**2.8**	**5.5**	**4.8**	**1.1**	**1.3**
Xylene, m,p-	NE	**0.30 J**	NE	**0.71 J**	**1.0 J**	**0.47 J**	**0.69 J**	**0.63 J**	**0.91 J**	**0.44 J**	**0.42 J**	**1.8**	**10**	**13**	**0.95 J**	**0.34 J**
Xylene, o-	4.6	0.87 U	7.9	**0.26 J**	**0.39 J**	**0.24 J**	**0.24 J**	**0.26 J**	**0.39 J**	0.87 U	0.87 U	**0.67 J**	**4.5**	**5.7**	**0.40 J**	**0.25 J**
Total BTEX	NE	**1.31**	NE	**5.07**	**5.34**	**2.38**	**5.99**	**4.26**	**5.7**	**2.26**	**4.12**	**6.9**	**31.3**	**38.6**	**20.84**	**2.32**
Other VOCs (ug/m3)																
2,2,4-Trimethylpentane	NE	0.93 U	NE	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U	**0.26 J**	0.93 U	0.93 U	0.93 U	0.93 U	0.93 U
Acetaldehyde	NE	**3.2 J**	NE	**8.9 J**	**6.8 J**	**4.3 J**	**7.1**	**8.9 J**	**9.4 J**	**5.6 J**	**33**	**49**	**12 J**	**41 J**	**9.6**	**23**
Acetone	43.7	**4.8**	98.9	**50**	**40**	**79**	**78**	**98**	**29**	**18**	**39**	**180**	**160**	**170**	**83**	**27**
Acrolein (propenal)	NE	**0.17 J**	NE	**0.45 J**	**0.56 J**	**0.28 J**	**0.64 J**	**0.43 J**	**0.70 J**	**0.44 J**	1.2 U	**0.70 J**	**0.67 J**	**0.91 J**	**0.49 J**	**0.31 J**
Butadiene, 1,3-	<3.4	0.44 U	<3.0	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	**0.27 J**	**0.11 J**	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
Butane	NE	**2.0**	NE	**2.0**	**2.0**	**2.0**	**2.3**	**2.4**	**2.9**	**0.58**	**4.8**	**2.3**	**5.6**	**6.0**	**0.91**	**0.30 J**
Butanone,2-	11.3	**0.45 J**	12	**1.0**	**1.0**	**1.2**	**1.2**	**1.5**	**1.2**	**1.5**	**1.6**	**8.3**	**7.0**	**9.5**	**2.9**	**1.9**
Carbon disulfide	3.7	0.62 U	4.2	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.99 U	2.3 U	2.0 U	**3.1**	**3.8**	**3.7**	0.62 U
Carbon tetrachloride	0.7	**0.38 J**	<1.3	**0.42 J**	**0.55 J**	1.3 U	**0.52 J**	**0.40 J**	1.3 U	**0.37 J**	1.3 U	**0.47 J**	**0.53 J**	**0.37 J**	**0.36 J**	**0.44 J**
Chlorobenzene	<0.8	0.92 U	<0.9	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U
Chloroethane	<1.2	0.53 U	<1.1	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	**0.17 J**	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U
Chloroform	0.6	0.98 U	1.1	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	**1.2**	**1.3**	**0.68 J**	**0.62 J**	**0.65 J**	**2.2**	**0.40 J**
Chloromethane	3.7	**0.97**	3.7	**0.96**	**0.95**	**0.90**	**0.97**	**1.0**	**1.1**	**0.13 J**	**0.32 J**	**0.17 J**	**0.38 J**	**0.18 J**	**0.12 J**	0.41 U
Cyclohexane	NE	0.69 U	NE	**0.25 J**	**0.29 J**	**0.25 J**	**0.43 J**	**0.52 J**	**0.62 J**	0.69 U	**2.7**	**0.65 J**	**1.4**	**1.4**	**1.4**	0.69 U
Decane, n-	7.6	1.2 U	17.5	**0.69 J**	**0.87 J**	**0.40 J**	**0.93 J**	**0.64 J**	**1.2**	**0.48 J**	**8.7**	**5.4**	**1.2**	**1.1 J**	**0.60 J**	**0.46 J**
Dichlorobenzene,1,4-	1.2	1.2 U	5.5	1.2 U	1.2 U	1.2 U	**0.92 J**	1.2 U	**0.46 J**	1.2 U	**0.41 J**	**0.34 J**	1.2 UJ	**6.0 J**	1.2 U	1.2 U
Dichlorodifluoromethane	8.1	**1.9**	16.5	**2.0**	**1.9**	**2.0**	**1.8**	**2.0**	**2.0**	**2.2**	**2.1**	**2.0**	**2.0**	**1.9**	**2.2**	**2.1**
Dichloroethene, cis-1,2-	<1.8	0.79 U	<1.9	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U
Dioxane,1,4-	NE	0.72 U	NE	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	**0.50 J**	0.72 U	0.72 U	0.72 U	0.72 U
Dodecane, n-	10.4	1.4 U	15.9	**0.74 J**	**0.63 J**	**0.77 J**	**1.1 J**	**0.82 J**	**0.95 J**	**0.94 J**	**1.7**	**1.7**	**1.1 J**	**0.70 J**	**2.7**	**0.79 J**
Ethanol	57	**1.9**	210	**24**	**27**	**28**	**55**	**43**	**73**	**2.1**	**2.0**	**26**	**71**	**87**	**6.9**	**5.0**
Ethyltoluene, p-	3	0.98 U	3.6	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	**0.28 J**	**0.37 J**	**0.42 J**	0.98 U	0.98 U
Heptane, n-	NE	**0.26 J**	NE	**1.0**	**0.82 J**	**0.45 J**	**5.7**	**1.3**	**1.4**	**2.1**	**1.6**	**2.7**	**4.1 J**	**1.4 J**	**0.72 J**	**0.47 J**
Hexachlorobutadiene	<6.4	2.1 U	<6.8	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	**0.55 J**	2.1 U	2.1 U	2.1 U	2.1 U
Hexane, n-	6.4	**0.36 J**	10.2	**0.58 J**	**0.65 J**	**0.44 J**	**0.83**	**0.45 J**	**1.5**	**0.26 J**	**1.4**	**2.3**	**1.3**	**1.4**	**0.80**	0.70 U
Hexanone,2-	NE	0.82 U	NE	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	0.82 U	**0.61 J**	0.82 U	0.82 U	0.82 U	0.82 U
Indane	NE	0.97 U	NE	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	**0.39 J**
Methyl tert-butyl ether	6.2	0.72 U	11.5	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U
Methyl-2-pentanone,4-	1.9	0.82 U	6	0.82 U	**0.36 J**	0.82 U	**0.83**	**0.78 J**	0.82 U	0.82 U	0.82 U	**2.1**	**1.6**	**1.9**	0.82 U	0.82 U
Methylene chloride	6.1	1.7 U	10	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	2.3 U	1.7 U	1.7 U	1.7 U	1.7 U
Methylnaphthalene,1-	NE	1.2 UJ	NE	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	**0.76 J**	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Methylnaphthalene,2-	NE	1.2 U	NE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	**0.47 J**	1.2 U	1.2 U	1.2 U	1.2 U
Naphthalene	4.9	1.0 U	5.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.30 J**	1.0 U	1.0 U	**0.34 J**	1.0 U	1.0 U	1.0 U	**0.89 J**
Nonane	2.8	1.0 U	7.8	**0.34 J**	**0.39 J**	**0.29 J**	**0.47 J**	**0.41 J**	**0.72 J**	**0.34 J**	**1.0 J**	**2.0**	**13**	**17**	**1.1**	1.0 U
Octane, n-	1.6	0.93 U	4.5	**0.23 J**	**0.30 J**	0.93 U	**0.27 J**	0.93 U	**0.28 J**	**0.26 J**	**74**	**50**	**6.6**	**7.5**	**1.0**	0.93 U
Pentane	NE	**1.1**	NE	**1.5**	**1.2**	**1.2**	**1.5**	**1.8**	**2.6**	**1.6**	**2.1**	**1.9**	**4.6**	**4.6**	**0.85**	**0.59 J**
Propanol,2-	16.5	**0.43 J**	250	**26**	**21 J**	**16 J**	**47 J**	**46 J**	**29 J**	**1.5 J**	**0.88 J**	**23 J**	**25 J**	**17 J**	**2.3**	**1.2 J**
Styrene	1.3	0.85 U	1.9	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	**0.29 J**	**0.41 J**	**0.38 J**	0.85 U	0.85 U
t-Butyl alcohol	NE	0.61 U	NE	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	**1.9**	**0.89**	**1.3**	0.61 U	0.61 U
Tetrachloroethene	6.5	1.4 U	15.9	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	**0.37 J**	1.4 U	**1.0 J**	**2.2**	**2.6**	**2.0**	**0.81 J**
Tetramethylbenzene, 1,2,4,5-	NE	1.1 U	NE	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	**0.42 J**	1.1 U	1.1 U
Trichloro-1,2,2-trifluoroethane, 1,1,2-	NE	1.5 U	NE	**0.41 J**	**0.56 J**	**0.43 J**	**0.45 J**	**0.57 J**	1.5 U	**0.70 J**	**0.51 J**	**0.62 J**	**0.64 J**	**0.58 J**	**0.57 J**	**0.59 J**
Trichloroethane,1,1,1-	2.6	1.1 U	20.6	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	**0.89 J**	**0.36 J**	**0.30 J**	**0.63 J**	**1.1**	1.1 U	**0.94 J**
Trichloroethene	1.3	1.1 U	4.2	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	**0.34 J**	**0.33 J**	**0.36 J**	**0.35 J**	**0.31 J**
Trichlorofluoromethane	4.3	**1.1 J**	18.1	**1.7 J**	**3.2**	**1.0 J**	**1.8**	**1.3**	**7.5**	**2.5**	**1.9**	**7.2**	**5.9**	**6.3**	**3.6**	**16**
Trimethylbenzene,1,2,3-	NE	0.98 U	NE	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	**0.28 J**	**0.47 J**	**0.56 J**	0.98 U	0.98 U
Trimethylbenzene,1,2,4-	5.8	0.98 U	9.5	**0.41 J**	**0.60 J**	**0.28 J**	**0.57 J**	**0.43 J**	**0.70 J**	0.98 U	0.98 U	**0.59 J**	**0.64 J**	**0.43 J**	0.98 U	**0.28 J**
Trimethylbenzene,1,3,5-	2.7	0.98 U	3.7	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U
Undecane, n-	14.8	1.3 U	22.6	**0.88 J**	**1.0 J**	**0.61 J**	**1.0 J**	**0.75 J**	**1.0 J**	**0.70 J**	**1.6**	**2.0**	**1.3**	**1.2 J**	**1.1 J**	**0.73 J**
Helium (%)																
Helium	NA	NA	NE	NA	NA	NA	NA	NA	NA	0.0166 U	**3.01**	**0.508**	**0.101**	**0.425**	**0.019**	**0.154**

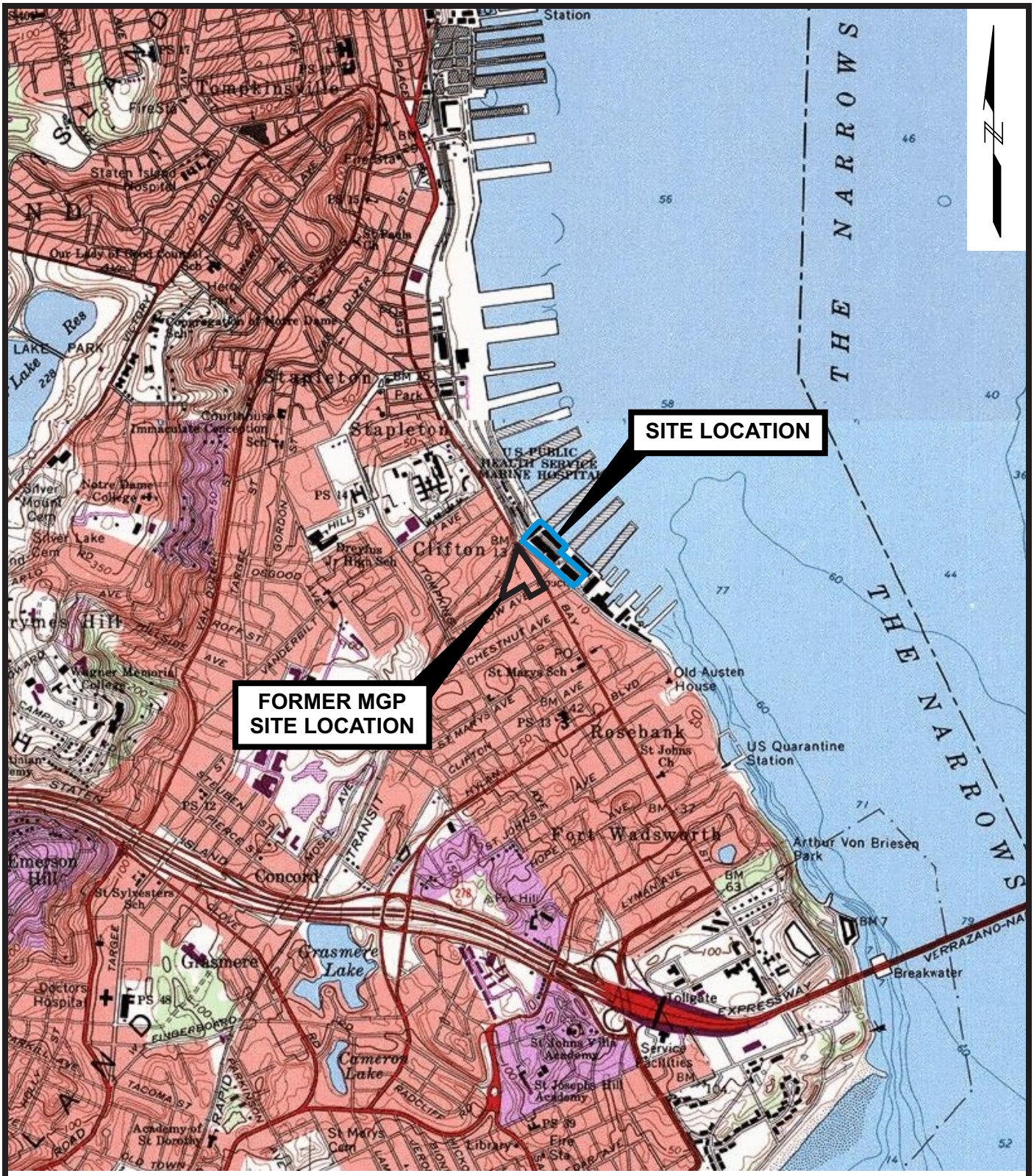
Table 4
Soil Vapor and Indoor Air
Analytical Results Summary
Supplemental Remedial Investigation
1 Edgewater Street
Staten Island, New York

Notes:

[1] Source: Environmental Protection Agency (EPA) 2001: Building Assessment and Survey Evaluation (BASE) as referenced in the New York State Department of Health (NYSDOH), October 2006. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from selected public and commercial office buildings reported in various locations within office settings in NYS, 1994-1996.

Samples analyzed by modified EPA Method TO-15
NA - not analyzed
NE- not established
J - estimated value
U - indicates not detected to the reporting limit
Bolding indicates a detected result value
Shading and bolding indicates that the detected result value presently above the NYSDOH screening value it was compared to
ug/m^3 - micrograms per cubic meter
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds

Figures



SOURCE:
Map created with TOPO! ® ©2001 National Geographic (www.nationalgeographic.com/topo).

0 2000 4000
SCALE, FEET

SITE MANAGEMENT PLAN ONE EDGEWATER STREET STATEN ISLAND, NEW YORK	GEI Consultants	SITE LOCATION MAP
nationalgrid	Project 093100-1-1104	March 2014 Figure 1

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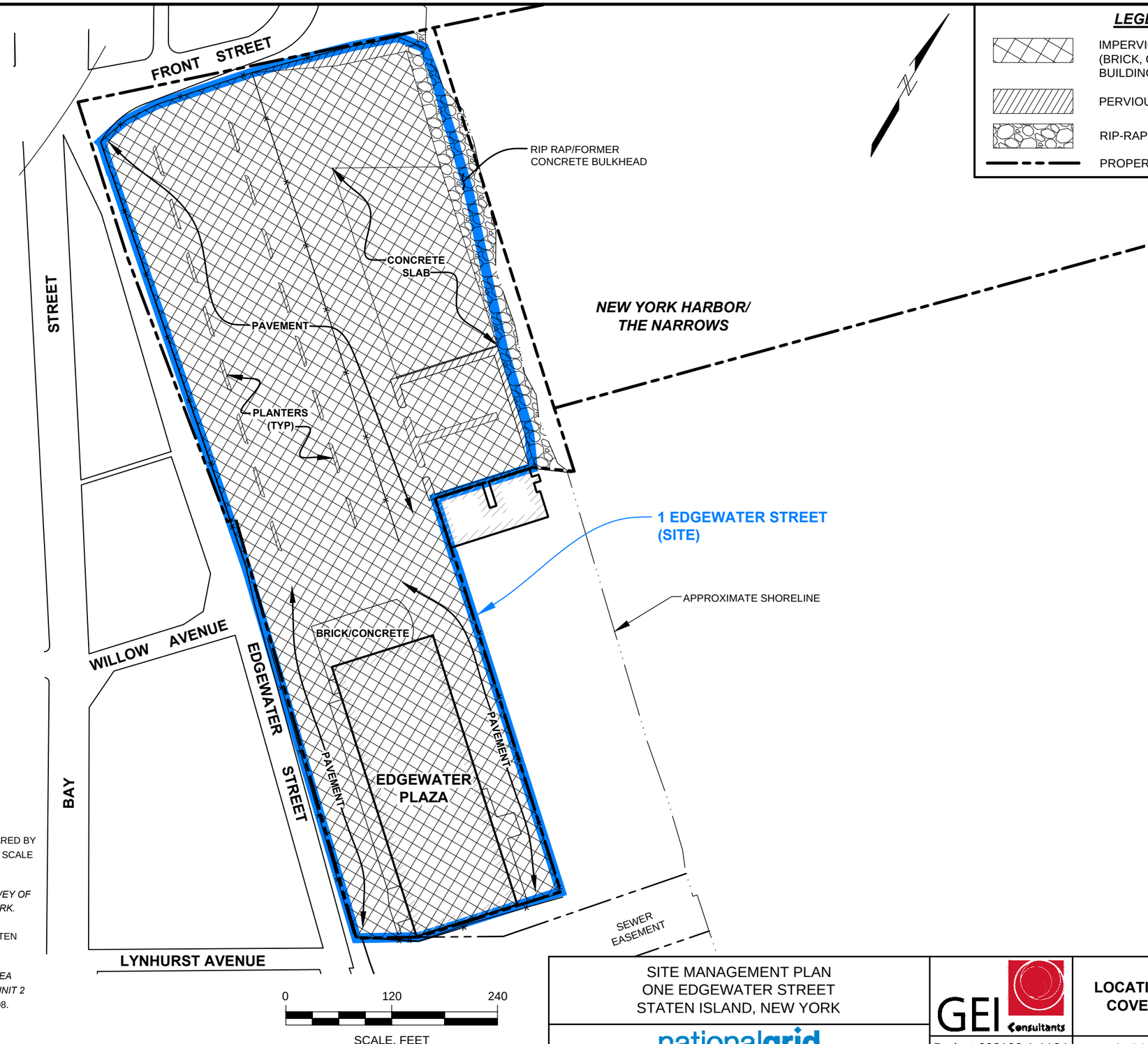

SOURCES:

PLATE 1: BOUNDARY SURVEY AND EXISTING CONDITIONS PLAN, PREPARED BY GEI CONSULTANTS, INC., DOUGLAS BONOFF, NEW YORK L.S. #050146, SCALE 1" = 50', DATED September 2009.

PROPERTY BOUNDARY OF 1 EDGEWATER STREET FROM: *MAP OF SURVEY OF PROPERTY IN THE 4TH WARD, BORO OF RICHMOND, CITY OF NEW YORK.* SCALE 1" = 60', DATED DECEMBER 5, 1949, REVISED TO APRIL 3, 1973. PREPARED BY CARLTON H. ETTLINGER ET AL, CITY SURVEYORS, STATEN ISLAND N.Y.

FINAL SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT OFF-SITE AREA [ONE EDGEWATER STREET] CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2) PREPARED BY GEI CONSULTANTS, INC. DATED DECEMBER 2008.

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SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

nationalgrid

GEI Consultants

Project 093100-1-1104

LOCATION OF COMPOSITE COVER SYSTEM TYPES

March 2014

Figure 2

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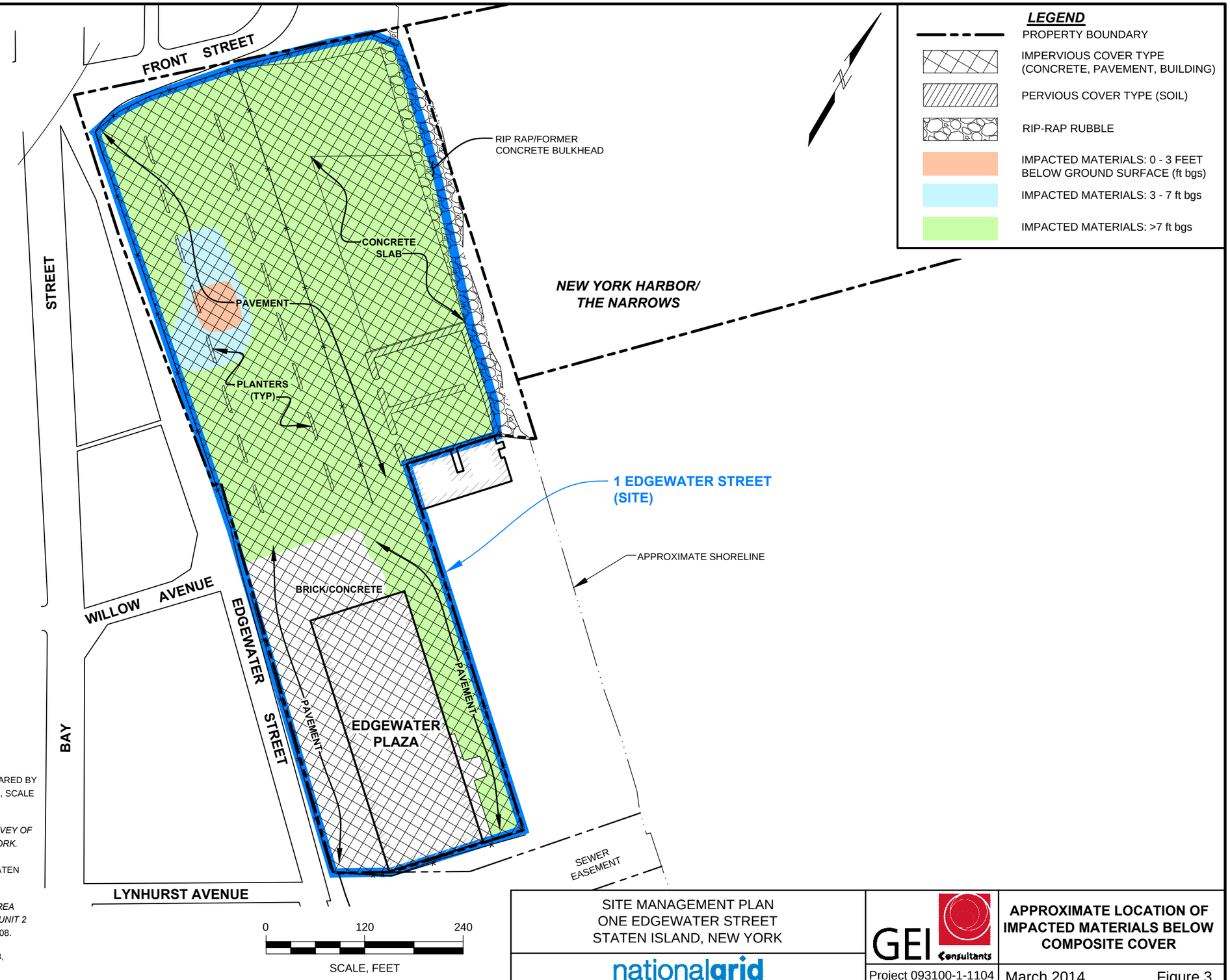

SOURCES:

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SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

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APPROXIMATE LOCATION OF IMPACTED MATERIALS BELOW COMPOSITE COVER

March 2014

Figure 3

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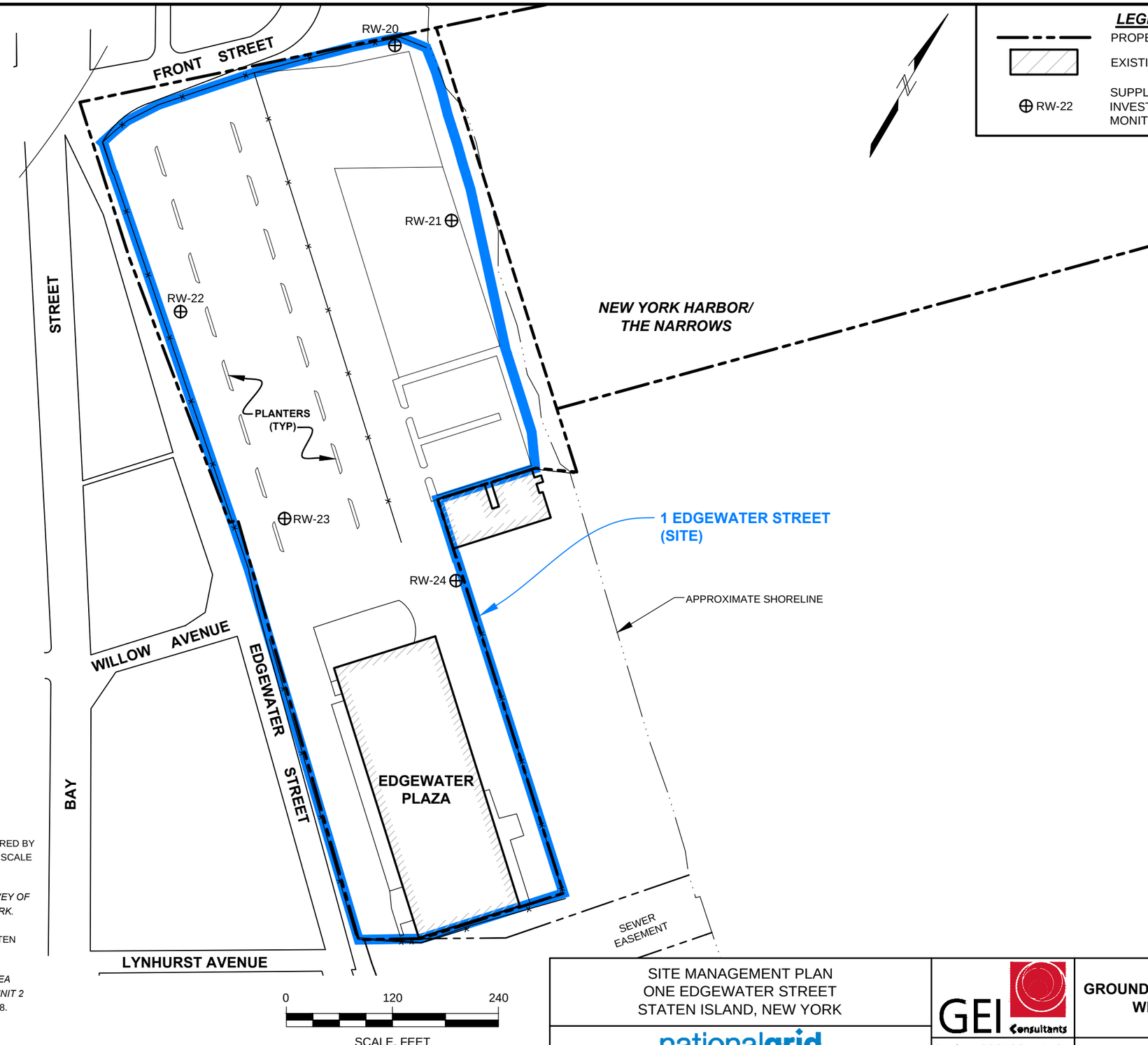

SOURCES:

PLATE 1: BOUNDARY SURVEY AND EXISTING CONDITIONS PLAN, PREPARED BY GEI CONSULTANTS, INC., DOUGLAS BONOFF, NEW YORK L.S. #050146, SCALE 1" = 50', DATED September 2009.

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SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

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GROUNDWATER MONITORING WELL NETWORK

March 2014

Figure 4

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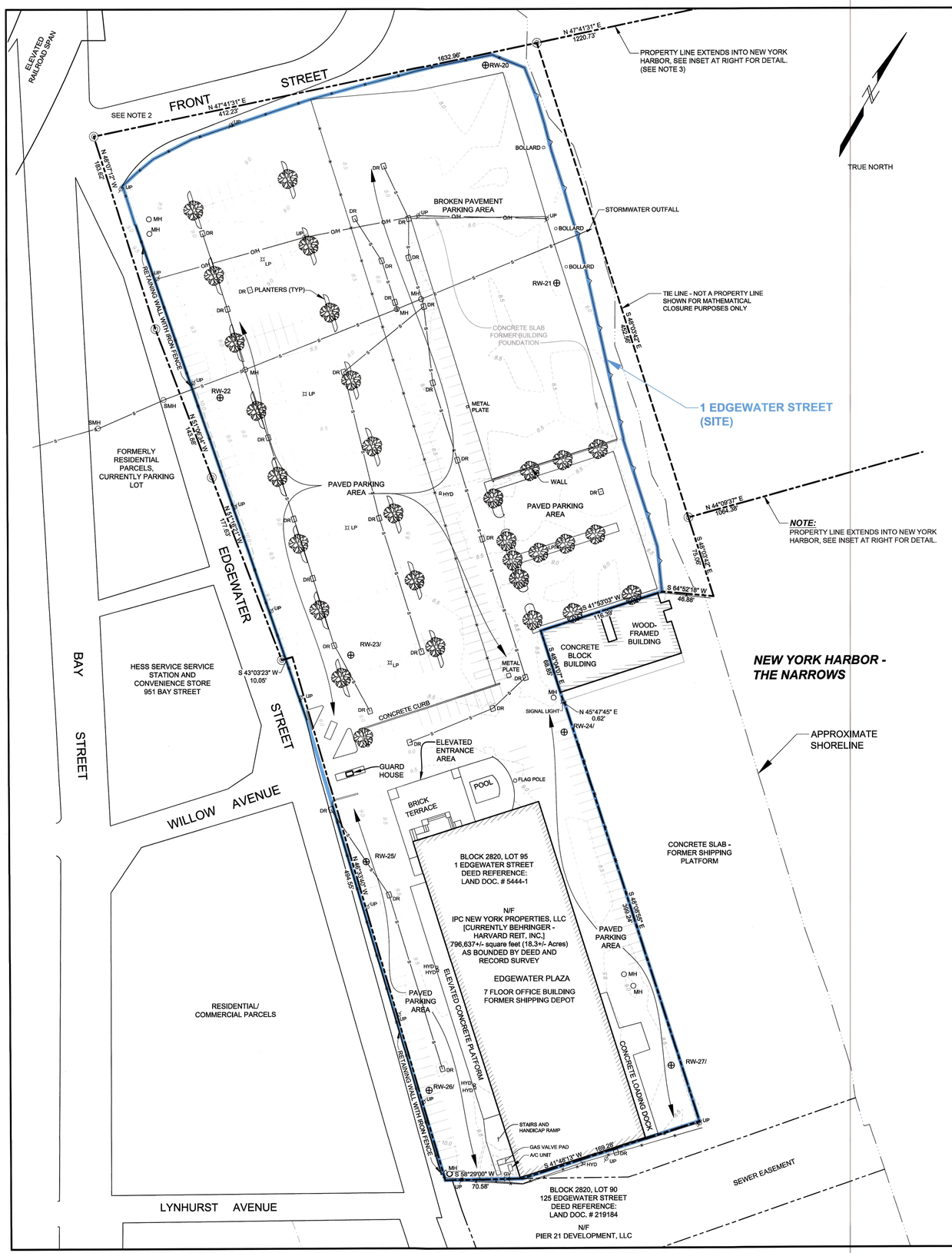
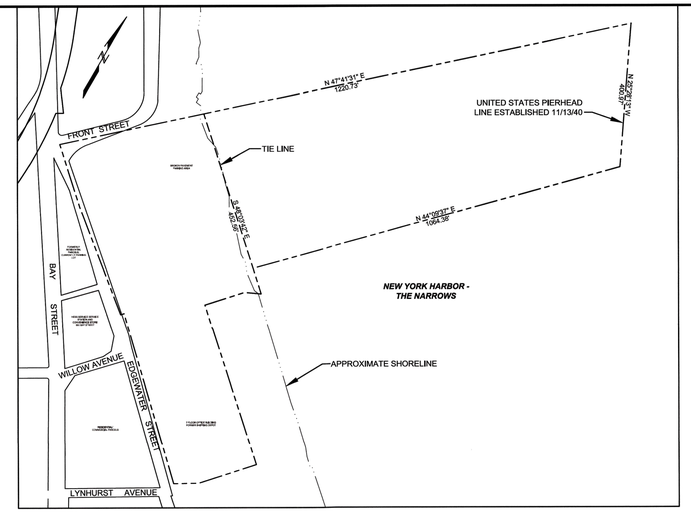
Plates





COMPLETE PROPERTY BOUNDARY

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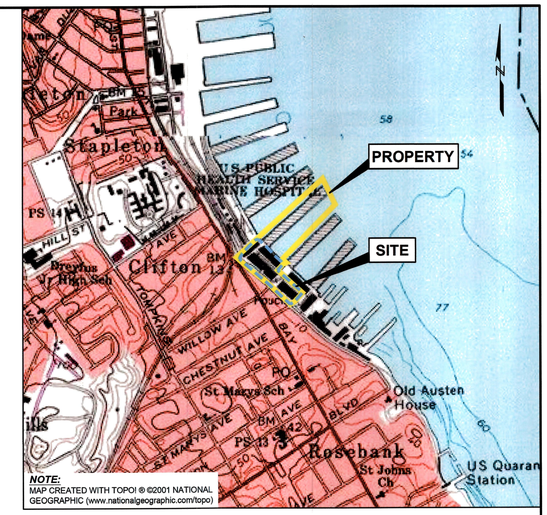
SCALE, FEET



SITE LOCUS MAP

0 1000 2000
SCALE, FEET

LEGEND

- APPROXIMATE PROPERTY LINE
- EXISTING BUILDING
- CHAIN LINK FENCE
- STORM SEWER LINE (SEE NOTE 4)
- OVERHEAD ELECTRIC LINE
- APPROXIMATE SHORELINE
- BULKHEAD
- GROUND SURFACE ELEVATION CONTOUR (FT NAVD)
- ANGLE POINT
- DR CATCH BASIN
- MH MANHOLE
- UP UTILITY POLE
- LP LIGHT POLE
- GV GAS VALVE
- TREE

PLAN REFERENCE:

MAP OF SURVEY OF PROPERTY IN THE 4TH WARD, BORO OF RICHMOND, CITY OF NEW YORK.

SCALE 1" = 60', DATED DECEMBER 5, 1949, REVISED TO APRIL 3, 1973.

PREPARED BY CARLTON H. ETTLINGER ET AL, CITY SURVEYORS, STATEN ISLAND N.Y.

ADDITIONAL SOURCES:

1. *MAP OF SURVEY OF PROPERTY, BOROUGH OF STATEN ISLAND, CITY OF NEW YORK,* PREPARED BY CARLTON H.ETTLINGER, LAND SURVEYOR, STATEN ISLAND, NEW YORK, REDATED 9-26-88.
2. *SITE DEVELOPMENT PLAN,* 1 EDGEWATER PLAZA, S.I., N.Y., PREPARED BY DONALD E. PETERS, ARCHITECT, A.I.A., SCALE: 1" = 60', REVISION DATED 9-22-97.
3. AERIAL PHOTOGRAPH FROM GOOGLE™ EARTH, ACCESSED ON 7/7/08, IMAGE ©2008 DIGITALGLOBE.

NOTES:

1. This plan has been prepared to A-2 and T-2 standards of horizontal and vertical accuracy as a *dependant resurvey* of the property identified in Richmond County assessment records as Block 2820 Lot 95. The record property boundary has been re-established by examination of existing structures and fence lines. There are no easements or encroachments affecting the property from a careful inspection of the same, other than those depicted or noted hereon.

   The record bearings of the property boundary have been adjusted to conform to true north (NAD 83) as determined by differential GPS observations performed on May 8, 2009. Elevations contours are depicted relative to NAVD 88, as determined by reference to NGS vertical benchmark F344.
2. The westerly property lines follow the original course of Edgewater Street, formerly an irregular village lane. The street had been widened back to the existing retaining wall prior to the 1949 record survey. On January 25, 1968, the City of New York adopted the widening of Edgewater Street, taking a prescriptive easement over that part of the subject property occupied by roadbed. Front Street was subsequently established on land formerly occupied by a shipping depot. Likewise, a prescriptive easement was taken over that part of the subject property occupied by the roadbed. No property was condemned during these widenings, therefore the title lines and corners of the subject property are recognized to remain at the original locations.
3. The subject property formerly included a pier and wharfage basin that extended over 1000 feet to the pierhead line established by the secretary of war in 1990. The pier was demolished circa 1990. The boundary tie line depicted seaward of the existing shoreline was selected for graphical convenience and does not represent the limits of ownership of the subject property. Although riparian ownership in New York generally extends to the low water line, it is recognized that the owners of the subject property retain title to submerged land out to the record pierhead line.
4. The location of underground storm sewer conduits is inferred from catch basin grades but was not field-verified. Other underground utilities that exist on the site are not depicted. The size, location and existence of all underground utilities must be determined by authorized utility locators before any excavations are conducted.

   Other property boundaries depicted on this plan are based on assessment mapping only and should not be relied upon to accurately represent true title lines.

   To my knowledge and belief this plan is substantially correct as noted hereon.

Douglas Bonoff

DOUGLAS BONOFF, NY L.S. #50146

SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

nationalgrid

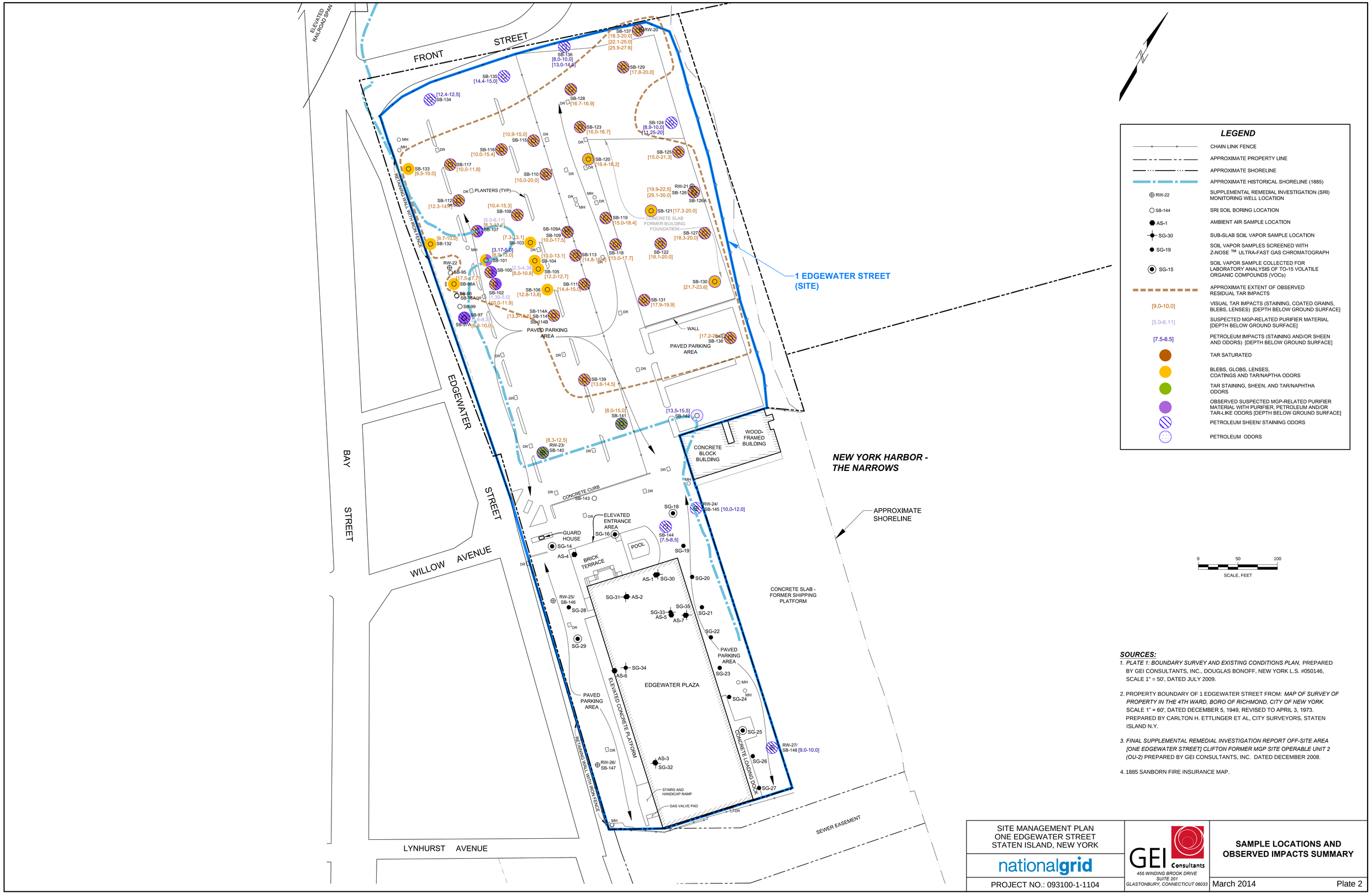
PROJECT NO.: 093100-1-1104

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

BOUNDARY SURVEY AND EXISTING CONDITIONS PLAN

March 2014 | Plate 1

I:\Project\National Grid\CLIFTON\061140\Edgewater Site Mgmt\03-2014\Plates\Clifton ESMP-Samples.dwg



SOURCES:

1. *PLATE 1: BOUNDARY SURVEY AND EXISTING CONDITIONS PLAN,* PREPARED BY GEI CONSULTANTS, INC., DOUGLAS BONOFF, NEW YORK L.S. #050146, SCALE 1" = 50', DATED JULY 2009.
2. PROPERTY BOUNDARY OF 1 EDGEWATER STREET FROM: *MAP OF SURVEY OF PROPERTY IN THE 4TH WARD, BORO OF RICHMOND, CITY OF NEW YORK.* SCALE 1" = 60', DATED DECEMBER 5, 1949, REVISED TO APRIL 3, 1973. PREPARED BY CARLTON H. ETTLINGER ET AL, CITY SURVEYORS, STATEN ISLAND N.Y.
3. *FINAL SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT OFF-SITE AREA [ONE EDGEWATER STREET] CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2)* PREPARED BY GEI CONSULTANTS, INC. DATED DECEMBER 2008.
4. 1885 SANBORN FIRE INSURANCE MAP.

SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

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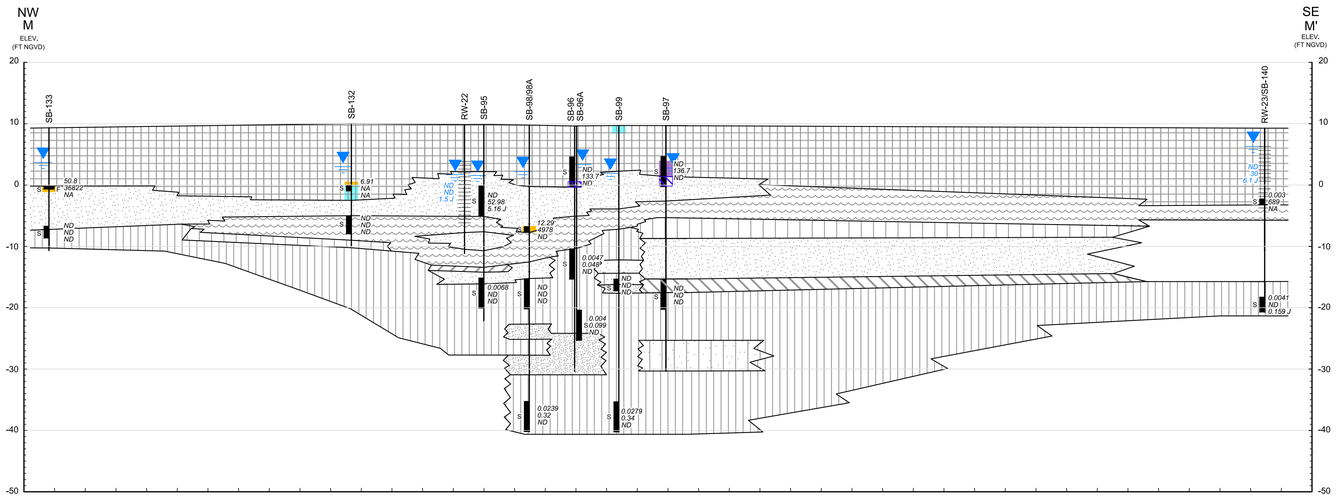
SAMPLE LOCATIONS AND OBSERVED IMPACTS SUMMARY

March 2014

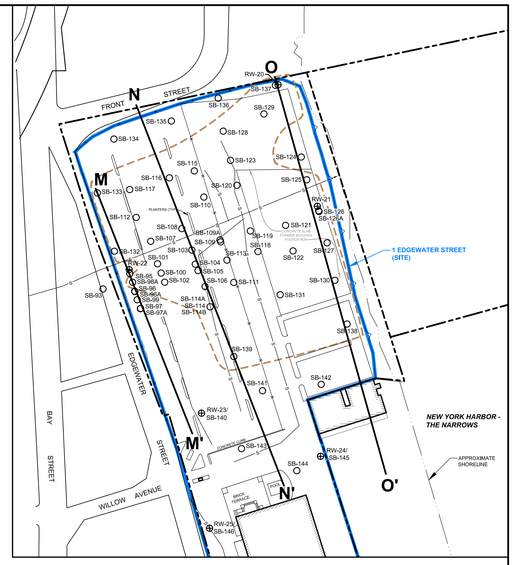
Plate 2

I:\Project\National Grid\CLIFTON\061140\Edgewater Site Mgmt\03-2014\Plates\Clifton ESMP-Samples.dwg



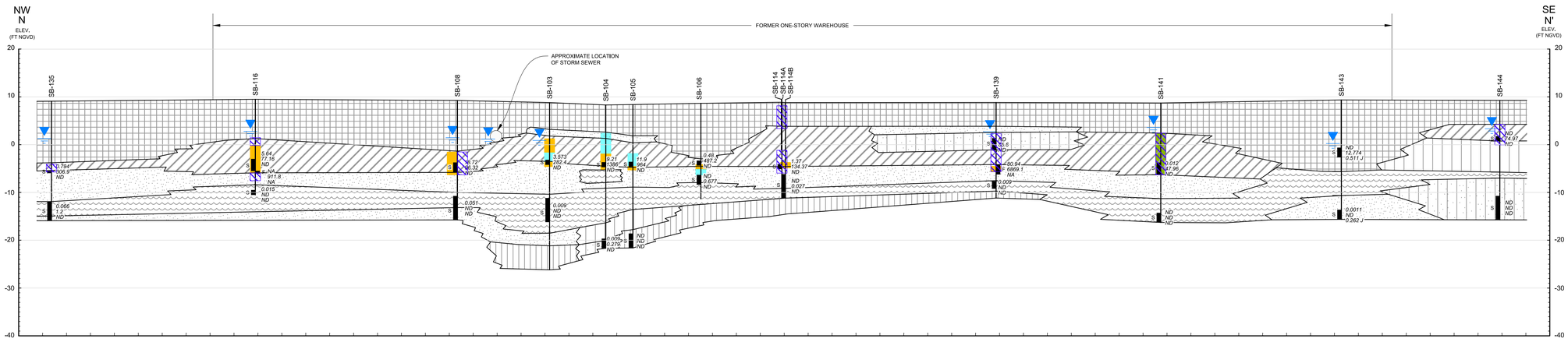
CROSS SECTION LOCATION LEGEND

—X—X—	CHAIN LINK FENCE
—S—	STORM SEWER LINE
- - - -	APPROXIMATE EXTENT OF OBSERVED RESIDUAL TAR IMPACTS
⊕ RW-20	SUPPLEMENTAL REMEDIAL INVESTIGATION (SRI) MONITORING WELL LOCATION
○ SB-144	SRI SOIL BORING LOCATION



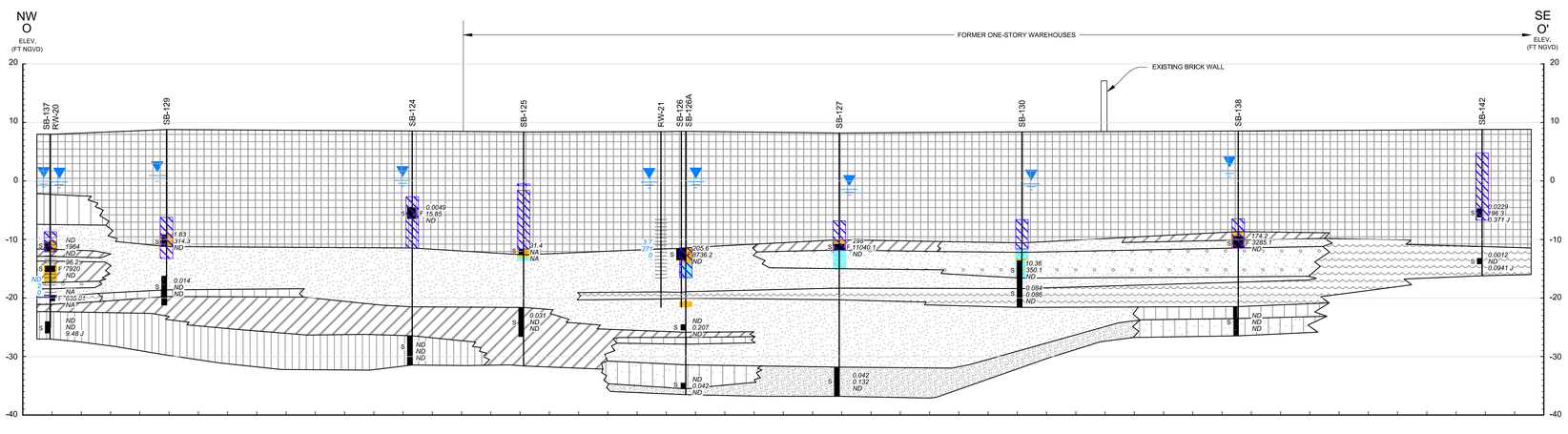
CROSS SECTION LOCATION

0 100 200
SCALE, FEET



VERTICAL SCALE, FEET — HORIZONTAL SCALE, FEET

NOTE: VERTICAL EXAGGERATION = 2X



LEGEND

HARBOR/ALLUVIAL DEPOSITS
- FILL
- GRAVELLY-SAND
- SAND (shallow)
- SILT (shallow)
- SILT-CLAY
- PEAT

PHYSICAL OBSERVATIONS
- SHEEN AND TAR/ NAPHTHA ODORS
- TAR STAINING, SHEEN, AND TAR/NAPHTHA ODORS
- TAR STAINING, TAR BLEBS/SHEEN AND TAR/NAPHTHA ODORS
- TAR SATURATED, SOIL MATRIX, TAR/NAPHTHA ODORS
- PURIFIER MATERIAL
- PETROLEUM STAINING, SHEENS AND ODORS

GLACIAL DEPOSITS
- SILT (deep)
- SILT-SAND
- SAND, SILT, CLAY
- SILT-CLAY
- SAND (deep)

- CONTACT
- OBSERVED APPARENT GROUNDWATER TABLE BASED UPON BORING INFORMATION
- BOUNDARY IS APPROXIMATED

SB-137/RW-20
- SOIL BORING/ MONITORING WELL IDENTIFICATION
- BORING

COMPOUNDS IN SOIL
- ANALYTICAL SOIL SAMPLE INTERVAL: 10.52 — TOTAL BTEX (mg/kg); 1714.8 — TOTAL PAHs (mg/kg); 61.0 — TOTAL CYANIDE (mg/kg)
- F — FORENSIC SOIL SAMPLE INTERVAL

COMPOUNDS IN GROUNDWATER
- TOTAL BTEX (ug/L) 80
- TOTAL PAHs (ug/L) 160
- TOTAL CYANIDE (ug/L) 50
- WELL SCREEN INTERVAL

ND	NOT DETECTED; TOTAL CONCENTRATION IS LISTED AS ND BECAUSE NO COMPOUNDS WERE DETECTED IN THE GROUP
J	ESTIMATED VALUE
ug/L	MICROGRAMS PER LITER OR PARTS PER BILLION (PPB)
mg/kg	MILLIGRAMS/KILOGRAM OR PARTS PER MILLION (PPM)
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENE
PAHs	POLYCYCLIC AROMATIC HYDROCARBONS

NOTE:
GEOLOGIC AND PHYSICAL OBSERVATIONS WERE OBTAINED FROM SUPPLEMENTAL REMEDIAL INVESTIGATION BORING AND MONITORING WELL LOGS.

SOURCES:

1. *PLATE 1: BOUNDARY SURVEY AND EXISTING CONDITIONS PLAN,* PREPARED BY GEI CONSULTANTS, INC., DOUGLAS BONOFF, NEW YORK L.S. #050146, SCALE 1" = 50', DATED JULY 2009.
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3. *FINAL SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT OFF-SITE AREA (ONE EDGEWATER STREET) CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2)* PREPARED BY GEI CONSULTANTS, INC. DATED DECEMBER 2008.

SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

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PROJECT NO.: 093100-1-1104

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GEOLOGIC CROSS SECTIONS M-M', N-N' AND O-O'

March 2014 — Plate 3

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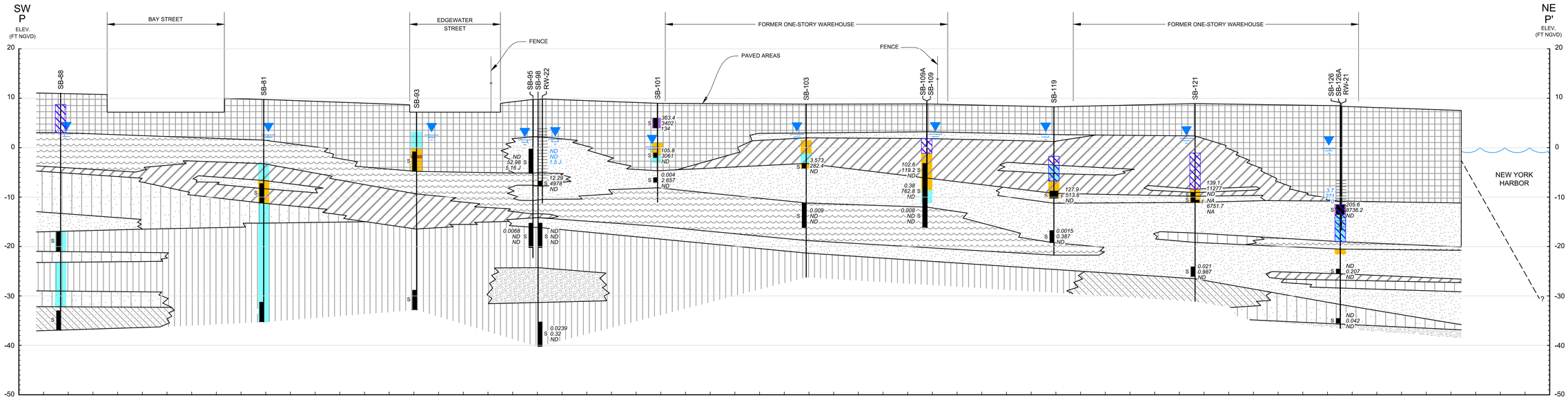


LEGEND

FILL

HARBOR/ALLUVIAL DEPOSITS

- GRAVELLY-SAND
- SAND (shallow)
- SILT (shallow)
- SILT-CLAY
- PEAT

PHYSICAL OBSERVATIONS

- SHEEN AND TAR/ NAPHTHA ODORS
- TAR STAINING, SHEEN, AND TAR/NAPHTHA ODORS
- TAR STAINING, TAR BLEBS/SHEEN AND TAR/NAPHTHA ODORS
- TAR SATURATED, SOIL MATRIX, TAR/NAPHTHA ODORS
- PURIFIER MATERIAL
- PETROLEUM STAINING, SHEENS AND ODORS

GLACIAL DEPOSITS

- SILT (deep)
- SILT-SAND
- SAND, SILT, CLAY
- SILT-CLAY
- SAND (deep)

CONTACT

OBSERVED APPARENT GROUNDWATER TABLE BASED UPON BORING INFORMATION

BOUNDARY IS APPROXIMATED

SB-137/RW-20 — SOIL BORING/ MONITORING WELL IDENTIFICATION

BORING

ANALYTICAL SOIL SAMPLE INTERVAL — S

COMPOUNDS IN SOIL

- *10.52* — TOTAL BTEX (mg/kg)
- *1714.8* — TOTAL PAHs (mg/kg)
- *61.0* — TOTAL CYANIDE (mg/kg)

F — FORENSIC SOIL SAMPLE INTERVAL

COMPOUNDS IN GROUNDWATER

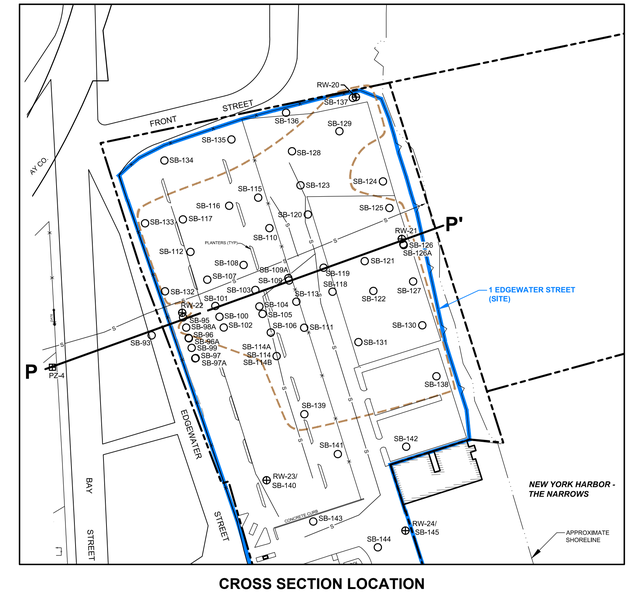
- TOTAL BTEX (ug/L) *80*
- TOTAL PAHs (ug/L) *160*
- TOTAL CYANIDE (ug/L) *50*

WELL SCREEN INTERVAL

ND	NOT DETECTED; TOTAL CONCENTRATION IS LISTED AS ND BECAUSE NO COMPOUNDS WERE DETECTED IN THE GROUP
J	ESTIMATED VALUE
ug/L	MICROGRAMS PER LITER OR PARTS PER BILLION (PPB)
mg/kg	MILLIGRAMS/KILOGRAM OR PARTS PER MILLION (PPM)
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENE
PAHs	POLYCYCLIC AROMATIC HYDROCARBONS

CROSS SECTION LOCATION LEGEND

- CHAIN LINK FENCE
- STORM SEWER LINE
- APPROXIMATE EXTENT OF OBSERVED RESIDUAL TAR IMPACTS
- RW-20 — SUPPLEMENTAL REMEDIAL INVESTIGATION (SRI) MONITORING WELL LOCATION
- SB-144 — SRI SOIL BORING LOCATION



CROSS SECTION LOCATION

0 100 200
SCALE, FEET

NOTE:
GEOLOGIC AND PHYSICAL OBSERVATIONS WERE OBTAINED FROM SUPPLEMENTAL REMEDIAL INVESTIGATION BORING AND MONITORING WELL LOGS.

SOURCES:

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20 10 0 VERTICAL SCALE, FEET

0 20 40 HORIZONTAL SCALE, FEET

NOTE: VERTICAL EXAGGERATION = 2X

SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

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GEOLOGIC CROSS SECTION P-P'

March 2014 Plate 4

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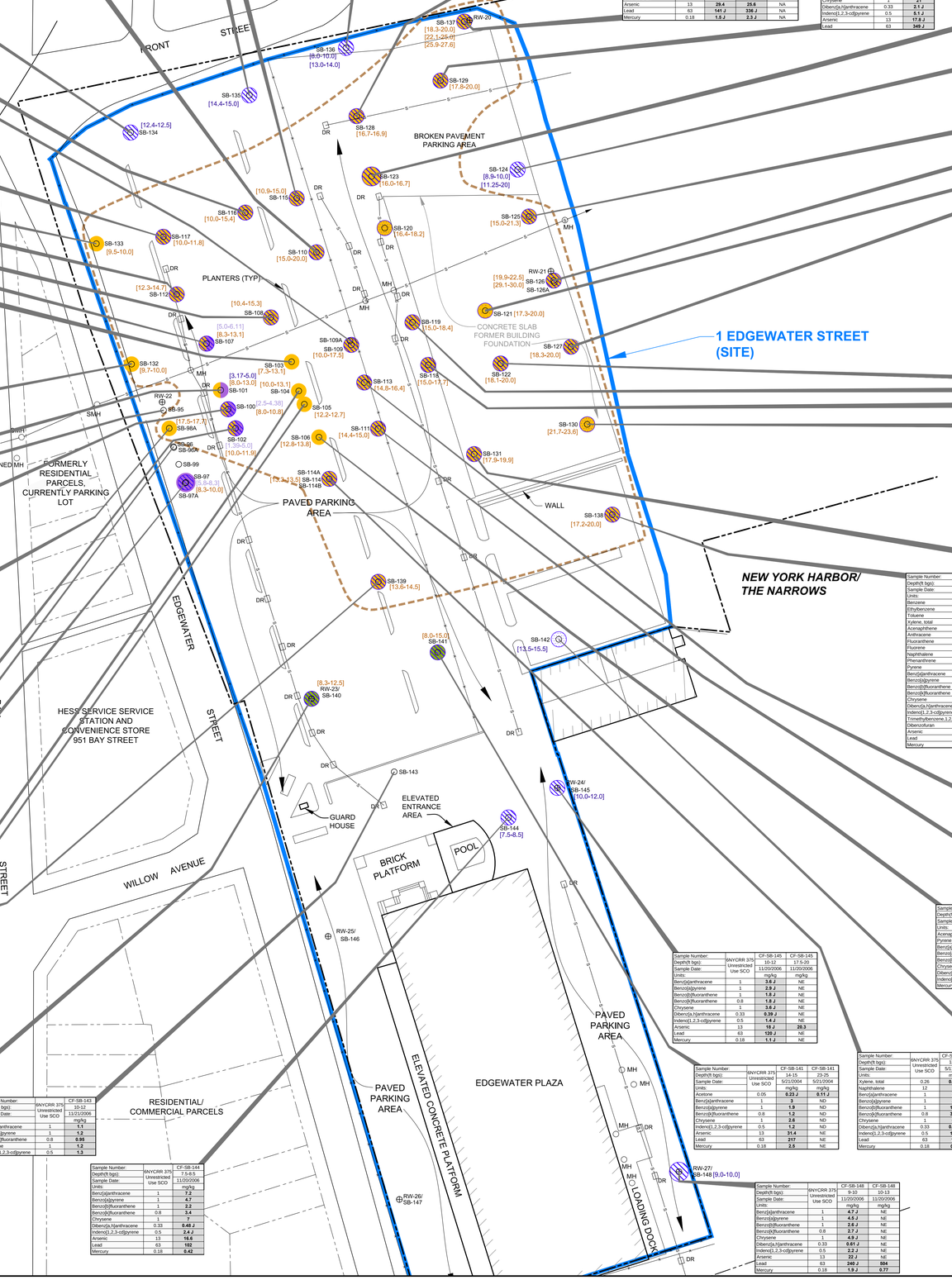


Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-109A 12-15	CF-SB-109A 15-20
Depth(ft bgs):		12-15	15-20
Sample Date:		5/17/2004	5/17/2004
Units:		mg/kg	mg/kg
Ethylbenzene	1	**44**	NE
Toluene	0.7	**1.6 J**	ND
Xylene, total	0.26	**57**	NE
Acenaphthene	20	NE	**85**
Fluoranthene	100	NE	**115**
Naphthalene	12	**35**	NE
Phenanthrene	100	NE	**110**
Pyrene	100	NE	**120**
Benz[a]anthracene	1	**2.7 J**	**55**
Benzo[a]pyrene	1	**1.7 J**	**40**
Benzo[b]fluoranthene	1	NE	**18**
Benzo[k]fluoranthene	0.8	**1.2 J**	**20 J**
Chrysene	1	**2.8 J**	**52**
Dibenz[a,h]anthracene	0.33	ND	**7 J**
Indeno[1,2,3-cd]pyrene	0.5	**0.51 J**	**12 J**
Arsenic	13	**32.7**	NE
Lead	63	**195**	NE
Mercury	0.18	**2.8**	NE

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-116 12-15	CF-SB-116 15-15.5
Depth(ft bgs):		12-15	15-15.5
Sample Date:		5/11/2004	5/11/2004
Units:		mg/kg	mg/kg
Ethylbenzene	1	**2.4**	NA
Xylene, total	0.26	**3.1**	NA
Acenaphthene	20	NE	**86.6**
Fluorene	30	NE	**32.1**
Naphthalene	12	**22.J**	**168**
Phenanthrene	100	NE	**146**
Fluoranthene	100	NE	**115**
Benzo[a]pyrene	1	**1.5 J**	**26.2**
Benzo[b]fluoranthene	1	NE	**15.6 J**
Benzo[k]fluoranthene	0.8	**0.93 J**	**11.9 J**
Chrysene	1	**2.4 J**	**31.8 J**
Dibenz[a,h]anthracene	0.33	ND	**4.8 J**
Indeno[1,2,3-cd]pyrene	0.5	ND	**10.1 J**
Trimethylbenzene,1,2,4	3.6	NA	**21.3 J**
Arsenic	13	**34.4**	NA
Lead	63	**198**	NA
Mercury	0.18	**2.3 J**	NA

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-134 11-13	CF-SB-134 15-16
Depth(ft bgs):		11-13	15-16
Sample Date:		5/19/2004	5/19/2004
Units:		mg/kg	mg/kg
Benzene	0.06	**0.66 J**	NA
Ethylbenzene	1	**1.8**	NA
Toluene	0.7	**1.2 J**	NA
Xylene, total	0.26	**1.6**	NA
Naphthalene	12	**20 J**	**168**
Benzo[a]pyrene	1	**15 J**	**26 J**
Benzo[b]fluoranthene	1	**9.1 J**	**23 J**
Benzo[k]fluoranthene	0.8	**5.1**	**8.1**
Chrysene	1	**23 J**	**35 J**
Dibenz[a,h]anthracene	0.33	**3.1 J**	NA
Indeno[1,2,3-cd]pyrene	0.5	**4.9 J**	NA
Arsenic	13	**15.3**	NA
Lead	63	**478 J**	NA

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-110 10-15	CF-SB-110 15-16	CF-SB-110
Depth(ft bgs):		10-15	15-16	15-20
Sample Date:		5/10/2004	5/10/2004	5/10/2004
Units:		mg/kg	mg/kg	mg/kg
Ethylbenzene	1	**2.7 J**	**5.8 J**	NA
Xylene, total	0.26	**1.9**	**5.3**	**8.3**
Acenaphthene	20	**55.1**	NE	NA
Naphthalene	12	**89.1**	**29.9**	NA
Phenanthrene	100	**114**	NE	NA
Fluoranthene	100	**32**	**7.37 J**	NA
Benzo[a]pyrene	1	**24.7**	**5.71 J**	NA
Benzo[b]fluoranthene	1	**12.7**	**3.52 J**	NA
Benzo[k]fluoranthene	0.8	**13.2**	**3.34 J**	NA
Chrysene	1	**30.8**	**6.77 J**	NA
Dibenz[a,h]anthracene	0.33	**4.85**	**1.15 J**	NA
Indeno[1,2,3-cd]pyrene	0.5	**9.35**	**2.64 J**	NA
Trimethylbenzene,1,2,4	3.6	**10.7**	NE	NA
Arsenic	13	**26.4**	NE	NA
Lead	63	**153**	**187**	NA
Mercury	0.18	**2.6**	NE	NA

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-135 14-15
Depth(ft bgs):		14-15
Sample Date:		5/19/2004
Units:		mg/kg
Benzene	0.06	**0.09 J**
Xylene, total	0.26	**0.33 J**
Acenaphthene	20	**42**
Benz[a]anthracene	1	**19 J**
Benzo[a]pyrene	1	**9.3 J**
Benzo[b]fluoranthene	1	**8.8 J**
Chrysene	1	**21 J**
Dibenz[a,h]anthracene	0.33	**2 J**
Indeno[1,2,3-cd]pyrene	0.5	**3.3 J**
Arsenic	13	**5.1**
Lead	63	**358 J**
Mercury	0.18	**1.4 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-115 14-15
Depth(ft bgs):		14-15
Sample Date:		5/11/2004
Units:		mg/kg
Xylene, total	0.26	**2**
Acenaphthene	20	**38.2**
Naphthalene	12	**62.3**
Benz[a]anthracene	1	**15.8**
Benzo[a]pyrene	1	**12.2**
Benzo[b]fluoranthene	1	**6.28**
Benzo[k]fluoranthene	0.8	**7.2**
Chrysene	1	**14.9**
Dibenz[a,h]anthracene	0.33	**2.33**
Indeno[1,2,3-cd]pyrene	0.5	**5.21**
Trimethylbenzene,1,2,4	3.6	**4.68**
Arsenic	13	**27.5**
Lead	63	**459**
Mercury	0.18	**0.95 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-136 13-14
Depth(ft bgs):		13-14
Sample Date:		5/19/2004
Units:		mg/kg
Benzene	0.06	**11.2**
Xylene, total	0.26	**3.4**
Acenaphthene	20	**140**
Anthracene	100	**110**
Fluoranthene	100	**120**
Naphthalene	12	**52**
Phenanthrene	100	**100**
Pyrene	100	**120**
Benz[a]anthracene	1	**11.2**
Benzo[a]pyrene	1	**12.J**
Benzo[b]fluoranthene	1	**8.4 J**
Benzo[k]fluoranthene	0.8	**7.4 J**
Chrysene	1	**12.J**
Dibenz[a,h]anthracene	0.33	**2.3 J**
Indeno[1,2,3-cd]pyrene	0.5	**3.9 J**
Arsenic	13	**18**
Lead	63	**428 J**
Mercury	0.18	**0.59 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-128 17-18
Depth(ft bgs):		17-18
Sample Date:		5/18/2004
Units:		mg/kg
Benzene	0.06	**0.23 J**
Ethylbenzene	1	**2.4**
Xylene, total	0.26	**3.4**
Acenaphthene	20	**140**
Anthracene	100	**110**
Fluoranthene	100	**120**
Naphthalene	12	**52**
Phenanthrene	100	**100**
Pyrene	100	**120**
Benz[a]anthracene	1	**8.2**
Benzo[a]pyrene	1	**5.3**
Benzo[b]fluoranthene	1	**6.8**
Benzo[k]fluoranthene	0.8	**2.2**
Chrysene	1	**14**
Dibenz[a,h]anthracene	0.33	**0.53**
Indeno[1,2,3-cd]pyrene	0.5	**1.2 J**
Arsenic	13	**17.8 J**
Lead	63	**303**
Mercury	0.18	**0.37 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-137 18.5-20	CF-SB-137 20-22	CF-SB-137
Depth(ft bgs):		18.5-20	20-22	27.5-28
Sample Date:		5/20/2004	5/20/2004	5/20/2004
Units:		mg/kg	mg/kg	mg/kg
Benzene	0.06	**66**	NA	NA
Toluene	0.7	ND	**1.2 J**	NA
Xylene, total	0.26	ND	**29**	NA
Acenaphthene	20	**77.J**	**867**	**32.4**
Acenaphthylene	100	NE	**130**	NE
Anthracene	100	**190**	**519**	NE
Benzo(g,h,i)perylene	100	**100**	**112**	NE
Fluoranthene	100	**220 J**	**558**	NE
Fluorene	30	NE	**444**	NE
Naphthalene	12	**15.J**	**999**	NE
Phenanthrene	100	**380 J**	**1400**	NE
Pyrene	100	**390 J**	**735**	NE
Benz[a]anthracene	1	**140 J**	**301**	**46**
Benzo[a]pyrene	1	**93 J**	**251**	**37.5**
Benzo[b]fluoranthene	1	**49 J**	**169**	**28.9**
Benzo[k]fluoranthene	0.8	**55 J**	**66.J**	**8.53**
Chrysene	1	**160 J**	**318**	**47**
Dibenz[a,h]anthracene	0.33	**17 J**	**50.8**	**4.26**
Indeno[1,2,3-cd]pyrene	0.5	**28 J**	**115**	**14.6**
Arsenic	13	**29.4**	**25.6**	NA
Lead	63	**141 J**	**336 J**	NA
Mercury	0.18	**1.5 J**	**2.3 J**	NA

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-123 15-17
Depth(ft bgs):		15-17
Sample Date:		5/14/2004
Units:		mg/kg
Benzene	0.06	**1.2 J**
Ethylbenzene	1	**4.5**
Toluene	0.7	**1.2 J**
Xylene, total	0.26	**12**
Acenaphthene	20	**74**
Fluorene	30	**33**
Naphthalene	12	**170**
Phenanthrene	100	**140**
Pyrene	100	**100**
Benz[a]anthracene	1	**39**
Benzo[a]pyrene	1	**33**
Benzo[b]fluoranthene	1	**19 J**
Benzo[k]fluoranthene	0.8	**17 J**
Chrysene	1	**40**
Dibenz[a,h]anthracene	0.33	**14 J**
Indeno[1,2,3-cd]pyrene	0.5	**14 J**
Arsenic	13	**37**
Lead	63	**303**
Mercury	0.18	**3.1 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-129 18-20
Depth(ft bgs):		18-20
Sample Date:		5/18/2004
Units:		mg/kg
Ethylbenzene	1	**1.5**
Xylene, total	0.26	**0.33 J**
Acenaphthene	20	**40**
Benz[a]anthracene	1	**20**
Benzo[a]pyrene	1	**14**
Benzo[b]fluoranthene	1	**14**
Chrysene	1	**21**
Dibenz[a,h]anthracene	0.33	**2.1 J**
Indeno[1,2,3-cd]pyrene	0.5	**5.1 J**
Arsenic	13	**17.8 J**
Lead	63	**349 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-124 13-15
Depth(ft bgs):		13-15
Sample Date:		5/14/2004
Units:		mg/kg
Benz[a]anthracene	1	**2.68**
Benzo[b]fluoranthene	0.8	**0.84**
Chrysene	1	**1.26**
Dibenz[a,h]anthracene	0.33	**0.77**
Indeno[1,2,3-cd]pyrene	0.5	**2.06**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-125 20-21
Depth(ft bgs):		20-21
Sample Date:		5/14/2004
Units:		mg/kg
Benzene	0.06	**1.8**
Ethylbenzene	1	**9.2**
Toluene	0.7	**2.3**
Xylene, total	0.26	**18**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-128
Depth(ft bgs):		17-18
Sample Date:		5/18/2004
Units:		mg/kg
Benzene	0.06	**0.23 J**
Ethylbenzene	1	**2.4**
Xylene, total	0.26	**3.4**
Acenaphthene	20	**140**
Anthracene	100	**110**
Fluoranthene	100	**120**
Naphthalene	12	**52**
Phenanthrene	100	**100**
Pyrene	100	**120**
Benz[a]anthracene	1	**8.2**
Benzo[a]pyrene	1	**5.3**
Benzo[b]fluoranthene	1	**6.8**
Benzo[k]fluoranthene	0.8	**2.2**
Chrysene	1	**14**
Dibenz[a,h]anthracene	0.33	**0.53**
Indeno[1,2,3-cd]pyrene	0.5	**1.2 J**
Arsenic	13	**17.8 J**
Lead	63	**303**
Mercury	0.18	**0.37 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-133 9.5-10
Depth(ft bgs):		9.5-10
Sample Date:		5/19/2004
Units:		mg/kg
Benzene	0.06	**14**
Ethylbenzene	1	**2.8**
Toluene	0.7	**10**
Xylene, total	0.26	**24**
Acenaphthene	20	**1700 J**
Acenaphthylene	100	**382 J**
Anthracene	100	**2400 J**
Benzo(g,h,i)perylene	100	**755**
Fluoranthene	100	**5100**
Fluorene	30	**1060 J**
Naphthalene	12	**4200**
Phenanthrene	100	**7140**
Pyrene	100	**3710**
Benz[a]anthracene	1	**1790 J**
Benzo[a]pyrene	1	**1660**
Benzo[b]fluoranthene	1	**1550 J**
Benzo[k]fluoranthene	0.8	**567**
Chrysene	1	**1430**
Dibenz[a,h]anthracene	0.33	**374 J**
Indeno[1,2,3-cd]pyrene	0.5	**984**
Trimethylbenzene,1,2,4	3.6	**79.8 J**
Dibenzofuran	7	**1580 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-117 10-12
Depth(ft bgs):		10-12
Sample Date:		5/12/2004
Units:		mg/kg
Acenaphthene	20	**83.1**
Phenanthrene	100	**133**
Benz[a]anthracene	1	**33**
Benzo[a]pyrene	1	**23.2**
Benzo[b]fluoranthene	1	**13.2**
Benzo[k]fluoranthene	0.8	**12**
Chrysene	1	**32**
Dibenz[a,h]anthracene	0.33	**4.62**
Indeno[1,2,3-cd]pyrene	0.5	**9.49**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-112 13-14
Depth(ft bgs):		13-14
Sample Date:		5/10/2004
Units:		mg/kg
Ethylbenzene	1	**2.7**
Xylene, total	0.26	**3.7**
Acenaphthene	20	**91.1**
Fluoranthene	100	**106**
Fluorene	30	**32.8**
Naphthalene	12	**143**
Phenanthrene	100	**147**
Pyrene	100	**128**
Benz[a]anthracene	1	**55.2**
Benzo[a]pyrene	1	**40.6**
Benzo[b]fluoranthene	1	**25.3**
Benzo[k]fluoranthene	0.8	**19.7**
Chrysene	1	**50.2**
Dibenz[a,h]anthracene	0.33	**8.33**
Indeno[1,2,3-cd]pyrene	0.5	**16.5**
Trimethylbenzene,1,2,4	3.6	**15.8**
Dibenzofuran	7	**12.8**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-108 13-15
Depth(ft bgs):		13-15
Sample Date:		5/7/2004
Units:		mg/kg
Ethylbenzene	1	**8.4**
Xylene, total	0.26	**9.9**
Naphthalene	12	**34**
Benz[a]anthracene	1	**2.2 J**
Benzo[a]pyrene	1	**1.5 J**
Benzo[b]fluoranthene	0.8	**1.1 J**
Chrysene	1	**2.1 J**
Arsenic	13	**24.7**
Lead	63	**141**
Mercury	0.18	**2.8 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-107 9-10	CF-SB-107 12-13	CF-SB-107
Depth(ft bgs):		9-10	12-13	13-18
Sample Date:		5/6/2004	5/6/2004	5/6/2004
Units:		mg/kg	mg/kg	mg/kg
Benzene	0.06	ND	**1.2 J**	NE
Ethylbenzene	1	NE	**92**	NE
Toluene	0.7	ND	**1.2 J**	NE
Xylene, total	0.26	NE	**34**	**0.75 J**
Acenaphthene	20	NE	**540**	NE
Anthracene	100	NE	**280**	NE
Fluoranthene	100	NE	**260**	NE
Fluorene	30	NE	**210 J**	NE
Naphthalene	12	NE	**1200**	NE
Phenanthrene	100	NE	**550**	NE
Pyrene	100	NE	**360**	NE
Benz[a]anthracene	1	**9.9**	**130 J**	NE
Benzo[a]pyrene	1	**10**	**87 J**	NE
Benzo[b]fluoranthene	1	**4.6**	**45 J**	NE
Benzo[k]fluoranthene	0.8	**6.2 J**	**56 J**	NE
Chrysene	1	**11**	**150 J**	NE
Dibenz[a,h]anthracene	0.33	**1.9 J**	**14 J**	ND
Indeno[1,2,3-cd]pyrene	0.5	**3.7**	**26 J**	NE
Arsenic	13	NE	**17.8**	ND
Barium	350	NE	NE	**418 J**
Lead	63	**184**	**533**	NE
Mercury	0.18	NE	**2.8**	ND
Selenium	3.9	**4.3**	ND	ND

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-103 12-13
Depth(ft bgs):		12-13
Sample Date:		5/4/2004
Units:		mg/kg
Ethylbenzene	1	**1.9**
Xylene, total	0.26	**1.6**
Acenaphthene	20	**21**
Naphthalene	12	**28**
Benz[a]anthracene	1	**18**
Benzo[a]pyrene	1	**10**
Benzo[b]fluoranthene	1	**11 J**
Chrysene	1	**19**
Dibenz[a,h]anthracene	0.33	**1.7 J**
Indeno[1,2,3-cd]pyrene	0.5	**3.2 J**
Mercury	0.18	**0.44 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-101 3/5	CF-SB-101 10-11
Depth(ft bgs):		3/5	10-11
Sample Date:		5/3/2004	5/3/2004
Units:		mg/kg	mg/kg
Ethylbenzene	1	**10 J**	**50**
Toluene	0.7	**3.4 J**	**2.8 J**
Xylene, total	0.26	**390**	**83**
Acenaphthene	20	**86 J**	**46 J**
Anthracene	100	**120 J**	**330**
Fluoranthene	100	NE	**170 J**
Fluorene	30	NE	**110 J**
Naphthalene	12	**260 J**	**1100**
Phenanthrene	100	**300**	**300**
Pyrene	100	**140 J**	**230**
Benz[a]anthracene	1	**47 J**	**86 J**
Benzo[a]pyrene	1	**18 J**	**71 J**
Benzo[b]fluoranthene	1	**37 J**	**37 J**
Benzo[k]fluoranthene	0.8	ND	**53 J**
Chrysene	1	**60 J**	**87 J**
Dibenz[a,h]anthracene	0.33	ND	**11 J**
Indeno[1,2,3-cd]pyrene	0.5	ND	**23 J**
Arsenic	13	**39.8 J**	NE
Lead	63	**66 J**	**217 J**
Mercury	0.18	**1.1 J**	**0.77 J**
Cyanide, Total	27	**134**	ND

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-132 10-11
Depth(ft bgs):		10-11
Sample Date:		5/19/2004
Units:		mg/kg
Benzene	0.06	**2.8**
Toluene	0.7	**1.4**
Xylene, total	0.26	**2.7**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-130 22-25
Depth(ft bgs):		22-25
Sample Date:		5/18/2004
Units:		mg/kg
Benzene	0.06	**0.46 J**
Ethylbenzene	1	**6.8**
Xylene, total	0.26	**3.1**
Acenaphthene	20	**25**
Naphthalene	12	**24**
Benz[a]anthracene	1	**10 J**
Benzo[a]pyrene	1	**15 J**
Benzo[b]fluoranthene	1	**11 J**
Benzo[k]fluoranthene	0.8	**12 J**
Chrysene	1	**13 J**
Dibenz[a,h]anthracene	0.33	**3.5 J**
Indeno[1,2,3-cd]pyrene	0.5	**7.1 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-119 17-18.5
Depth(ft bgs):		17-18.5
Sample Date:		5/12/2004
Units:		mg/kg
Benzene	0.06	**2.8 J**
Ethylbenzene	1	**47**
Toluene	0.7	**4.4 J**
Xylene, total	0.26	**74**
Acenaphthene	20	**46**
Naphthalene	12	**130**
Benz[a]anthracene	1	**17 J**
Benzo[a]pyrene	1	**12 J**
Benzo[b]fluoranthene	1	**7.4 J**
Benzo[k]fluoranthene	0.8	**9.7 J**
Chrysene	1	**16 J**
Indeno[1,2,3-cd]pyrene	0.5	**6.2 J**
Lead	63	**76.7**
Mercury	0.18	**0.28 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-118 16-17	CF-SB-118 17-17.5	CF-SB-118 32.5-35
Depth(ft bgs):		16-17	17-17.5	32.5-35
Sample Date:		5/12/2004	5/12/2004	5/12/2004
Units:		mg/kg	mg/kg	mg/kg
Acenaphthene	20	**758**	**1790 J**	NE
Acenaphthylene	100	**105 J**	**394 J**	ND
Anthracene	100	**560**	**1910 J**	NE
Benzo(g,h,i)perylene	100	**113 J**	**730 J**	ND
Fluoranthene	100	**690**	**3680 J**	NE
Fluorene	30	**452**	**1790 J**	NE
Naphthalene	12	**1390**	**5580**	NE
Phenanthrene	100	**1650**	**6620**	NE
Pyrene	100	**817**	**2820 J**	NE
Benz[a]anthracene	1	**344**	**1610 J**	NE
Benzo[a]pyrene	1	**293**	**1400 J**	NE
Benzo[b]fluoranthene	1	**228**	**1620 J**	ND
Benzo[k]fluoranthene	0.8	**94.3 J**	**576 J**	NE
Chrysene	1	**328**	**1730 J**	NE
Dibenz[a,h]anthracene	0.33	**47.1 J**	**208 J**	ND
Indeno[1,2,3-cd]pyrene	0.5	**93.4 J**	**873 J**	ND
Trimethylbenzene,1,2,4	3.6	**70.6 J**	**150 J**	NA
Dibenzofuran	7	**111 J**	**1470 J**	NA
Arsenic	13	NA	NA	**13.6**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-138 18-20
Depth(ft bgs):		18-20
Sample Date:		5/20/2004
Units:		mg/kg
Benzene	0.06	**2.3 J**
Ethylbenzene	1	**73**
Toluene	0.7	**7.9**
Xylene, total	0.26	**91**
Acenaphthene	20	**300**
Anthracene	100	**211**
Fluoranthene	100	**248**
Fluorene	30	**172**
Naphthalene	12	**482**
Phenanthrene	100	**593**
Pyrene	100	**306**
Benz[a]anthracene	1	**133**
Benzo[a]pyrene	1	**107**
Benzo[b]fluoranthene	1	**88.8**
Benzo[k]fluoranthene	0.8	**26.1**
Chrysene	1	**129**
Dibenz[a,h]anthracene	0.33	**20.9**
Indeno[1,2,3-cd]pyrene	0.5	**47.2**
Trimethylbenzene,1,2,4	3.6	**34.7 J**
Dibenzofuran	7	**39.9**
Arsenic	13	**50**
Lead	63	**624 J**
Mercury	0.18	**3.4 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-131 18-19
Depth(ft bgs):		18-19
Sample Date:		5/19/2004
Units:		mg/kg
Benzene	0.06	**1.9 J**
Ethylbenzene	1	**67**
Toluene	0.7	**5.5**
Xylene, total	0.26	**99**
Acenaphthene	20	**555**
Anthracene	100	**313**
Fluoranthene	100	**263**
Fluorene	30	**291**
Naphthalene	12	**1060**
Phenanthrene	100	**858**
Pyrene	100	**375**
Benz[a]anthracene	1	**149**
Benzo[a]pyrene	1	**104**
Benzo[b]fluoranthene	1	**74.8**
Benzo[k]fluoranthene	0.8	**23**
Chrysene	1	**156**
Dibenz[a,h]anthracene	0.33	**13.1**
Indeno[1,2,3-cd]pyrene	0.5	**38.8**
Trimethylbenzene,1,2,4	3.6	**73.6 J**
Dibenzofuran	7	**37.3**
Lead	63	**298 J**
Mercury	0.18	**1.8 J**

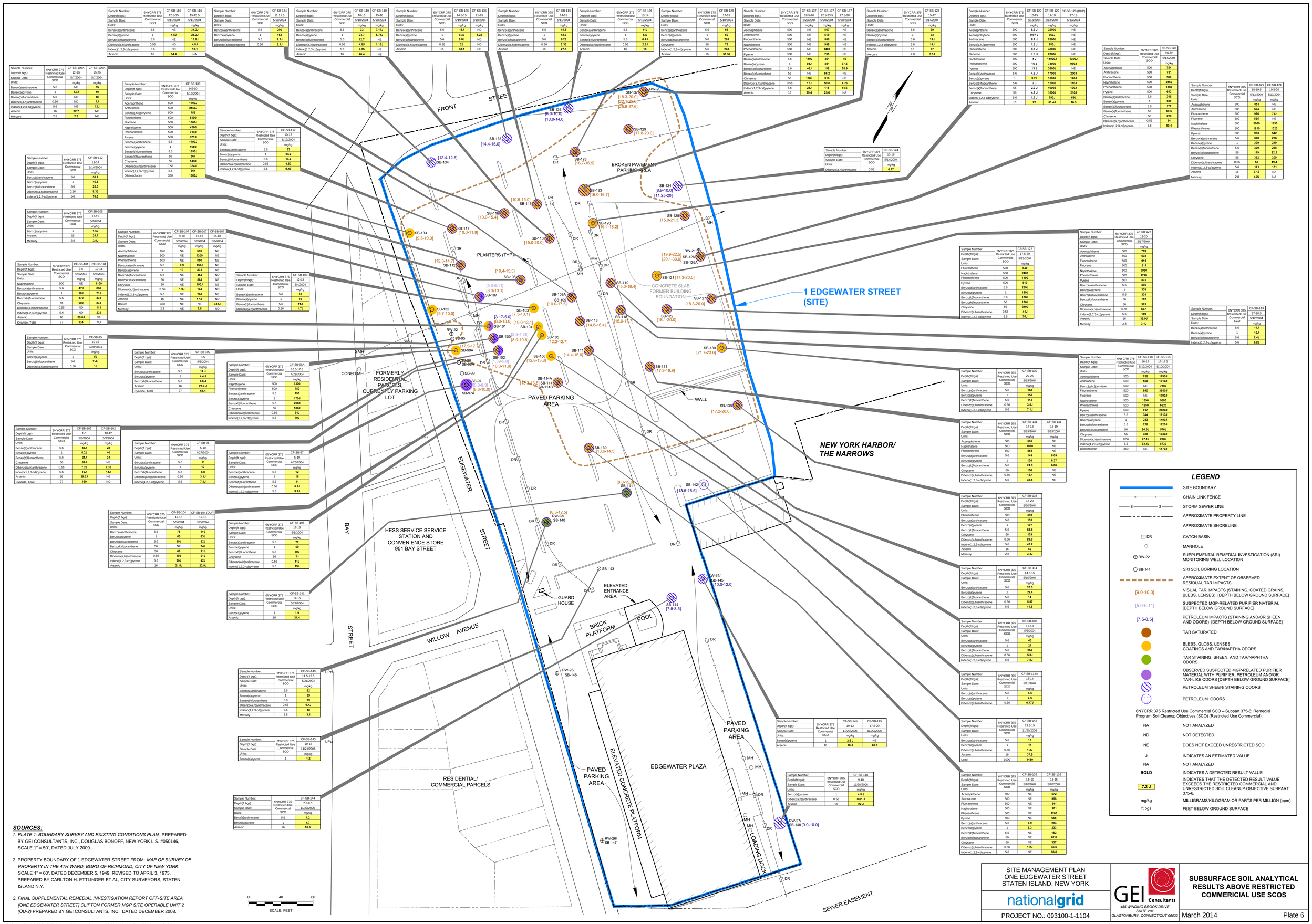
Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-113 15-15.5
Depth(ft bgs):		15-15.5
Sample Date:		5/11/2004
Units:		mg/kg
Ethylbenzene	1	**2.8**
Xylene, total	0.26	**1.9**
Lead	63	**194**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-106 12-13
Depth(ft bgs):		12-13
Sample Date:		5/6/2004
Units:		mg/kg
Acenaphthene	20	**52**
Pyrene	100	**100**
Benz[a]anthracene	1	**43**
Benzo[a]pyrene	1	**27**
Benzo[b]fluoranthene	1	**25.J**
Chrysene	1	**47**
Dibenz[a,h]anthracene	0.33	**5.3 J**
Indeno[1,2,3-cd]pyrene	0.5	**7.8 J**
Mercury	0.18	**0.28 J**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-111 14.5-15
Depth(ft bgs):		14.5-15
Sample Date:		5/10/2004
Units:		mg/kg
Acenaphthene	20	**92**
Fluorene	30	**46.6**
Naphthalene	12	**108**
Phenanthrene	100	**192**
Benz[a]anthracene	1	**37.5**
Benzo[a]pyrene	1	**29.4**
Benzo[b]fluoranthene	1	**14**
Benzo[k]fluoranthene	0.8	**15.3**
Chrysene	1	**35.7**
Dibenz[a,h]anthracene	0.33	**5.57**
Indeno[1,2,3-cd]pyrene	0.5	**11.5**
Trimethylbenzene,1,2,4	3.6	**16.3**

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-145 19-12	CF-SB-145 17.5-20
Depth(ft bgs):		19-12	17.5-20
Sample Date:		11/20/2006	11/20/2006
Units:		mg/kg	mg/kg
Benz[a]anthracene	1	**3.6 J**	NE
Benzo[a]pyrene	1	**2.9 J**	NE
Benzo[b]fluoranthene	1	**1.8 J**	NE
Benzo[k]fluoranthene	0.8	**1.8 J**	NE
Chrysene	1	**3.6 J**	NE
Dibenz[a,h]anthracene	0.33	**0.39 J**	NE
Indeno[1,2,3-cd]pyrene	0.5	**1.4 J**	NE
Arsenic	13	**18 J**	**20.3**
Lead	63	**120 J**	NE
Mercury	0.18	**1.1 J**	NE

Sample Number:	6NYCRR 375 Unrestricted Use SCO	CF-SB-141 14-15	CF-SB-141 23-25
Depth(ft bgs):		14-15	23-25
Sample Date:		5/21/2004	5/21/2004
Units:		mg/kg	mg/kg
Acetone	0.05	**0.23 J**	**0.11 J**
Benzene	1	**3**	ND
Benzo[a]pyrene	1	**1.9**	ND
Benzo[k]fluoranthene	0.8	**1.2**	ND
Chrysene	1	**2.4**	ND
Indeno[1,2,3-cd]pyrene	0.5	**1.2**	ND



Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-116	CF-SB-116
Depth(ft bgs):		12.5-15	15-15.5
Sample Date:		5/11/2004	5/11/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	NE	**34.2 J**
Benzo(a)pyrene	1	**1.5 J**	**25.2 J**
Benzo(b)fluoranthene	5.6	NE	**15.6 J**
Dibenz(a,h)anthracene	0.56	ND	**4.5 J**
Indeno(1,2,3-cd)pyrene	5.6	ND	**10.1**
Arsenic	16	**34.4**	NA

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-134	CF-SB-134
Depth(ft bgs):		11-11.5	19-20
Sample Date:		5/19/2004	5/19/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	**25J**	
Benzo(a)pyrene	1	**15J**	
Benzo(b)fluoranthene	5.6	**9.1J**	
Dibenz(a,h)anthracene	0.56	**3.1J**	

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-110	CF-SB-110
Depth(ft bgs):		10-15	15-16
Sample Date:		5/10/2004	5/10/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	**32**	**7.17J**
Benzo(a)pyrene	1	**24.7**	**5.71J**
Benzo(b)fluoranthene	5.6	**12.7**	NE
Dibenz(a,h)anthracene	0.56	**4.85**	**1.15J**
Indeno(1,2,3-cd)pyrene	5.6	**9.35**	NE
Arsenic	16	**26.4**	NE

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-135	CF-SB-135
Depth(ft bgs):		14.5-15	21-25
Sample Date:		5/19/2004	5/19/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	**15J**	ND
Benzo(a)pyrene	1	**9.3J**	**1.2J**
Benzo(b)fluoranthene	5.6	**8.8J**	ND
Dibenz(a,h)anthracene	0.56	**2J**	ND
Arsenic	16	**33.1**	NE

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-115	CF-SB-115
Depth(ft bgs):		14-15	21-25
Sample Date:		5/11/2004	5/11/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	**15.8**	
Benzo(a)pyrene	1	**12.2**	
Benzo(b)fluoranthene	5.6	**6.28**	
Dibenz(a,h)anthracene	0.56	**2.33**	
Arsenic	16	**27.8**	

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-136	CF-SB-136
Depth(ft bgs):		13-14	19-20
Sample Date:		5/19/2004	5/19/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	**11J**	
Benzo(a)pyrene	1	**13J**	
Benzo(b)fluoranthene	5.6	**6.4J**	
Dibenz(a,h)anthracene	0.56	**2.3J**	
Arsenic	16	**18**	

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-128	CF-SB-128
Depth(ft bgs):		17-18	21-25
Sample Date:		5/18/2004	5/18/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	**69**	
Benzo(a)pyrene	1	**50**	
Benzo(b)fluoranthene	5.6	**28J**	
Chrysene	56	**72**	
Indeno(1,2,3-cd)pyrene	5.6	**20J**	
Arsenic	16	**30.3J**	

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-137	CF-SB-137	CF-SB-137
Depth(ft bgs):		21.5-20	22.5-23.5	27.5-28
Sample Date:		5/20/2004	5/20/2004	5/20/2004
Units:		mg/kg	mg/kg	mg/kg
Acenaphthene	500	NE	**867**	NE
Anthracene	500	NE	**519**	NE
Fluoranthene	500	NE	**558**	NE
Naphthalene	500	NE	**999**	NE
Phenanthrene	500	NE	**1400**	NE
Pyrene	500	NE	**735**	NE
Benzo(a)anthracene	5.6	**140J**	**301**	**46**
Benzo(a)pyrene	1	**93J**	**251**	**37.5**
Benzo(b)fluoranthene	5.6	**46J**	**189**	**28.9**
Benzo(k)fluoranthene	56	NE	**66.2**	NE
Chrysene	56	**160J**	**318**	NE
Dibenz(a,h)anthracene	0.56	**17J**	**50.8**	**4.26**
Indeno(1,2,3-cd)pyrene	5.6	**28J**	**115**	**14.6**
Arsenic	16	**29.4**	**25.6**	NA

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-123
Depth(ft bgs):		15-17
Sample Date:		5/14/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**39**
Benzo(a)pyrene	1	**33**
Benzo(b)fluoranthene	5.6	**19J**
Indeno(1,2,3-cd)pyrene	5.6	**14J**
Arsenic	16	**37**
Mercury	2.8	**3.1J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-120	CF-SB-120	CF-SB-120 (DUP)
Depth(ft bgs):		10-15	17-18	17-18
Sample Date:		5/13/2004	5/13/2004	5/13/2004
Units:		mg/kg	mg/kg	mg/kg
Acenaphthene	500	**8.3 J**	**2200J**	NE
Acenaphthylene	500	**0.97 J**	**960J**	NE
Anthracene	500	**6.7 J**	**2600J**	NE
Benzo(g,h,i)perylene	500	**1.8 J**	**780J**	NE
Fluoranthene	500	**9.3 J**	**4500J**	NE
Fluorene	500	2.2 U	**2000J**	NE
Naphthalene	500	**4 J**	**1400J**	**1300J**
Phenanthrene	500	**16 J**	**7400J**	**990J**
Pyrene	500	**13 J**	**3800J**	NE
Benzo(a)anthracene	5.6	**4.9 J**	**1700J**	**200J**
Benzo(a)pyrene	1	**3.7J**	**1500J**	**140J**
Benzo(b)fluoranthene	5.6	**2 J**	**1200J**	**110J**
Benzo(k)fluoranthene	56	**2.2 J**	**1000J**	**100J**
Chrysene	56	**4.7 J**	**1800J**	**210J**
Indeno(1,2,3-cd)pyrene	5.6	**1.2 J**	**790J**	**69J**
Arsenic	16	**22**	**51.4J**	**16.3**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-126
Depth(ft bgs):		20-22
Sample Date:		5/14/2004
Units:		mg/kg
Acenaphthene	500	**754**
Anthracene	500	**791**
Fluoranthene	500	**589**
Naphthalene	500	**2160**
Phenanthrene	500	**1380**
Pyrene	500	**652**
Benzo(a)anthracene	5.6	**245**
Benzo(a)pyrene	1	**207**
Benzo(b)fluoranthene	5.6	**177**
Benzo(k)fluoranthene	56	**69.5**
Chrysene	56	**228**
Dibenz(a,h)anthracene	0.56	**34**
Indeno(1,2,3-cd)pyrene	5.6	**90.4**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-121	CF-SB-121
Depth(ft bgs):		18-19.5	19.5-20
Sample Date:		5/13/2004	5/13/2004
Units:		mg/kg	mg/kg
Acenaphthene	500	**851**	NE
Anthracene	500	**594**	NE
Fluoranthene	500	**996**	**712**
Fluorene	500	**535**	NE
Naphthalene	500	**3000**	**1830**
Phenanthrene	500	**1810**	**1020**
Pyrene	500	**933**	**542**
Benzo(a)anthracene	5.6	**370**	**266**
Benzo(a)pyrene	1	**329**	**249**
Benzo(b)fluoranthene	5.6	**309**	**268**
Benzo(k)fluoranthene	56	**119**	**92.3**
Chrysene	56	**352**	**209**
Dibenz(a,h)anthracene	0.56	**55**	**49.4**
Indeno(1,2,3-cd)pyrene	5.6	**171**	**151**
Arsenic	16	**37.6**	NA
Mercury	2.8	**4.3J**	NA

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-124
Depth(ft bgs):		13-15
Sample Date:		5/14/2004
Units:		mg/kg
Dibenz(a,h)anthracene	0.56	**0.77**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-127	CF-SB-127
Depth(ft bgs):		19-20	21-22
Sample Date:		5/17/2004	
Units:		mg/kg	
Acenaphthene	500	**709**	
Anthracene	500	**638**	
Fluoranthene	500	**919**	
Fluorene	500	**511**	
Naphthalene	500	**2030**	
Phenanthrene	500	**1720**	
Pyrene	500	**875**	
Benzo(a)anthracene	5.6	**396**	
Benzo(a)pyrene	1	**338**	
Benzo(b)fluoranthene	5.6	**324**	
Benzo(k)fluoranthene	56	**102**	
Chrysene	56	**375**	
Dibenz(a,h)anthracene	0.56	**66.1**	
Indeno(1,2,3-cd)pyrene	5.6	**169**	
Arsenic	16	**35.9J**	
Mercury	2.8	**3.1J**	

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-119
Depth(ft bgs):		17-18.5
Sample Date:		5/12/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**172**
Benzo(a)pyrene	1	**123**
Benzo(b)fluoranthene	5.6	**7.4J**
Indeno(1,2,3-cd)pyrene	5.6	**6.2J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-122
Depth(ft bgs):		17.5-20
Sample Date:		5/13/2004
Units:		mg/kg
Fluoranthene	500	**640**
Naphthalene	500	**2400**
Phenanthrene	500	**1100**
Pyrene	500	**510**
Benzo(a)anthracene	5.6	**230J**
Benzo(a)pyrene	1	**190J**
Benzo(b)fluoranthene	5.6	**130J**
Benzo(k)fluoranthene	56	**170J**
Chrysene	56	**210J**
Dibenz(a,h)anthracene	0.56	**41J**
Indeno(1,2,3-cd)pyrene	5.6	**76J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-118	CF-SB-118
Depth(ft bgs):		16-17	17-17.5
Sample Date:		5/12/2004	5/10/2004
Units:		mg/kg	mg/kg
Acenaphthene	500	**758**	**1790J**
Anthracene	500	**560**	**1910J**
Benzo(g,h,i)perylene	500	NE	**730J**
Fluoranthene	500	**690**	**3600J**
Fluorene	500	NE	**1790J**
Naphthalene	500	**1390**	**5580**
Phenanthrene	500	**1600**	**6020**
Pyrene	500	**817**	**2820J**
Benzo(a)anthracene	5.6	**344**	**1610J**
Benzo(a)pyrene	1	**283**	**1400J**
Benzo(b)fluoranthene	5.6	**228**	**1620J**
Benzo(k)fluoranthene	56	**94.3J**	**576J**
Chrysene	56	**328**	**1710J**
Dibenz(a,h)anthracene	0.56	**47.1J**	**208J**
Indeno(1,2,3-cd)pyrene	5.6	**93.4J**	**873J**
Dibenzofuran	350	NE	**1470J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-130
Depth(ft bgs):		22-25
Sample Date:		5/19/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**18J**
Benzo(a)pyrene	1	**15J**
Benzo(b)fluoranthene	5.6	**11J**
Dibenz(a,h)anthracene	0.56	**3.5J**
Indeno(1,2,3-cd)pyrene	5.6	**7.1J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-131	CF-SB-131
Depth(ft bgs):		17-18	18-19
Sample Date:		5/19/2004	5/19/2004
Units:		mg/kg	mg/kg
Acenaphthene	500	**585**	NE
Naphthalene	500	**1060**	NE
Phenanthrene	500	**858**	NE
Benzo(a)anthracene	5.6	**149**	**8.09**
Benzo(a)pyrene	1	**104**	**6.37**
Benzo(b)fluoranthene	5.6	**74.8**	**6.06**
Chrysene	56	**156**	NE
Dibenz(a,h)anthracene	0.56	**13.1**	NE
Indeno(1,2,3-cd)pyrene	5.6	**38.5**	NE

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-138
Depth(ft bgs):		18-20
Sample Date:		5/20/2004
Units:		mg/kg
Phenanthrene	500	**593**
Benzo(a)anthracene	5.6	**133**
Benzo(a)pyrene	1	**107**
Benzo(b)fluoranthene	5.6	**88.8**
Chrysene	56	**129**
Dibenz(a,h)anthracene	0.56	**20.9**
Indeno(1,2,3-cd)pyrene	5.6	**47.2**
Arsenic	16	**50**
Mercury	2.8	**3.4J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-111
Depth(ft bgs):		14.5-15
Sample Date:		5/10/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**37.5**
Benzo(a)pyrene	1	**29.4**
Benzo(b)fluoranthene	5.6	**14**
Dibenz(a,h)anthracene	0.56	**5.97**
Indeno(1,2,3-cd)pyrene	5.6	**11.5**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-106
Depth(ft bgs):		12-13
Sample Date:		5/6/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**43**
Benzo(a)pyrene	1	**27**
Benzo(b)fluoranthene	5.6	**25J**
Dibenz(a,h)anthracene	0.56	**5.3J**
Indeno(1,2,3-cd)pyrene	5.6	**7.8J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-114A
Depth(ft bgs):		13-14
Sample Date:		5/11/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**6.3**
Benzo(a)pyrene	1	**4.3**
Dibenz(a,h)anthracene	0.56	**0.77J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-142
Depth(ft bgs):		13.5-15
Sample Date:		11/20/2006
Units:		mg/kg
Benzo(a)anthracene	5.6	**15**
Benzo(a)pyrene	1	**11**
Dibenz(a,h)anthracene	0.56	**1.3J**
Arsenic	16	**37.9**
Lead	1000	**1480**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-139	CF-SB-139
Depth(ft bgs):		7.5-10	13-15
Sample Date:		5/20/2004	5/20/2004
Units:		mg/kg	mg/kg
Acenaphthene	500	NE	**572**
Anthracene	500	NE	**958**
Fluoranthene	500	NE	**541**
Naphthalene	500	NE	**901**
Phenanthrene	500	NE	**1200**
Pyrene	500	NE	**666**
Benzo(a)anthracene	5.6	**7.9**	**284**
Benzo(a)pyrene	1	**6.3**	**233**
Benzo(b)fluoranthene	5.6	NE	**182**
Benzo(k)fluoranthene	56	NE	**62.8**
Chrysene	56	NE	**337**
Dibenz(a,h)anthracene	0.56	**1.2J**	**36.5**
Indeno(1,2,3-cd)pyrene	5.6	NE	**96.6**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-145	CF-SB-145
Depth(ft bgs):		10-12	17.5-20
Sample Date:		11/20/2006	11/20/2006
Units:		mg/kg	mg/kg
Benzo(a)pyrene	1	**2.9 J**	NE
Arsenic	16	**16 J**	**20.3**

Sample Number:		CF-SB-148
Depth(ft bgs):	6NYCRR 375 Restricted Use Commercial SCO	9-10
Sample Date:		11/20/2006
Units:		mg/kg
Benzo(a)pyrene	1	**4.5 J**
Dibenz(a,h)anthracene	0.56	**0.61 J**
Arsenic	16	**22 J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-109A	CF-SB-109A
Depth(ft bgs):		12-15	15-20
Sample Date:		5/7/2004	5/7/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	NE	**55**
Benzo(a)pyrene	1	**1.7J**	**40**
Benzo(b)fluoranthene	5.6	NE	**18**
Dibenz(a,h)anthracene	0.56	ND	**7J**
Indeno(1,2,3-cd)pyrene	5.6	NE	**12J**
Arsenic	16	**32.7**	NE
Mercury	2.8	**2.8**	NE

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-133
Depth(ft bgs):		8-9.5
Sample Date:		5/19/2004
Units:		mg/kg
Acenaphthene	500	**1750J**
Anthracene	500	**2450J**
Benzo(g,h,i)perylene	500	**755**
Fluoranthene	500	**9100**
Fluorene	500	**1860J**
Naphthalene	500	**4200**
Phenanthrene	500	**7140**
Pyrene	500	**3710**
Benzo(a)anthracene	5.6	**1790J**
Benzo(a)pyrene	1	**1660**
Benzo(b)fluoranthene	5.6	**1850J**
Benzo(k)fluoranthene	56	**567**
Chrysene	56	**1430**
Dibenz(a,h)anthracene	0.56	**374J**
Indeno(1,2,3-cd)pyrene	5.6	**964**
Dibenzofuran	350	**1550J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-117
Depth(ft bgs):		10-12
Sample Date:		5/10/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**33**
Benzo(a)pyrene	1	**23.2**
Benzo(b)fluoranthene	5.6	**13.2**
Dibenz(a,h)anthracene	0.56	**4.62**
Indeno(1,2,3-cd)pyrene	5.6	**9.49**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-112
Depth(ft bgs):		13-14
Sample Date:		5/10/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**55.2**
Benzo(a)pyrene	1	**40.6**
Benzo(b)fluoranthene	5.6	**25.3**
Dibenz(a,h)anthracene	0.56	**8.33**
Indeno(1,2,3-cd)pyrene	5.6	**16.5**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-108
Depth(ft bgs):		13-15
Sample Date:		5/7/2004
Units:		mg/kg
Benzo(a)pyrene	1	**1.5J**
Arsenic	16	**24.7**
Mercury	2.8	**2.8J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-107	CF-SB-107	CF-SB-107
Depth(ft bgs):		9-10	12-13	15-18
Sample Date:		5/6/2004	5/6/2004	5/6/2004
Units:		mg/kg	mg/kg	mg/kg
Acenaphthene	500	NE	**540**	NE
Naphthalene	500	NE	**1200**	NE
Phenanthrene	500	NE	**850**	NE
Benzo(a)anthracene	5.6	**9.9**	**130J**	NE
Benzo(a)pyrene	1	**10**	**87J**	NE
Benzo(b)fluoranthene	5.6	NE	**45J**	ND
Benzo(k)fluoranthene	56	NE	**56J**	NE
Chrysene	56	NE	**150J**	NE
Dibenz(a,h)anthracene	0.56	**1.9J**	**14J**	ND
Indeno(1,2,3-cd)pyrene	5.6	NE	**26J**	NE
Arsenic	16	NE	**17.8**	ND
Barium	400	NE	**NE**	**418J**
Mercury	2.8	NE	**2.8**	ND

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-101	CF-SB-101
Depth(ft bgs):		3-5	10-11
Sample Date:		5/3/2004	5/3/2004
Units:		mg/kg	mg/kg
Naphthalene	500	NE	**1100**
Benzo(a)anthracene	5.6	**47J**	**88J**
Benzo(a)pyrene	1	**18J**	**71J**
Benzo(b)fluoranthene	5.6	**37J**	**37J**
Chrysene	56	**60J**	**87J**
Dibenz(a,h)anthracene	0.56	ND	**11J**
Indeno(1,2,3-cd)pyrene	5.6	ND	**23J**
Arsenic	16	**39.8J**	NE
Cyanide, Total	27	**134**	ND

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-103
Depth(ft bgs):		12-13
Sample Date:		5/4/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**18**
Benzo(a)pyrene	1	**10**
Benzo(b)fluoranthene	5.6	**11J**
Dibenz(a,h)anthracene	0.56	**1.7J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-95
Depth(ft bgs):		10-15
Sample Date:		4/28/2004
Units:		mg/kg
Benzo(a)pyrene	1	**5J**
Benzo(b)fluoranthene	5.6	**7.4J**
Dibenz(a,h)anthracene	0.56	**1J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-100
Depth(ft bgs):		3-5
Sample Date:		5/3/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**14 J**
Benzo(a)pyrene	1	**4.4 J**
Benzo(b)fluoranthene	5.6	**6.8 J**
Arsenic	16	**27.4 J**
Cyanide, Total	27	**61.4**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-96A
Depth(ft bgs):		16.5-17.5
Sample Date:		4/28/2004
Units:		mg/kg
Naphthalene	500	**1300**
Phenanthrene	500	**780**
Benzo(a)anthracene	5.6	**190**
Benzo(a)pyrene	1	**170J**
Benzo(b)fluoranthene	5.6	**250J**
Chrysene	56	**180J**
Dibenz(a,h)anthracene	0.56	**34J**
Indeno(1,2,3-cd)pyrene	5.6	**70J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-102	CF-SB-102
Depth(ft bgs):		1-5	10-12
Sample Date:		5/3/2004	5/3/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	**46J**	**28**
Benzo(a)pyrene	1	**5.2J**	**40**
Benzo(b)fluoranthene	5.6	**21J**	**24**
Chrysene	56	**67J**	NE
Dibenz(a,h)anthracene	0.56	**7.2J**	**7.3J**
Indeno(1,2,3-cd)pyrene	5.6	**12J**	**14J**
Arsenic	16	**39.2J**	NE
Cyanide, Total	27	**160**	ND

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-96
Depth(ft bgs):		5-10
Sample Date:		4/27/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**11**
Benzo(a)pyrene	1	**12**
Benzo(b)fluoranthene	5.6	**8.8**
Dibenz(a,h)anthracene	0.56	**3.1J**
Indeno(1,2,3-cd)pyrene	5.6	**7.1J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-97
Depth(ft bgs):		5-10
Sample Date:		4/26/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**12**
Benzo(a)pyrene	1	**15**
Benzo(b)fluoranthene	5.6	**11**
Dibenz(a,h)anthracene	0.56	**3.2J**
Indeno(1,2,3-cd)pyrene	5.6	**9.7J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-104	CF-SB-104 (DUP)
Depth(ft bgs):		12-13	12-13
Sample Date:		5/5/2004	5/5/2004
Units:		mg/kg	mg/kg
Benzo(a)anthracene	5.6	**78**	**110**
Benzo(a)pyrene	1	**60**	**83J**
Benzo(b)fluoranthene	5.6	**50J**	**53J**
Benzo(k)fluoranthene	56	NE	**74J**
Chrysene	56	**66**	**91J**
Dibenz(a,h)anthracene	0.56	**10J**	**21J**
Indeno(1,2,3-cd)pyrene	5.6	**30J**	**42J**
Arsenic	16	**21.5J**	**22.9J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-105
Depth(ft bgs):		12-13
Sample Date:		5/5/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**72**
Benzo(a)pyrene	1	**90**
Benzo(b)fluoranthene	5.6	**60J**
Chrysene	56	**71**
Dibenz(a,h)anthracene	0.56	**11J**
Indeno(1,2,3-cd)pyrene	5.6	**19J**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-141
Depth(ft bgs):		14-15
Sample Date:		5/21/2004
Units:		mg/kg
Benzo(a)pyrene	1	**1.9**
Arsenic	16	**31.4**

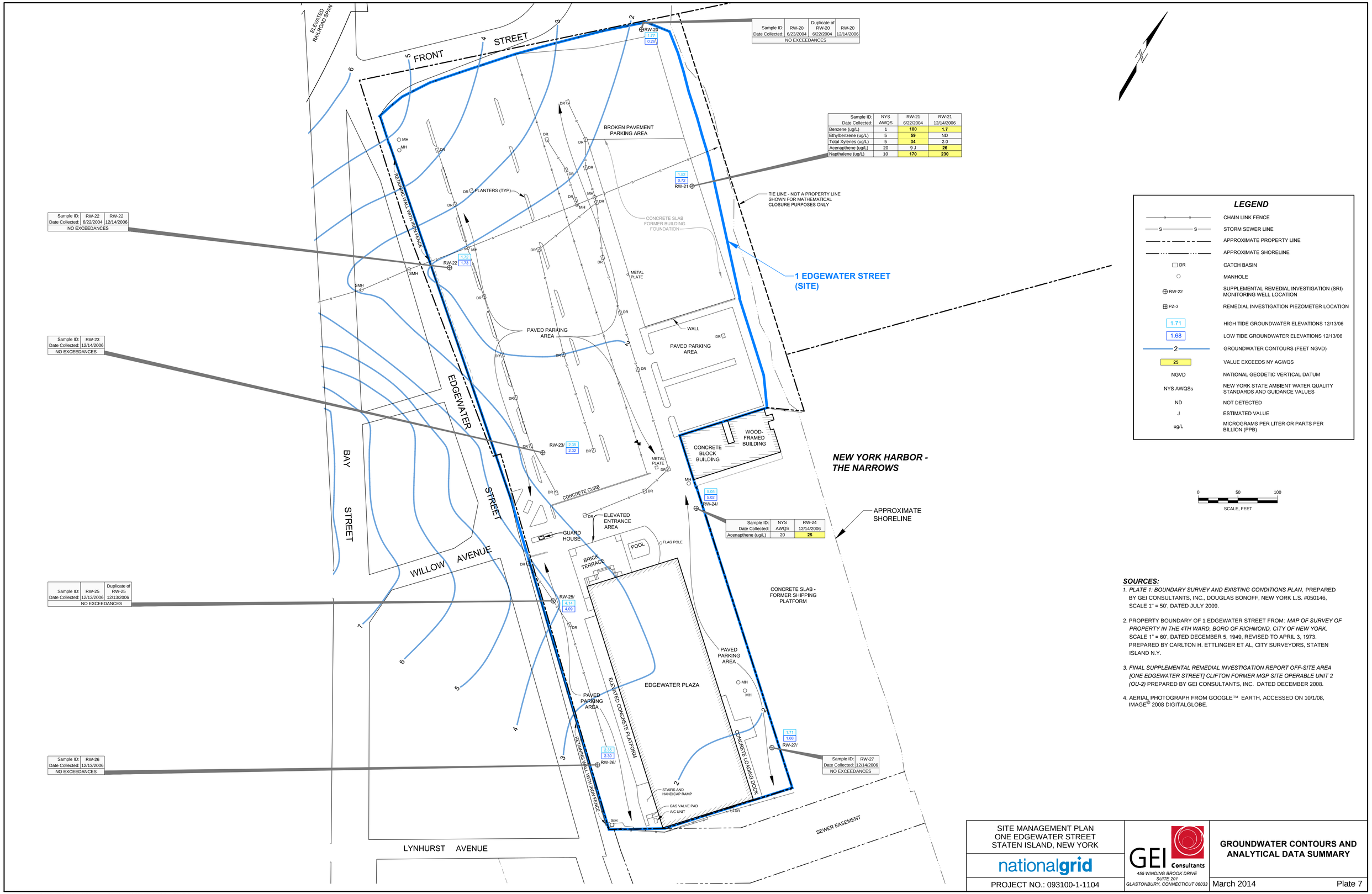
Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-140
Depth(ft bgs):		11.5-12.5
Sample Date:		5/21/2004
Units:		mg/kg
Benzo(a)anthracene	5.6	**62**
Benzo(a)pyrene	1	**53**
Benzo(b)fluoranthene	5.6	**39**
Dibenz(a,h)anthracene	0.56	**9.4J**
Indeno(1,2,3-cd)pyrene	5.6	**40**
Mercury	2.8	**3.1**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-143
Depth(ft bgs):		10-12
Sample Date:		11/21/2006
Units:		mg/kg
Benzo(a)pyrene	1	**1.2**

Sample Number:	6NYCRR 375 Restricted Use Commercial SCO	CF-SB-144
Depth(ft bgs):		7.5-8.5
Sample Date:		11/20/2006
Units:		mg/kg
Benz[a]anthracene	5.6	**7.2**
Benzo[a]pyrene	1	**4.7**
Arsenic	16	**16.6**

SOURCES:

1. *PLATE 1: BOUNDARY SURVEY AND EXISTING CONDITIONS PLAN,* PREPARED BY GEI CONSULTANTS, INC., DOUGLAS BONOFF, NEW YORK L.S. #050146, SCALE 1" = 50', DATED JULY 2009.
2. PROPERTY BOUNDARY OF 1 EDGEWATER STREET FROM: *MAP OF SURVEY OF PROPERTY IN THE 4TH WARD, BORO OF RICHMOND, CITY OF NEW YORK.* SCALE 1" = 60', DATED DECEMBER 5, 1949, REVISED TO APRIL 3, 1973. PREPARED BY CARLTON H. ETTLINGER ET AL, CITY SURVEYORS, STATEN ISLAND N.Y.
3. *FINAL SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT OFF-SITE AREA [ONE EDGEWATER STREET] CLIFTON FORMER MGP SITE OPERABLE UNIT 2 (OU-2)* PREPARED BY GEI C



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4. AERIAL PHOTOGRAPH FROM GOOGLE™ EARTH, ACCESSED ON 10/1/08, IMAGE© 2008 DIGITALGLOBE.

SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

nationalgrid

PROJECT NO.: 093100-1-1104

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

GROUNDWATER CONTOURS AND ANALYTICAL DATA SUMMARY

March 2014

Plate 7

I:\Project\National Grid\CLIFTON\061140\Edgewater Site Mgmt\03-2014\Plates\Clifton ESMP-Samples.dwg

Appendix A

Soil Management and Excavation Work Plan

GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

Appendix A
Soil Management and Excavation Plan

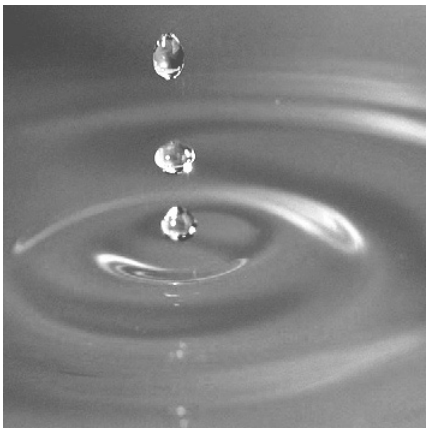
One Edgewater Street
Staten Island, New York

In association with:
Clifton Former Manufactured Gas Plant
Operable Unit 2
ACO Index No. D2-0001-98-04
Site ID: 2-43-023

Prepared for:
National Grid
287 Maspeth Avenue
Brooklyn, New York

Prepared by:
GEI Consultants, Inc., P.C.
400 Unicorn Park Drive
Woburn, MA 01801

March 2014



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1. Introduction

On behalf of National Grid, GEI Consultants, Inc., P.C. (GEI) has prepared this Soil Management and Excavation Work Plan for the One Edgewater Street located in the Clifton neighborhood of Staten Island, New York (Site). The Site location is shown in Figure 1 of the Site Management Plan (SMP). This Soil Management and Excavation Work Plan was prepared as a companion document (Appendix A) of the Site Management Plan (SMP) in order to manage residual manufactured gas plant (MGP) and petroleum impacts discovered during the supplemental remedial investigation (SRI) activities at the property.

This plan provides specific soil and groundwater management procedures for the property owner and subcontracted employees that are involved in ground intrusive activities to minimize the potential contact with soils containing residual impacts and concentrations of constituents of concern (COCs) above applicable regulatory criteria. The majority of residual impacts are isolated beneath the composite cover cap at depths greater than 7 feet below ground surface (bgs). However, there is an isolated area of residual impacts that is present below the composite cap and above 7 feet bgs within the southwest area of the parking lot. The approximate depths of the residual impacts are shown in Figure 3, Plate 6 and Plate 7 of the SMP. Landscaping and shallow utility excavations in the top six feet will generally not encounter MGP or petroleum related impacts except as indicated on Figure 3 of the SMP. However, landscaping and maintenance personnel should be aware of the potential. If any impacts are encountered during site work, regardless of depth or location, this plan should be followed. The property owner will notify National Grid and the NYSDEC in advance if intrusive activities are to be completed within areas and at depths that are anticipated to encounter impacted soils and groundwater containing concentrations of COCs above applicable regulatory criteria.

This plan is to be used for guidance and is used in conjunction with any applicable state, local or federal regulations. This plan was prepared by GEI in general accordance with the requirements in New York Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation, dated December 2002; 6 New York Code, Rules and Regulations (6 NYCRR) Part 375 Environmental Remedial Programs, dated December 14, 2006; and the Draft Site Management Plan guidelines provided by the NYSDEC in April 2009. All intrusive construction work within the impacted soils (Figure 3 of SMP) must also be conducted in accordance with the procedures defined in a health and safety Plan (HASP) and air monitoring plan as provided in this document. An example HASP is provided in Appendix B of the SMP.

This remainder of this Soil Management and Excavation Work Plan is organized into the following sections:

2 – Notifications	Discusses notification procedures to be completed prior to commencing intrusive activities.
3 – Training and Planning Requirements	Describes the health and safety training requirements for workers involved in and planning considerations for site work within impacted materials.
4 – Soil Management Procedures	Presents the procedures to be followed during intrusive construction activities for soil management.
5 – Water Management Procedures	Presents the procedures to be followed during intrusive construction activities to address groundwater and stormwater management.
6 – Reporting	Identifies the reporting requirements and information to be provided following the completion of intrusive construction activities.

2. Notifications

Advance notice must be provided to National Grid and NYSDEC whenever intrusive work is planned at the property within areas and at depths that are anticipated to encounter impacted soils and groundwater containing concentrations of COCs above applicable regulatory criteria. The property owner will provide notification to National Grid at least 15 business days in advance of any planned, non-emergency intrusive activities that could involve the disturbance of impacted soils and/or groundwater beneath the composite cover in areas of impacted material as provided above (Figure 3 of SMP). In the event of any unplanned work or emergency work, the property owner will provide a notification to National Grid at the time any emergency work will occur/is occurring. The property owner will provide documentation of intrusive activities that affect the composite cover system at the Site in accordance with Section 4 of the SMP.

Notifications will be made to:

National Grid Project Manager:

Name: Andrew Prophete

Address: 287 Maspeth Avenue, Brooklyn, New York 11211

Telephone: 718-963-5412

Fax: 718-963-5611

Email: Andrew.Prophete@nationalgrid.com

NYSDEC Project Manager:

Name: Richard Dana

Address: New York State Department of Environmental Conservation

Division of Environmental Remediation, Remedial Bureau C

625 Broadway Albany, New York 12233-7014

Telephone: 518-402-9662

Fax: 518-402-9679

Email: rhdana@gw.dec.state.ny.us

The Site owners' notification to National Grid and NYSDEC for work within impacted areas of the Site (Figure 3 of SMP) will include:

- A brief, detailed description of the work to be performed, including the location and areal extent, staging of excavated soils, plans for Site re-grading, intrusive elements or utilities to be installed.
- A schedule for the work, detailing the start and completion of all intrusive activity.
- A copy of the contractor's HASP, in electronic format. Specific training requirements are addressed below in Section 3.
- Selection of National Grid-approved disposal facility for potential soil and fluids.
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

National Grid will review and provide comments on all planned activities. National Grid may have a representative on-site, as appropriate, during any intrusive work activities to observe activities and document compliance with this plan.

3. Training and Planning Requirements

The following section provides the mandatory training and planning requirements needed prior to completing intrusive activities within impacted material at the property (Figure 3 of SMP). Because residual impacts remain at the property, any intrusive work within impacted soils must be completed under a site-specific HASP to protect workers engaged in intrusive activities that may come into contact with COCs. The property owner is responsible for the development of a HASP which must be reviewed and approved by a qualified environmental professional. Once prepared, the HASP must be submitted to National Grid for review and approval prior to conducting work. The HASP will require that workers involved in intrusive activities have specialized training to address the potential for contact with COCs, as required by the Occupational Safety and Health Administration (OSHA). An example HASP is provided in Appendix B of the SMP. A summary of concentrations of COCs that exceed established soil cleanup objectives in soils are located in Plate 2 of the SMP, and groundwater COCs are provided in Figure A3 of this report.

All workers engaged in intrusive activities within areas and at depths that are anticipated to encounter impacted soils and groundwater containing concentrations of COCs above applicable regulatory criteria must have:

- 40-hour OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) training (under 29 Code of Federal Regulations (CFR) 1910.120)
- 8-hour OSHA HAZWOPER annual refresher training
- Medical monitoring surveillance program

Workers are required to provide copies of the OSHA training and medical testing documentation prior to participating in work activities. Evidence of the necessary training must be provided to National Grid prior to commencing intrusive operations within areas with impacted soils and groundwater.

To the extent required, a community air monitoring plan (CAMP) will be implemented as part of intrusive activities within impacted areas of the property to monitor for the off-site migration of Site contaminants and dust to minimize the impact of Site activities. Any CAMP will comply with the New York State Department of Health (NYSDOH) requirements. A copy the NYSDOH generic CAMP requirements are provided in the example HASP in Appendix B of the SMP. CAMP monitoring levels are provided in section 4.3.

It is the responsibility of the property owner and property owners' contractors to ensure compliance with all state, local or federal laws implicated by its performance of intrusive activities within impacted material at the property.

4. Soil Management Procedures

The following section provides the soil management procedures which are intended to address intrusive activities performed at the property and governed by this Soil Management and Excavation Work Plan and the procedures for handling residual contamination in soils and groundwater that exceed applicable criteria. Intrusive construction work in areas with impacted soils and groundwater (Figure 3 of SMP) must also be conducted in accordance with the procedures defined in a HASP (Appendix B of SMP) and CAMP as provided in this document. The remainder of this section summarizes the procedures to be followed during the implementation of intrusive activities. All intrusive activities must be in compliance with this plan, information provided in DER-10 Technical Guide and 29 CFR 1910 and 1926, as well as all other applicable state, local or federal laws and regulations.

4.1 Pre-Mobilization Activities

The property owner will complete pre-mobilization Site preparation activities prior to commencing intrusive work activities to minimize potential construction delays. The property owner will provide National Grid with a summary of the proposed scope of work including the location of the work, the expected volume of soil to be excavated, the means and methods for the proposed staging, and the ultimate planned disposal of soils generated. The plan will indicate whether proposed activities will require dewatering, proposed containment of dewatering liquids and planned disposal options for dewatering liquids.

The property owner will establish proposed decontamination areas at the property. Dust mitigation and vapor mitigation supplies/equipment will be procured to address potential conditions that could be encountered during intrusive activities.

Sediment controls including silt fence and/or hale bale checks will be erected prior to commencing intrusive operations. Details of stormwater and sediment controls are provided in section 5.

4.2 Excavation Activities

Excavation activities will be completed in accordance with the descriptions provided in this plan.

4.2.1 Soil Screening

Visual, olfactory and instrument-based (photo-ionization detector (PID)) soil screening will be performed by a qualified environmental professional during all remedial and development

excavations into known or potentially contaminated material. Soil conditions will be documented and recorded. Soil screening will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

4.2.2 Excavation

All excavation activities and handling of excavated soils will be overseen by a qualified environmental professional. The property owner and subcontractors performing this work are responsible for the safe performance of all invasive work. The HASP will address safety concerns with excavations at the property. The presence of easements and the exact location of on-site utilities should be field verified prior to completing excavation activities. Stormwater drainage line(s) are present at the property based upon survey information and field investigations completed at the property. The exact location of on-site utilities should be field verified prior to completing excavation activities in the vicinity of the stormwater drain lines. The property owner and contractors are responsible for the structural integrity of excavations and for structures that may be affected by excavations such as subsurface utilities.

Excavated soils will be screened in accordance with soil screening procedures provided above in section 4.2.1. Soils exhibiting potential MGP-related impacts will be segregated for disposal. Excavated soils which do not exhibit visual impacts are to be returned to the excavation upon completion of the work.

4.2.3 Stockpile Methods

Small volumes of soil can be containerized in United States Department of Transportation-approved 55-gallon drums or plastic-lined roll-off containers. Roll-off-containers should be covered and secured daily to eliminate rainwater collection within the containers.

Non-containerized soil stockpiles will be segregated based on previous environmental data and screening results, as described in previous sections. Material will be segregated into the following types, when applicable: material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil. Stockpiles will be encircled with a berm and/or silt fence (Figure A1). Hay bales will be used as needed near catch basins, surface waters and other discharge points. Excavated soils will be placed on a polyethylene sheeting liner that is at least 6-millimeter (mil) thick. Stockpiles will be kept covered while not in use with appropriately anchored tarps to minimize the erosion/run-off and/or windblown dust emissions.

The sheeting cover must possess the necessary physical strength to resist deterioration due to the elements. Stockpiles will be routinely inspected, and if the cover does become damaged

or displaced, it must be promptly replaced and/or secured. The movement of soil stockpiles should be minimized to maintain the integrity of the cover/ liner.

4.2.4 Dust and Vapor Suppression

Dust and vapor suppression measures will be available to address and mitigate dust/vapor emissions during intrusive site activities. The property owner and contractors should complete work in a way that minimizes, to the extent reasonably practicable, the generation of dust and odors including minimizing the size of the excavations, backfilling open excavations and covering the excavation with polyethylene sheeting. Dust and vapor mitigation measures such as water spray should be available and implemented when action levels for the HASP and/or CAMP are exceeded or when deemed necessary. Dust and vapor will be monitored as part of the HASP and CAMP. Action levels and response actions to excursions of the action levels are provided below in subsection 4.3.

4.2.5 Materials Transportation

Stockpiled and segregated soils will be transported to a National Grid-approved thermal desorption disposal facility designated by National Grid at the time of disposal. National Grid shall complete all paperwork and other manifests required for the transport of such soils, designating National Grid as the generator of same. All transport of materials will be performed by licensed haulers in accordance with appropriate state, local or federal regulations. Material transported by trucks exiting the property will be secured with tight-fitting hard top covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquids they will be stabilized with water reducing amendments that are approved by the disposal facility. Polyethylene liners will be used in the trucks, as necessary.

Trucks leaving the property will be visually inspected (i.e., box sidewalls, box tailgate, and tires, etc.) and cleaned with brushes/brooms and will be decontaminated with pressure sprayers, if necessary, prior to being allowed to leave the property. The residues generated from the decontamination procedures will be contained and stored with MGP-related soils/ fluids. The entrance to the property will be inspected daily for evidence of tracking of soils and cleaned as needed. All trucks loaded with materials will exit the vicinity of the property using only these approved truck routes as provided in Figure A2. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes (Figure A2). This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped

truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; (f) overall safety in transport; and (g) community input [where necessary].

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site. Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

4.2.6 Materials Testing and Disposal

Representative soil samples will be collected from the stockpiled soils and submitted to a NYSDOH-accredited laboratory prior to disposal. A list of NYSDOH-approved contract protocols laboratories is available at the following internet website: http://www.wadsworth.org/labcert/elap/elap.html. Each soil sample will be analyzed for the chemical parameters and the frequency required by the approved disposal facility. No soils shall be shipped off the property without laboratory analysis. Prior to shipment, the authorization to ship the soils will be obtained from the disposal facility. Soils will be shipped from the property directly to a National Grid-approved thermal desorption disposal facility designated by National Grid at the time of disposal. The property owner will contact National Grid for the approved disposal facility. The disposal facility will provide a quantity of materials received along with documentation of the materials destruction at the completion of the project. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Site Management Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts. Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2.

4.2.7 Backfill and Materials Reuse

If excavated soil is not visually impacted with MGP-related or other contaminants, and other field screening methods (e.g., PID) do not indicate the presence of contaminants, the excavated material may be returned to the original excavation in accordance with discussions with the NYSDEC and National Grid. Impacted soils will not be reused within a cover soil layer, within landscaping berms, as backfill for subsurface utility lines or anywhere else other than its original location. The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. All imported soils will meet NYSDEC approved backfill or cover soil quality standards for restricted commercial SCOs. These soil quality objectives are listed in Table 1. Non-compliant soils will not be imported onto the property without prior approval by NYSDEC and National Grid. Material from industrial sites, spill sites,

other environmental remediation sites or potentially contaminated sites, and solid waste, will not be imported to the property.

4.2.8 Cover System Restoration

After the completion of soil removal and any other invasive activities, the cover system will be restored. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the composite cover system. A figure showing the modified surface will be included in the subsequent Periodic Report Review and in any updates to the Site Management Plan.

4.2.9 Halting of Intrusive Activities

In the event that potential MGP-related impacts are encountered at unexpected depth or locations, Site activities will be suspended and National Grid will be notified and will evaluate the observed conditions in a manner and timeframe that does not interfere with the property owner's construction schedule, to the extent reasonably feasible. National Grid may determine that laboratory testing is required to evaluate the observed impacts for chemical concentrations and characteristics. If the encountered materials are determined to be associated with MGP materials, then the materials will be segregated and stockpiled/contained with MGP-related materials for disposal.

4.3 Air Monitoring

Air monitoring will be conducted during intrusive Site activities to ensure that activities on-site are not adversely affecting the air quality conditions for Site workers in the work zone or members of the surrounding community.

4.3.1 Work Zone

Monitoring in the work zone and/or worker breathing zone will be performed during intrusive activities. Work zone monitoring is to be conducted in order to identify airborne levels of Site-related compounds health and safety hazards and to determine the appropriate level of worker protection needed on-site. All workers involved in intrusive activities or materials handling will have received training and monitoring as described in section 3. Monitoring will be completed on a real-time basis with hand held monitoring equipment. The parameters that require monitoring will be provided in the HASP that is reviewed and approved by a CIH. The HASP provided in Appendix B of the SMP contains real-time air monitoring action levels.

4.3.2 Community Air Monitoring

Real-time air monitoring for total volatile organics (TVOCs) and respirable particulates will be conducted upwind and downwind of the work area along the Site perimeter. Figure 3A in the SMP provides a summary of the potential positioning of the CAMP monitoring locations based upon information regarding the prevailing wind direction; however, the exact location of the stations is dependent upon the daily prevailing wind direction. The community air monitoring will be conducted to conform to the CAMP guidelines presented by the New York State Department of Health in Appendix 1A of the Draft NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation. Table 2 provides a summary of CAMP action levels. Exceedances observed in the CAMP will be reported to National Grid.

TABLE 2: Community Air Monitoring Plan Action Levels

	Action Level[1]	Site Action
Total Volatile Organic Compounds	<5 ppm	Continue work activity and monitoring.
	>5 ppm but <25 ppm	Temporarily stop work, continue monitoring, identify the source of vapor, and take corrective action.
	>25 ppm	Stop work and take corrective actions to mitigate.
Particulate Matter (µg/m^3)	<100 µg/m^3	Continue work activity and monitoring.
	≥100 µg/m^3 but <150 µg/m^3	Continue work, monitor and employ dust suppression techniques.
	>150 µg/m^3	Stop work, continue monitoring, take corrective action, and re-evaluate activities/ methods.

ppm- stands for parts per millions

µg/m^3 - stands for microgram/cubic meter

[1]- Based upon a 15-minute average concentrations

5. Water Management Procedures

The following section provides a water management procedure to address the handling of groundwater dewatering liquids and stormwater at the property. Residual groundwater impacts have been identified at the property as shown on Figure 3, Plate 6 and Plate 7 of the SMP. Intrusive construction work must also be conducted in accordance with the procedures defined in an approved HASP.

5.1 Fluids Management

All impacted groundwater dewatering and equipment decontamination liquids will be contained and pumped into either 55-gallon USDOT drums or frac storage tank(s). Impacted liquids will not be discharged back to the land surface or subsurface. Alternatively, the property owner may secure a discharge permit from the New York City Department of Environmental Protection (NYCDEP) prior to discharge activities commencing. If obtained, a copy of the permit will be provided to National Grid prior to the start of work. Periodic laboratory testing of waters discharged to the sanitary sewer will be required to document compliance with levels provided in the permit.

A sample of the generated liquids will be submitted to a NYSDOH-approved laboratory for analysis for the National Grid-approved liquid disposal facility parameters. The liquids will be removed and transported by a licensed waste hauler with applicable state, local or federal regulations.

Solid material collected in the frac tank(s), as a result of settling with the tank(s), will be bulked with the MGP-impacted soils and sent to an appropriately licensed National Grid-approved disposal facility as necessary. The accumulated sediments will be handled in accordance with the soil management procedures presented in Section 4. The removal of liquids and sediments within the frac tank(s) will be completed in accordance with the prepared HASP as well as applicable state, local or federal regulations.

5.2 Stormwater Management

The property owner will employ stormwater management measures to limit the erosion and sedimentation from stormwater flow on the property. A summary of the measures that will be employed to limit potential stormwater erosion at the property are provided below:

- Silt fencing or hay bales stormwater control measures will be installed around the perimeter of the construction area (Figure A1).

- Stormwater control measures will be inspected regularly and after storm events and necessary repairs will be made to maintain the integrity of the stormwater control measures.
- All undercutting or erosion of the silt fence to anchor shall be repaired immediately with appropriate backfill materials.
- Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.
- Accumulated sediments will be removed from the stormwater control measures, as required, to keep the stormwater controls functional. Accumulated sediments will be returned to the property.
- Potential discharge points will be inspected to determine whether stormwater erosion control measures are effective in limiting sedimentation at and emanating from the property.

A record of the installation and inspection of the stormwater control measures will be documented and provided as part of a summary report as indicated in Section 6.

6. Reporting

Once excavation or other intrusive activities are completed, the property owner must submit a report to National Grid for review. National Grid may forward a copy of the report to the NYSDEC and NYSDOH in accordance with the terms of National Grid's AOC with the NYSDEC. The report will include:

- A detailed description of the work performed including the location and areal extent, site re-grading, intrusive elements or utilities installed or handling of impacted soils and groundwater.
- A summary of environmental conditions identified in the work areas, including the conditions of soils and groundwater encountered, erosion and sediment controls employed, screening and monitoring results, and results from any sampling that was conducted.
- A summary of excavated soil volumes, including volumes reused or disposed of at a National Grid-approved disposal facility.
- A summary of the liquids generated during Site construction activities including volumes disposed of at a National Grid-approved disposal facility.
- Identification of disposal facilities for waste streams and confirmation from the disposal facility that the material were accepted and disposed of in accordance with applicable federal, state and local regulations.
- Identification of sources of backfill and associated chemical testing results.

Table

Table 1
Soil Cleanup Objectives
1 Edgewater Street
Staten Island, New York

Analytes	Unrestricted Use (ppm)	Residential Use (ppm)	Restricted-Residential Use (ppm)	Restricted-Commercial Use (ppm)	Restricted-Industrial Use (ppm)	Protection of Groundwater (ppm)	Protection of Ecological Resources (ppm)
Volatile Organic Compounds							
Acetone	0.05	100	100	500	1,000	0.05	2.2
Benzene	0.06	2.9	4.8	44	89	0.06	70
Butanone, 2-	0.12	100	100	500	1,000	0.12	100
Butylbenzene, n-	12	100	100	500	1,000	12	NE
Butylbenzene, tert-	5.9	100	100	500	1,000	5.9	NE
Butylbenzene,sec-	11	100	100	500	1,000	11	NE
Carbon tetrachloride	0.76	1.4	2.4	22	44	0.76	NE
Chlorobenzene	1.1	100	100	500	1,000	1.1	40
Chloroform	0.37	10	49	350	700	0.37	12
Dichlorobenzene,1,2-	1.1	100	100	500	1,000	1.1	NE
Dichlorobenzene,1,3-	2.4	17	49	280	560	2.4	NE
Dichlorobenzene,1,4-	1.8	9.8	13	130	250	1.8	20
Dichloroethane,1,1-	0.27	19	26	240	480	0.27	NE
Dichloroethane,1,2-	0.02	2.3	3.1	30	60	0.02	10
Dichloroethene, cis-1,2-	0.25	59	100	500	1,000	0.25	NE
Dichloroethene,1,1-	0.33	100	100	500	1,000	0.33	NE
Dioxane,1,4-	0.1	9.8	13	130	250	0.1	0.1
Ethylbenzene	1	30	41	390	780	1	NE
Methyl tert-butyl ether	0.93	62	100	500	1,000	0.93	NE
Methylene chloride	0.05	51	100	500	1,000	0.05	12
Naphthalene	12	100	100	500	1,000	12	NE
Propylbenzene, n-	3.9	100	100	500	1,000	3.9	NE
Tetrachloroethene	1.3	5.5	19	150	300	1.3	2
Toluene	0.7	100	100	500	1,000	0.7	36
Trans-1,2-dichloroethene	0.19	100	100	500	1,000	0.19	NE
Trichloroethane, 1,1,1-	0.68	100	100	500	1,000	0.68	NE
Trichloroethene	0.47	10	21	200	400	0.47	2
Trimethylbenzene, 1,2,4-	3.6	47	52	190	380	3.6	NE
Trimethylbenzene, 1,3,5-	8.4	47	52	190	380	8.4	NE
Vinyl chloride	0.02	0.21	0.9	13	27	0.02	NE
Xylene, total	0.26	100	100	500	1,000	1.6	0.26

Table 1
Soil Cleanup Objectives
1 Edgewater Street
Staten Island, New York

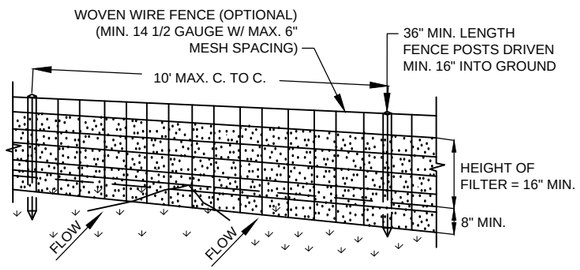
Analytes	Unrestricted Use (ppm)	Residential Use (ppm)	Restricted-Residential Use (ppm)	Restricted-Commercial Use (ppm)	Restricted-Industrial Use (ppm)	Protection of Groundwater (ppm)	Protection of Ecological Resources (ppm)
Semivolatile Organic Compounds							
Acenaphthene	20	100	100	500	1,000	98	20
Acenaphthylene	100	100	100	500	1,000	107	NE
Anthracene	100	100	100	500	1,000	1,000	NE
Benz[a]anthracene	1	1	1	5.6	11	1	NE
Benzo[a]pyrene	1	1	1	1	1.1	22	2.6
Benzo[b]fluoranthene	1	1	1	5.6	11	1.7	NE
Benzo[g,h,i]perylene	100	100	100	500	1,000	1,000	NE
Benzo[k]fluoranthene	0.8	1	3.9	56	110	1.7	NE
Chrysene	1	1	3.9	56	110	1	NE
Dibenz[a,h]anthracene	0.33	0.33	0.33	0.56	1.1	1,000	NE
Dibenzofuran	7	14	59	350	1,000	210	NE
Fluoranthene	100	100	100	500	1,000	1,000	NE
Fluorene	30	100	100	500	1,000	386	30
Hexachlorobenzene	0.33	0.33	1.2	6	12	3.2	NE
Indeno[1,2,3-cd]pyrene	0.5	0.5	0.5	5.6	11	8.2	NE
Methylphenol, 4-	0.33	34	100	500	1,000	0.33	NE
Cresol, m (methylphenol, 3-)	0.33	100	100	500	1,000	0.33	NE
Methylphenol,2-	0.33	100	100	500	1,000	0.33	NE
Pentachlorophenol	0.8	2.4	6.7	6.7	55	0.8	0.8
Phenanthrene	100	100	100	500	1,000	1,000	NE
Phenol	0.33	100	100	500	1,000	0.33	30
Pyrene	100	100	100	500	1,000	1,000	NE
Pesticides							
Aldrin	0.005	0.019	0.097	0.68	1.4	0.19	0.14
Alpha-bhc	0.02	0.097	0.48	3.4	6.8	0.02	0.04
Alpha-chlordane	0.094	0.91	4.2	24	47	2.9	1.3
Beta-BHC	0.036	0.072	0.36	3	14	0.09	0.6
DDD,4,4-	0.0033	2.6	13	92	180	14	0.0033
DDE,4,4-	0.0033	1.8	8.9	62	120	17	0.0033
DDT,4,4-	0.0033	1.7	7.9	47	94	136	0.0033
Delta-BHC	0.04	100	100	500	1,000	0.25	0.04
Dieldrin	0.005	0.039	0.2	1.4	2.8	0.1	0.006
Endosulfan I	2.4	4.8	24	200	920	102	NE
Endosulfan II	2.4	4.8	24	200	920	102	NE
Endosulfan sulfate	2.4	4.8	24	200	920	1,000	NE
Endrin	0.014	2.2	11	89	410	0.06	0.014
Gamma-BHC	0.1	0.28	1.3	9.2	23	0.1	6
Heptachlor	0.042	0.42	2.1	15	29	0.38	0.14
Silvex	3.8	58	100	500	1,000	3.8	NE

Table 1
Soil Cleanup Objectives
1 Edgewater Street
Staten Island, New York

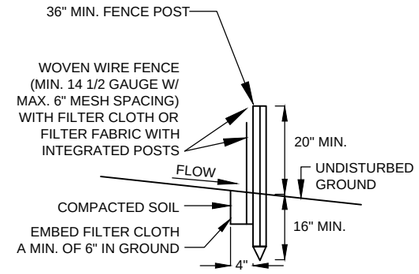
Analytes	Unrestricted Use (ppm)	Residential Use (ppm)	Restricted-Residential Use (ppm)	Restricted-Commercial Use (ppm)	Restricted-Industrial Use (ppm)	Protection of Groundwater (ppm)	Protection of Ecological Resources (ppm)
Polychlorinated Biphenyls (PCBs)							
Total PCBs	0.1	1	1	1	25	3.2	1
Metals							
Arsenic	13	16	16	16	16	16	13
Barium	350	350	400	400	10,000	820	433
Beryllium	7.2	14	72	590	2700	47	10
Cadmium	2.5	2.5	4.3	9.3	60	7.5	4
Chromium (VI)	1	22	110	400	800	19	1
Chromium (III)	30	36	180	1500	6800		41
Copper	50	270	270	270	10,000	1720	50
Lead	63	400	400	1000	3900	450	63
Manganese	1600	2000	2,000	10,000	10,000	2,000	1600
Mercury	0.18	0.81	0.81	2.8	5.7	0.73	0.18
Nickel	30	140	310	310	10,000	130	30
Selenium	3.9	36	180	1500	6800	4	3.9
Silver	2	36	180	1500	6800	8.3	2
Zinc	109	2200	10,000	10,000	10,000	2480	109
Cyanide							
Cyanide, Total	27	27	27	27	10,000	40	NE

Notes:
ppm - parts per million

Figures



PERSPECTIVE VIEW



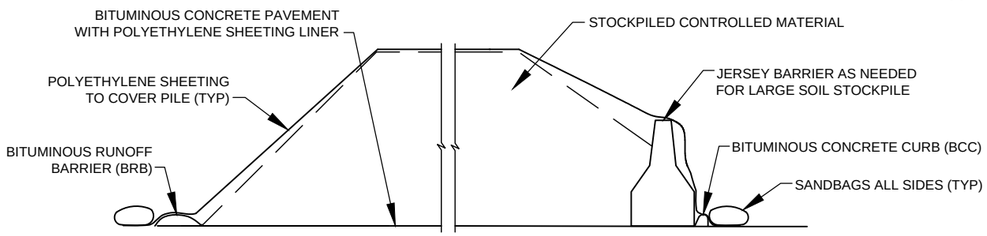
SECTION VIEW

EXAMPLE SILT FENCE DETAIL

SOURCE: NYSDEC

SILT FENCE NOTES:

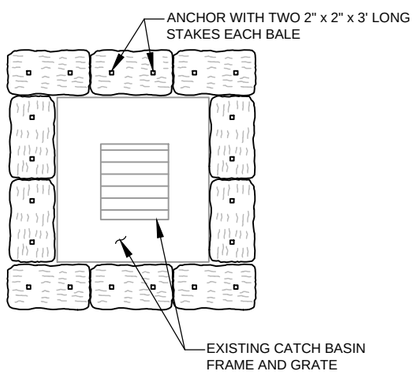
1. FASTEN WOVEN WIRE FENCE SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FASTEN FILTER CLOTH SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24-INCHES AT TOP AND MID-SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6-INCH MAXIMUM MESH OPENING.
3. OVERLAP ADJACENT FILTER CLOTH SIX INCHES AND FOLD. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. PERFORM MAINTENANCE AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
6. FILTER FABRIC WITH INTEGRATED STAKES MAY BE USED INSTEAD OF WIRE FENCE.



SECTION VIEW

EXAMPLE WASTE STOCKPILE DETAIL

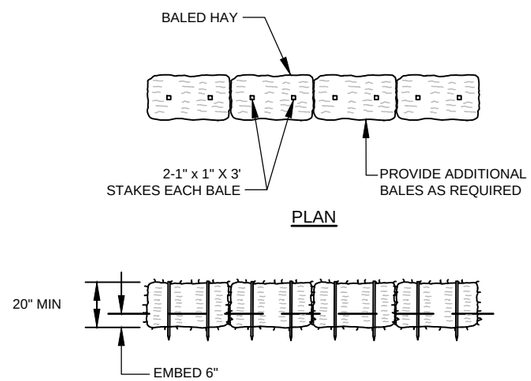
NOT TO SCALE



PLAN

EXAMPLE CATCH BASIN PROTECTION DETAIL

NOT TO SCALE



PLAN

ELEVATION

EXAMPLE STAKED HAY BALES DETAIL

NOT TO SCALE

SOURCES:

1. PROPERTY BOUNDARY OF 1 EDGEWATER STREET FROM: *MAP OF SURVEY OF PROPERTY IN THE 4TH WARD, BORO OF RICHMOND, CITY OF NEW YORK,* SCALE 1" = 60', DATED DECEMBER 5, 1949, REVISED TO APRIL 3, 1973, PREPARED BY CARLTON H. ETTLINGER ET AL, CITY SURVEYORS, STATEN ISLAND N.Y.
2. AERIAL PHOTOGRAPH FROM GOOGLE™ EARTH, ACCESSED ON 10/1/08, IMAGE © 2008 DIGITALGLOBE.

0 120 240

SCALE, FEET

SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

nationalgrid

GEI Consultants

Project 093100-1-1104

SAMPLE OF EROSION CONTROL STRUCTURES

March 2014 Figure A1

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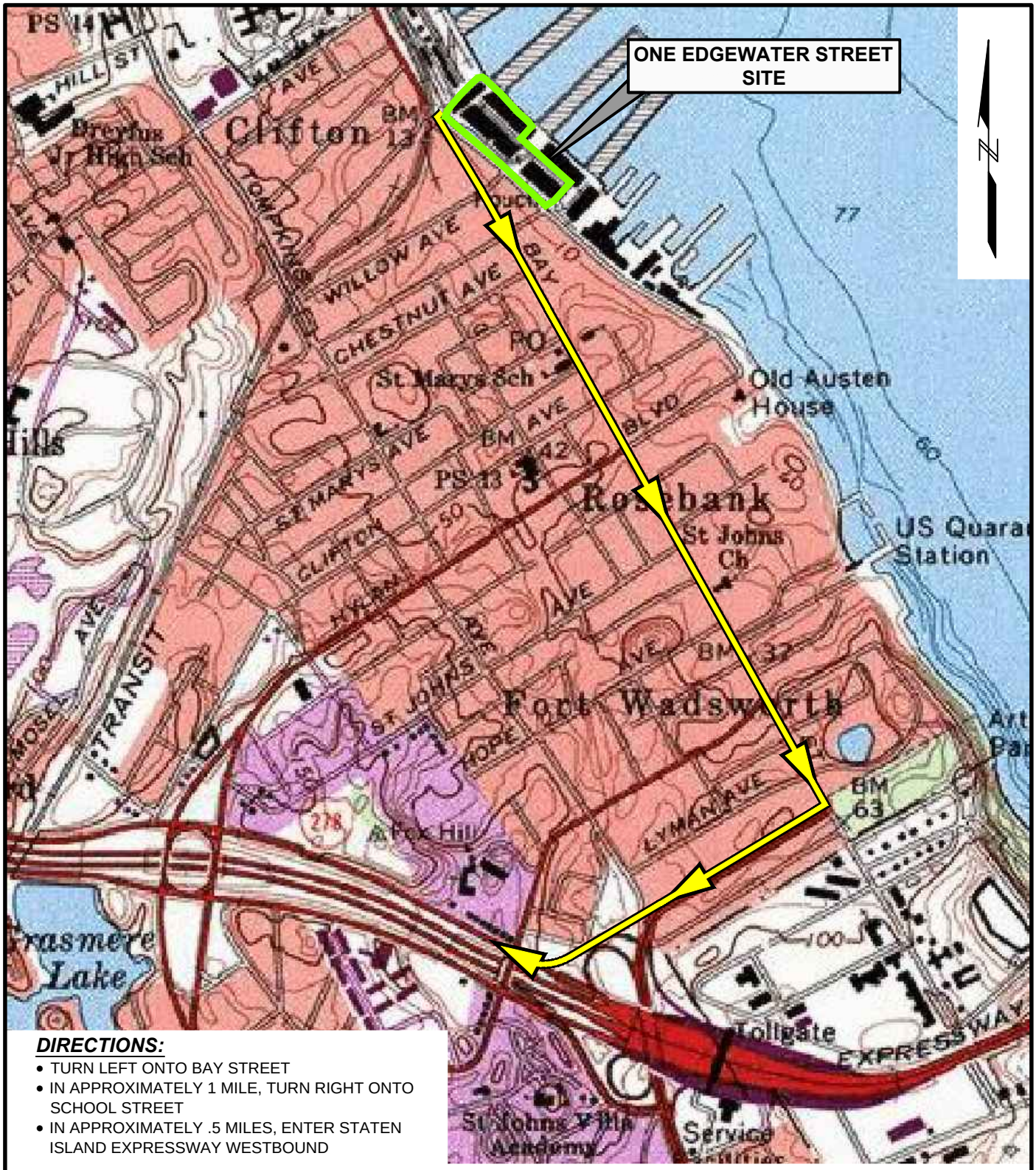

DIRECTIONS:

- TURN LEFT ONTO BAY STREET
- IN APPROXIMATELY 1 MILE, TURN RIGHT ONTO SCHOOL STREET
- IN APPROXIMATELY .5 MILES, ENTER STATEN ISLAND EXPRESSWAY WESTBOUND

SOURCE:

Map created with TOPO! ® ©2001 National Geographic (www.nationalgeographic.com/topo)

SITE MANAGEMENT PLAN ONE EDGEWATER STREET STATEN ISLAND, NEW YORK	GEI Consultants	**TRUCK ROUTE MAP**
nationalgrid	Project 093100-1-1104	March 2014 Figure A2

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LEGEND:

AMS-UW — CONCEPTUAL COMMUNITY AIR MONITORING STATION LOCATION (APPROXIMATE)

NOTE:
EXACT AIR MONITORING STATION LOCATIONS WILL BE BASED UPON PREVAILING WIND DIRECTION DURING INTRUSIVE ACTIVITY.

SOURCES:

1. PROPERTY BOUNDARY OF 1 EDGEWATER STREET FROM: *MAP OF SURVEY OF PROPERTY IN THE 4TH WARD, BORO OF RICHMOND, CITY OF NEW YORK,* SCALE 1" = 60', DATED DECEMBER 5, 1949, REVISED TO APRIL 3, 1973, PREPARED BY CARLTON H. ETTLINGER ET AL, CITY SURVEYORS, STATEN ISLAND N.Y.
2. AERIAL PHOTOGRAPH FROM GOOGLE™ EARTH, ACCESSED ON 10/1/08, IMAGE© 2008 DIGITALGLOBE.

SITE MANAGEMENT PLAN
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

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APPROXIMATE AIR MONITORING STATION LOCATIONS

March 2014

Figure A3

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Appendix B

Health and Safety Plan (HASP) (Electronic only)

INSTRUCTIONS

The following example Health and Safety Plan (HASP) is provided to environmental contractors to aid in preparation of a Contractor/Subcontractor Site-Specific HASP for a National Grid Manufactured Gas Plant (MGP) site. This document can be used as a foundation for HASP development by a qualified health and safety professional to meet the requirements of 29 CFR 1910 and 1926.

It is the Contractor's responsibility to identify project specific activity hazards and mitigation methods to protect Contractor employees (and Subcontractor employees under Contractor direction), and to augment this example HASP as necessary to meet these requirements and adopting this HASP as their own site-specific HASP.

The Contractor (and Subcontractor employees under Contractor direction) is specifically responsible for health and safety matters as they relate to the specific work duties to be performed by the Contractor's employees.

The format of the HASP follows the general project structure utilized by National Grid for remedial investigation and remedial construction activities at National Grid former MGP sites. Various sections of the example HASP have been bracketed where input from the selected Consultant/Contractor is required. The Contractor is required to insert their appropriate corporate programs into appendices within this HASP.

HEALTH AND SAFETY PLAN (HASP)

Site(s):	ONE EDGEWATER STREET
Location:	STATEN ISLAND, NEW YORK
Date Prepared:	[ADD DATE]
Revision:	**0**
Project Description:	[ADD PROPOSED WORK ACTIVITIES]
Waste types:	ADD SPECIFIC IMPACTS IN WORK AREA (e.g. residual tar/ oil impacted soil and/or groundwater)
Characteristics:	[ADD WASTE CHARACTERISTICS OF SOIL AND GROUNDWATER FOR REMOVAL]
Unusual Site Features:	[ADD UNUSUAL SITE-SPECIFIC CONDITIONS]
Status:	Commercial Parking Lot
Background Review:	Remedial Investigations Completed
Overall Hazard:	[INSERT UNDERSTANDING OF HAZARD LEVEL**]**

CONTRACTOR CERTIFICATIONS

By their signature, the undersigned hereby certify that this HASP has been reviewed and approved for use at the One Edgewater Street property, Staten Island, New York.

PROJECT MANAGER	DATE
SITE SAFETY OFFICER	DATE
CORPORATE HEALTH AND SAFETY MANAGER	DATE

Appendix B
Draft Health and Safety Plan
One Edgewater Street
Staten Island, New York

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Appendix A – Organizational Structure / Contact Information
Appendix B – Site Specific Information

1.0 INTRODUCTION

1.1 Purpose

This example Health and Safety Plan (HASP) addresses the health and safety practices that will be employed by workers participating in site management plan monitoring activities and [Insert intrusive activities i.e. construction and/or earthwork]activities within zones of residual soil and groundwater impacts at the 1 Edgewater Street, Staten Island, New York (Site). National Grid's Constultant will be implementing the site management monitoring activities. If intrusive site activities are completed within zones of residual impacts, the property owner will update this example HASP or prepare a HASP to address work activities. All HASPs must be reviewed and approved by National Grid and the NYSDEC prior to commencing work.

The HASP takes into account the specific hazards inherent to the Site, and presents procedures to be followed by the Consultant, Contractor, Subcontractor(s), and all site visitors in order to avoid and if necessary, protect against health and/or safety hazards. Activities performed under this HASP will comply with applicable parts of Occupational Safety and Health Administration (OSHA) Regulations, primarily 29 CFR Parts 1910 and 1926. A copy this HASP will be maintained on-site for the duration of work.

All workers who may participate in activities at the Site are required to comply with the provisions specified in this HASP or a HASP that is approved by National Grid and the NYSDEC. All site visitors who enter designated work zones must also comply with this HASP. Refusal or failure to comply with the HASP or violation of any safety procedures by field personnel and/or subcontractors performing work covered by this HASP may result in immediate removal from the site following consultation with the Contractor.

1.2 Scope of Work

This HASP addresses all general activities listed below:

- Annual groundwater monitoring

[INSERT SITE-SPECIFIC INTRUSIVE TASKS WITHIN SOILS AND GROUNDWATER THAT HAVE RESIDUAL IMPACTS]

2.0 PROJECT ORGANIZATION AND RESPONSIBILTIES

This Section includes the project organization and structure, and establishes the specific chain of command for responsibilities and communications. The organizational structure shall be reviewed and updated as necessary to reflect the current status of project operations.

2.1 Owner/Contractor

Owner/Contractor will have final responsibility and authority for all aspects of the project, and is also responsible for approving all changes to this HASP. Changes the HASP must be reviewed by National Grid and NYSEC

2.2 Consultant

Consultant provides general health and safety oversight as the Owner's/Contractor's agent. The Consultant will conduct perimeter air monitoring, and work zone monitoring for Consultant employees. The Consultant will monitor daily operations, and will serve as the Contractor's primary point of contact with regulatory agencies for health and safety related matters. Typical consultant health and safety roles for this project include:

- Project Manager
- Site Safety Officer
- Corporate Health and Safety Officer

[UPDATE CONSULTANT HEALTH AND SAFETY ROLES FOR PROJECT]

The Consultant health and safety roles are structured the same as the Contractor Project Organization. Details of these typical roles are presented below in Section 2.3.

A Consultant project-specific organization chart with contact information should be included in Appendix A, once prepared.

[PROVIDE CONSULTANT SPECIFIC HEALTH AND SAFETY ROLES IN APPENDIX A.]

2.3 Contractor

Contractor is responsible for all work detailed in the project work plan and/or Contractor Statement of Work. The Contractor is also responsible for the health and safety of Contractor and Subcontractor employees, and conducts work zone monitoring for Contractor and Subcontractor workers. Specific Contractor health and safety roles include:

[UPDATE CONTRACTOR HEALTH AND SAFETY ROLES FOR PROJECT]

Project Manager – responsibilities include the following:

- Ensures implementation of this program
- Conducts periodic inspections
- Participates in incident investigations
- Ensures the HASP has all of the required approvals before any site work is conducted
- Ensures that the Site Safety Officer (SSO) is informed of project changes which require modifications of the site health and safety plan
- Has overall project responsibility for Project Health and Safety.

Site Safety Officer (SSO) - responsibilities include the following:

- Ensures that the HASP is implemented and that all health and safety activities identified in site safety plans are conducted and/or implemented
- Ensures that field work conducted safely and enforces site health and safety rules
- Ensures that adequate communication between field crews and emergency response personnel is maintained
- Ensures that field site personnel are medically cleared and adequately trained and qualified to work at the site and that proper personal protective equipment is utilized by field teams
- Investigate and report all accidents/incidents to the PM and to the Corporate Health and Safety Officer (CHSO)
- Conducts and documents daily safety briefings
- Stops work if necessary
- Identifies operational changes which require modifications to health and safety procedures and site safety plans, and ensures that the procedure modifications are implemented and documented through changes to the HASP, with CHSO approval
- Directs and coordinates health and safety monitoring activities
- Evaluates air monitoring data relative to site- and activity-specific action levels
- Ensures that monitoring instruments are calibrated
- Reports to the CHSO to provide summaries of field operations and progress
- Conducts routine safety inspections of their work areas
- Conducts incident investigations and together with the CHSO, prepares appropriate reports (i.e. OSHA 300 Report)
- Maintains files on all personal monitoring results, laboratory reports, calculations and air sampling data sheets

- Ensure that all necessary information including emergency phone numbers, hospital directions and warning signs are kept posted in an area accessible to all site employees
- Maintain a daily list of workers and visitors present on the site.

Corporate Health and Safety Officer (CHSO) - responsibilities include the following:

- Provides for the development and approval of the HASP
- Serves as the primary contact to review health and safety matters that may arise
- Approves revised or new safety protocols for field operations
- Coordinates revisions of this HASP with field personnel
- Coordinates upgrading or downgrading of personal protective equipment with the SSO
- Maintains a copy of fit test certification, documents of medical clearance, and exposure reports from site activities.
- Assists in the investigation of all accidents/incidents

Site Personnel - responsibilities include the following:

- Reports any unsafe or potentially hazardous conditions to the SSO
- Maintains knowledge of the information, instructions and emergency response actions contained in the HASP
- Complies with rules, regulations and procedures as set forth in the HASP and any revisions
- Prevents admittance to work sites by unauthorized personnel
- Inspect all tools and equipment, including PPE, prior to use

A Contractor project-specific organization chart with contact information and health and safety roles should be included in Appendix A.

.

3.0 SITE HISTORY AND PROJECT DESCRIPTION

3.1 Location

The following information was obtained from the site management plan (SMP). Update as needed for changes to Site conditions and use.

The Site address is One Edgewater Street Staten Island, Richmond County, New York, and is identified as Block 2820 and Lot 95 on the City of New York Department of Finance Tax Map for the Borough of Staten Island. The location of the Site is shown on **Figure 1 of SMP**. The property encompasses approximately 18.29-acres; 7.41 acres is located on the landside and 10.88 acres are submerged beneath the Narrows of the New York Harbor (**Plate 1 of SMP**). The Site was previously owned by IPC Commercial Properties, which was acquired by Behringer Harvard REIT, Inc. (Behringer Harvard), in December 2007.

The property is zoned M2-1, manufacturing and commercial. The property is bounded by The Narrows of New York Harbor to the northeast and east, Staten Island Railroad MTA New City Transit repair facility to the northwest, the former NYC Transit Authority property to the south (125 Edgewater Street), and Edgewater Street to the west. The site topography is relatively flat, with elevation ranging from approximately 10 feet North American Vertical Datum (NAVD) at Edgewater Street to 8 feet NAVD at the boundary with New York Harbor (**Plate 1 of SMP**).

The property is developed with a seven-story commercial office building referred to as Edgewater Plaza on the southeastern portion of the property. The remainder of the property consists of a paved sidewalk and asphalt parking lot. The property is secured with a chain-link fence and a guarded entrance at the Willow Avenue/Edgewater Street intersection. A permitted stormwater outfall is located along the northern portion of the Site, and a large combined sewer overflow (CSO) is located on the adjacent property to the south.

3.2 Site History

The One Edgewater Street property was originally part of The Narrows. A former stream flowed adjacent to the nearby Clifton Former MGP that discharged to The Narrows at the western boundary of the current One Edgewater Street property. Prior to being filled sometime before 1885, the stream carried limited amounts of tar from the Clifton Former MGP property and discharged into The Narrows.

In 1921, the Pouch Terminal Company extended and developed the shoreline by placing 5 to 21 feet of fill material in The Narrows to create the property that currently includes One Edgewater Street. The property was developed as a warehousing operation with a seven-story warehouse, numerous one-story warehouses and a deep water pier (Pier 19).

By 1983, a number of the one-story warehouses were removed. The property was redeveloped after 1988 for its current commercial use.

4.0 POTENTIAL SITE HAZARDS

This section presents an example assessment of potential chemical, physical, and biological hazards that may be encountered during intrusive work within areas with soils and groundwater that contain residual impacts. An activity hazard analysis (AHA) will need to be prepared to address the health and safety hazards of each specific project task or operation and requirements and procedures for worker protection.

[INSERT CONTRACTOR SPECIFIC AHA IN SECTION 4 AND APPENDIX B].

4.1 Chemical Hazards

The characteristics of potential compounds at the Site are discussed below for information purposes. Adherence to the safety and health guidelines in this HASP should reduce the potential for exposure to the compounds discussed below. Table 4-1 presents chemical data regarding potential exposure and monitoring for the chemical types listed below.

[TABLE 4-1 PROVIDES A TYPICAL LIST CHEMICAL DATA FOR MANUFACTURED GAS PLANT SITES. REVIEW SITE SEPCIFIC CHEMICAL DATA AND UPDATE INFORMATION IN SUBSECTIONS 4.1.1 THROUGH 4.1.7 FOR SITE-SPECIFIC CHEMICAL HAZARDS WITHIN THE PROPOSED WORK AREA.]

4.1.1 Volatile Organic Compounds (VOCs)

Volatile organic chemicals (VOCs), such as benzene, toluene, ethyl benzene, and xylene (BTEX) are present as soil and groundwater contaminants and in some cases chemical components in non-aqueous phase liquids (NAPL) such as oil or tar within soils and abandoned pipelines. These compounds generally have a depressant effect on the central nervous system (CNS), may cause chronic liver and kidney damage, and some are suspected human carcinogens. Benzene is a known human carcinogen. Acute exposure may include headache, dizziness, nausea, and skin and eye irritation. The primary route of exposure to VOCs is through inhalation and therefore respiratory protection is the primary control against exposure to VOCs.

4.1.2 Coal Tar and Coal Tar Products

Coal tar products, which are semi-volatile organic compounds (SVOCs) consist of a mixture of acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluorethene, benz(a)pyrene, benzo(e)pyrene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3cd)pyrene, 2-methyl naphthalene, naphththalene, phenanthrene, phenols, and pyrene.

Coal tar products and other semi-volatile organic compounds (SVOCs) are present at the Site within impacted soil and groundwater and as a residual dense non-aqueous phase liquid (DNAPL) by-product of gas production within soils.

Coal tar products such as those listed above may cause contact dermatitis. Direct contact can be irritating to the skin and produce itching, burning, swelling and redness. Direct contact or exposure to the vapors may be irritating to the eyes. Conjunctivitis may result from prolonged exposure. Coal tar is considered to be very toxic, if ingested. High levels of exposure to coal

tar, though not anticipated during work activities conducted during this project, may increase the risk of cancer including lung, kidney and skin cancer. Naphthalene is also an eye and skin irritant and can cause nausea, headache, fever anemia, liver damage, vomiting convulsions and coma. Poisoning may occur by ingestion of large doses, inhalation or skin absorption.

The major route of entry for the work activities to be conducted at this site is through direct contact. Exposure is most likely when handling soil and water samples. Inhalation may occur when the soil is disturbed causing respirable and nuisance dust particles to become airborne.

4.1.3 Heavy Metals

The Site contains elevated levels of metals including arsenic, chromium, lead, mercury, and selenium.

Exposure to arsenic can cause dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, and hyperpigmentation of skin. Chronic exposure to arsenic has resulted in lung cancer in humans.

Exposure to lead may cause acute symptoms such as eye irritation, weakness, weight loss, abdominal pain, and anemia. Chronic exposure to lead may result in kidney disease, effects to the reproductive system, blood forming organs, and CNS.

Both lead and arsenic are regulated by specific OSHA standards. They are 29 CFR 1910.1025/1926.52 and 29 CFR 1910.1018/1926.1118, respectively. These standards include specific requirements for air monitoring, signs and labels, training and medical surveillance.

Exposure to chromium can cause acute symptoms such as irritation of the eyes, nose and throat as well as wheezing and coughing. Chronic effects include nosebleeds, nasal congestion, dermatitis, and loss of sight.

Exposure to mercury can cause dizziness, salivation nausea, vomiting, diarrhea, constipation, emotional disturbance, and kidney injury. Chronic exposure to mercury can cause CNS damage.

Exposure to selenium can cause mucous membrane irritation, coughing, sneezing, shortness of breath, chills, headaches, hypotension, and CNS depression. Chronic exposure to selenium could cause bronchial irritation, gastrointestinal distress, excessive fatigue, and skin discoloration.

As with SVOCs, the primary route of exposure is through inhalation of dust particles when soil is disturbed and becomes airborne.

4.1.6 Cyanide

Cyanide compounds are common by-products of manufactured gas production. Hydrogen cyanide is toxic because it is a chemical asphyxiant. It replaces the oxygen in the blood and thereby suffocates the cells. Ferrocyanides are not considered toxic because the hydrogen cyanide ion is bound to tightly to the iron and cannot therefore replace the oxygen. It takes a great amount of heat and/or acid to release cyanide gas from the ferrocyanide molecule.

4.1.7 Hydrogen Sulfide

Hydrogen sulfide is another common by-product of manufactured gas production. Exposure to lower concentrations can result in eye irritation, a sore throat and cough, shortness of breath, and fluid in the lungs. These symptoms usually go away in a few weeks. Long-term, low-level exposure may result in fatigue, loss of appetite, headaches, irritability, poor memory, and dizziness. Breathing very high levels (>800 ppm) of hydrogen sulfide can cause death within just a few breaths. The primary route of exposure is through inhalation and therefore respiratory protection is the primary control against exposure to hydrogen sulfide.

4.1.8 Evaluation of Organic Vapor Exposure

Air monitoring reduces the risk of overexposure by indicating when action levels have been exceeded and when personal protective equipment (PPE) must be upgraded or changed. Action levels for volatile organic compounds and associated contingency plans for the work zone are discussed within Section 8.0 of this Health and Safety Plan.

Exposure to organic vapors shall be evaluated and/or controlled by:

- Monitoring air concentrations for organic vapors in the breathing zone with a photoionization detector (PID) or a flame ionizing detector (FID)
- When possible, engineering control measures will be utilized to suppress the volatile organic vapors. Engineering methods can include utilizing a fan to promote air circulation, utilizing volatile suppressant foam, providing artificial ground cover or covering up the impacted material with a tarp to mitigate volatile odors.
- When volatile suppression engineering controls are not effective and organic vapor meters indicate concentrations above the action levels, then appropriate respiratory protection (i.e. air purifying respirator with organic vapor cartridge) will be employed.

Appendix B
Draft Health and Safety Plan
One Edgewater Street
Staten Island, New York

Table 4-1
Chemical Data

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
Arsenic	7440-38-2	0.01 mg/m^3	0.01 mg/m^3 A.L. .005mg/m3	Inhalation Skin Absorption Ingestion Skin Contact	Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, potential carcinogen	Liver, kidneys, skin, lungs, lymphatic system	Metal: Silver-gray or tin-white, brittle, odorless solid FP: NA IP: NA LEL: NA UEL: NA VP: 0 mm
Benzene	71-43-2	0.5 ppm (Skin)	1 ppm TWA 5 ppm STEL	Inhalation Skin Absorption Ingestion Skin Contact	Irritation of eyes, skin, nose, respiratory system, giddiness, headache, nausea; staggering gait, fatigue, anorexia, weakness, dermatitis, bone marrow depression, potential carcinogen	Eyes, skin, CNS, bone marrow, blood	FP: 12° F IP: 9.24 eve LEL: 1.2% UEL:7.8% VP: 75 mm
Chromium (Chromic Acid and Chromates)	1333-82-0	0.05 mg/m^3	0.1 mg/m^3	Inhalation Ingestion Skin Contact	Irritates respiratory system, nasal, septum perforation, liver and kidney damage, leucocytosis (increased blood leucocytes), leukopenis (reduced blood leucocytes), moncytosis (increased monocytes), Eosinophilia, eye injury, conjunctivitis, skin ulcer, sensitivity dermatitis, potential carcinongen	Blood, respiratory system, liver, kidney, eyes, skin, lung cancer	FP:NA IP:NA VP: Very Low LEL: NA UEL: NA
Ethylbenzene	100-41-4	100 ppm	100 ppm	Inhalation Ingestion Skin Contact	Eye, skin, mucous membrane irritation; headache; dermatitis, narcosis; coma	Eyes, skin, respiratory system, CNS	FP: 55° F IP: 8.76 eV LEL: 0.8% UEL:6.7% VP: 7 mm
Hydrogen cyanide	74-90-8	4.7 ppm (5 mg/m^3) STEL [skin]	10 ppm (11 mg/m^3) [skin]	Inhalation Ingestion Absorption Skin/Eye Contact	Asphyxia; weakness, headache, confusion; nausea, vomiting; increased rate and depth of respiration or respiration slow and gasping; thyroid, blood changes	CNS, CVS, thyroid, blood	Colorless or pale-blue liquid or gas (above 78°F) with a bitter, almond-like odor. VP: 630 mmHg IP: 13.60 eV

Table 4-1
Chemical Data

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
Hydrogen sulfide	7783-06-4	10 ppm TWA, 15 ppm STEL	20 ppm C, 50 ppm [10-min. Maximum peak]	Inhalation Skin/Eye Contact	Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, fatigue, irritability, insomnia; gastrointestinal disturbance; liquid: frostbite	Eyes, respiratory system, CNS	Colorless gas with a strong odor of rotten eggs. VP: 17.6 atm IP: 10.46 eV
Lead	7439-92-1	0.050 mg/m^3	0.05 mg/m^3 A.L. 0.03 mg/m3	Inhalation Ingestion Skin Contact	Weakness, insomnia; facial pallor; pal eye, anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis of wrist and ankles; irritates eyes, hypo tension	Eyes, GI tract, CNS, kidneys, blood, gingival tissue	A heavy, ductile, soft, gray solid. FP: NA IP: NA LEL: NA UEL: NA VP: 0 mm
Mercury	7439-97-6	0.025 mg/m^3	0.10 mg/m3	Inhalation Ingestion Skin Contact Skin Absorption	Irritates eyes and skin, chest pain, cough, difficulty breathing, bronchitis, pneumonitis, tremor, insomnia, irritability, indecision, headache, fatigue, weakness, stomatitis, salivation, Gastrointestinal disturbance, weight loss, proteinuria	Eyes, skin, respiratory tract, central nervous system	Silver-white, heavy odorless liquid FP: NA IP:? LEL: NA UEL:NA VP: 0.0012 mm
Naphthalene	91-20-3		10 ppm (50 mg/m3) TWA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse	Eyes, skin, blood, liver, kidneys, central nervous system	FP: 174 F IP: 8.12 eV, LEL: 0.8% UEL:6.7%, VP: 0.08 mm

Table 4-1
Chemical Data

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
					sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage		
PAH's as Coal tar pitch Volatiles (CTPV)	65996-93-2	0.2 mg/m3	0.2 mg/m3	Inhalation Skin contact Ingestion	Irritant to eyes, swelling, acne contact dermatitis, chronic bronchitis	Respiratory system, CNS, liver, kidneys, skin, bladder, carc	Black or dark brown amorphous residue.
Phenol	108-95-2	10 ppm (skin)	5 ppm (19 mg/m^3) [skin]	Inhalation Skin Absorption Ingestion Skin Contact	Irritates eyes, nose, throat, anorexia, weight loss, weakness, muscle ache, pain, dark urine, cyanosis, liver and kidney damage, skin burns, dermatitis, tremors, convulsions, twitching,	Eyes, skin, respiratory system, liver, kidneys	Colorless to light pink crystalline solid with sweet, acrid odor. FP:175 ^{o}F IP:8.5 LEL:1.8% UEL: 8.6% VP: 0.4 mm
Selenium	7782-49-2	0.2 mg/m^3	0.2 mg/m^3	Inhalation Ingestion Skin Contact	Irritant to eyes, skin, nose and throat, visual disturbance, headache, chills, fever, breathing difficulty, bronchitis, metallic taste, garlic breath, GI disturbance, dermatitis, eye and skin burns,	Eyes, skin, respiratory system, liver, kidneys, blood spleen	Amphorous or crystalline, red to gray solid FP: NA IP: NA LEL: NA UEL: NA VP: 0 mm
Toluene	108-88-3	50 ppm	200 ppm	Inhalation Skin Absorption Ingestion Skin Contact	Eye, nose irritation; fatigue, weakness, confusion, euphoria, dizziness, headache; dilated pupils, tearing of eyes; nervousness, muscle fatigue, insomnia, tingling in limbs; dermatitis	Eyes, skin, respiratory system, CNS, liver, kidneys	FP: 40°F IP: 8.82 eV LEL: 1.1% UEL:7.1% VP: 21 mm
Xylene	1330-20-7	100 ppm	100 ppm	Inhalation Skin Absorption Ingestion Skin Contact	Eye, skin, nose, throat irritation; dizziness, excitement, drowsiness; incoordination, staggering gait; corneal damage; appetite loss,	Eyes, skin, respiratory system, CNS, GI tract, blood, liver,	FP: 90°F IP: 8.56 eV LEL: 0.9% UEL: 6.7% VP: 9 mm

Table 4-1
Chemical Data

Compound	CAS #	ACGIH TLV	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
					nausea, vomiting, abdominal pain; dermatitis	kidneys	

Abbreviations	
C = ceiling limit, not to be exceeded	LEL = Lower explosive limit
CNS = Central Nervous System	mm = millimeter
CVS = Cardiovascular System	ppm = parts per million
eV = electron volt	Skin = significant route of exposure
FP = Flash point	STEL = Short-term exposure limit (15 minutes)
IP = Ionization Potential	TWA = Time-weighted average (8 hours)
GI = Gastro-intestinal	UEL = Upper explosive limit
A.L. Action Level	VP = vapor pressure approximately 68° F in mm Hg (mercury)

4.1.9 Evaluation of Respirable Dust Inhalation

Inhalation of respirable dust containing metals and semi-volatiles is possible when handling subsurface soils that contain these materials. Contaminated particulate matter (soil and pavement.) becomes suspended in air due to a combination of factors such as dry or dusty conditions. Air monitoring reduces the risk of overexposure to respirable dust inhalation by indicating when action levels have been exceeded and when personal protective equipment (PPE) must be upgraded or changed. Action levels for respirable dust and associated contingency plans for the work zone and perimeter of the site are discussed within Section 8.0 of this HASP.

Control of respirable dust shall be conducted at this site as follows:

- When possible, dust control measures will be utilized to suppress the dust. These methods include wetting down the area or covering up the material with a tarp.
- When dust suppression is not possible and respirable dust meters indicate concentrations above the action levels, a High Efficiency Particulate Filter (HEPA) must be used to prevent against inhalation of contaminated dusts.

4.1.10 Evaluation of Skin Contact and Absorption

Skin contact by contaminants may be controlled by use of proper hygiene practices, PPE and good housekeeping procedures. The proper PPE (e.g., protective coveralls, gloves, safety glasses) as described in Section 6 will be worn for all activities where contact with potential contaminated media or materials are expected.

4.1.11 Other Chemical Hazards

Chemicals not identified in this HASP may be used during excavation activities. Prior to the initiation of any on-site tasks, each Contractor, Subcontractor, or Consultant shall provide Material Safety Data Sheets to the SSO for each of the chemicals to be used. The MSDS's will be maintained on site by the SSO and all site workers and visitors who may potentially be exposed to the chemicals will be made aware of these hazards and the location of the on-site MSDS's during a hazard briefing session by the SSO.

4.2 Physical Hazards

[INSERT ANY ADDITIONAL SITE SPECIFIC HIGH LOSS PHYSICAL HAZARDS]

4.2.1 High Loss Potential Physical Hazards

Activities to be conducted at the site may involve operations that have the potential for a serious injury to occur, to include the following:

- Lockout/Tagout
- Heavy Equipment Operation
- Excavation and Trenching

4.2.1.1 Lockout-Tagout

Site personnel will assume that all electrical equipment at surface, subsurface, and overhead locations is energized, until the equipment has been designated as de-energized by an authorized representative. If the equipment cannot de-energized, work will stop and the SSO will consult with the PM and CHSO. The Contractor will notify National Grid prior to working adjacent to their equipment, and will verify that the equipment is energized or de-energized in the vicinity of the excavation location. The Control of Hazardous Energy Program "Lock Out/Tag Out" is included in Appendix H.

All power lines must be locked out, such that the lines cannot be energized when personnel are working near them. The lines shall not be unlocked and re-energized until the Contractor has completed work in the area and that all personnel are clear of the area.

If power lines cannot be de-energized, the SSO will consult with the local utility provider safety personnel to determine the safe working distance from the energized line. Work tasks will only commence after determination that a safe working distance can be maintained and all personnel working in the area have been informed of the limitation.

4.2.1.2 Heavy Equipment Operation

Heavy equipment will be operated under the following conditions:

- The operation of heavy equipment will be limited to authorized personnel specifically trained in its operation. Subcontractor site supervisors must provide this information to the SSO.
- Equipment shall be inspected daily to ensure that there are no exposed belts, fans, etc.
- When not in use, hydraulic and pneumatic components shall be left in down or “dead” position.
- Roll-over protection shall be provided on hilly terrain.
- Maintain all emergency shut-offs in sound working condition.
- The operator will use the safety devices provided with the equipment, including seat belts. Backup warning indicators and horns will be operable at all times.
- While in operation, all personnel not directly required in the area will keep a safe distance from the equipment.
- Personnel directly involved in activity will avoid moving in the path of operating equipment or any portion thereof. Areas blinded from the operator's vision will be avoided. Spotters will be used when personnel may be in areas where the operator’s view is obstructed.
- Additional riders will not be allowed on equipment unless it is specifically designed for that purpose.

4.2.1.3 Excavation and Trenching

The safety requirements for each excavation must be determined by a competent person who is capable of identifying existing and predictable hazards and work conditions that are unsanitary, hazardous, or dangerous to employees. The competent person must also have the authorization to take prompt corrective measures to eliminate unsatisfactory conditions.

[INSERT ANY ADDITIONAL SITE-SPECIFIC EXCAVATION AND TRENCHING HAZARDS]

The following are general requirements for work activities in and around excavations:

- Prior to initiation of any excavation activity (or ground intrusive activity, such as drilling), the location of underground installations will be determined. The New York State one-call center will be contacted by the Contractor / Subcontractor a minimum of 72 hours prior to excavation activities. It may also be necessary to temporarily support underground utilities during excavation. When excavations approach the estimated location of underground installations, the exact location of the underground installations shall be determined by means that are safe to workers, i.e., hand dig, test pits, etc.
- All excavations will be inspected daily by the competent person prior to commencement of work activities. Evidence of cave-ins, slides, sloughing, or surface cracks or excavations will be cause for work to cease until necessary precautions are taken to safeguard employees.
- Excavated and other materials or equipment that could fall or roll into the excavation shall be placed at least 5 feet from the edge of the excavation.
- Vehicular traffic and heavy equipment shall remain at least four feet from the face of the excavation.
- All excavation operations will cease immediately during hazardous weather conditions such as high winds, heavy rain, lightning and heavy snow.

4.2.1.4 Excavation Entry Safety

Personnel entering a trench or excavation that is greater than 4 feet deep shall implement the following procedures:

- The sides of all excavations in which personnel will be exposed to the danger of moving ground or potential cave-in will be adequately sloped, shored or contained within a trench box, or similar support structure designed and sealed by a professional engineer.
- The air in the excavation will be tested for oxygen deficiency, explosivity, organic vapors, carbon monoxide and hydrogen sulfide. The bottom, middle, top and corners of the excavation will be tested prior to entry and continuously during excavation entry.

- Ramps or ladders will be used to provide access and sufficient egress to the excavation. Ladders must be supplied for every 25 feet of lateral travel. Ladders must be securely anchored at the top or bottom and must extend at least 3 feet above the ground surface. A competent person is required to design ramps (those used exclusively for employee access/egress). Such ramps are constructed of wood, steel or earth. Structural ramps, used for vehicle/equipment access (steel or wood) must be designed by a competent person qualified in structural design. Vehicle ramps built of earth are not considered "structural ramps".
- Employees shall not work in excavations where there is an accumulation of water or in excavations where water is accumulating unless adequate precautions have been taken to protect employees against the hazard s posed by water accumulation.
- Emergency rescue equipment such as breathing apparatus, a safety harness and line, or a basket stretcher shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation.

4.2.2 Fire and Explosion

INSERT ANY ADDITIONAL SITE-SPECIFIC FIRE AND EXPLOSION HAZARDS

When conducting excavating activities, the opportunity of encountering fire and explosion hazards also exists from contamination in the soil and former pipelines. Additionally, the use of a diesel –powered excavating equipment could present the possibility of encountering fire and explosion hazards. Prevention and management of fire and explosion potential is addressed in the Contractor Project Specific AHA included in Appendix B of this HASP. All Contractor and Subcontractor activities shall conform with all applicable state, federal, and local regulations pertaining to fire and explosion prevention procedures.

[INSERT ANY ADDITIONAL SITE-SPECIFIC FIRE AND EXPLOSION HAZARDS]

4.2.3 Cold Stress

At certain times of the year, workers may be exposed to the hazards of working in cold environments. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia as well as slippery surfaces, brittle equipment, poor judgment and unauthorized procedural changes.

4.2.4 Heat Stress

Heat stress is a significant potential hazard, which is greatly exacerbated with the use of PPE in hot environments. The potential hazards of working in hot environments include dehydration, cramps, heat rash, heat exhaustion, and heat stroke. A heat stress prevention program will be implemented when ambient temperatures exceed 70ºF for personnel wearing impermeable clothing.

4.2.5 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps and generators. Site workers who will perform suspected high noise tasks and operations for short durations (less than 1-hour) shall wear earplugs. If deemed necessary by the SSO, the CHSO will be consulted on the need for additional hearing protection and the need to monitor sound levels for site activities. Other workers who do not need to be in proximity of the noise should distance themselves from the equipment generating the noise.

4.2.7 Hand and Power Tools

In order to complete the various tasks for the project, personnel will utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses, and hard hats will be worn by the operating personnel at all times when utilizing hand and power tools and GFI-equipped circuits will be used for all power tools.

4.2.8 Slips, Trips, and Falls

Working in and around the site will pose slip, trip and fall hazards due to slippery surfaces that may be oil covered, or from surfaces that are wet from rain or ice. Excavation at the sites will cause uneven footing in the trenches and around the spoil piles. Contractors shall employ good work practice and housekeeping procedures to minimize the potential for slip, trip, and fall hazards.

4.2.9 Manual Lifting

Manual lifting of heavy objects such as sections of pipe may be required. Failure to follow proper lifting technique can result in back injuries and strains. Site workers should use power equipment to lift heavy loads whenever possible and should evaluate loads before trying to lift them (i.e. they should be able to easily tip the load and then return it to its original position). Carrying heavy loads with a buddy and proper lifting techniques include: 1) make sure footing is solid, 2) make back straight with no curving or slouching, 3) center body over feet, 4) grasp the object firmly and as close to your body as possible, 5) lift with legs, and 6) turn with your feet, don’t twist. In addition, hand digging may present lifting/ergonomic hazards.

4.2.10 Steam, Heat, Splashing

Exposure to steam/heat/splashing hazards can occur during steam cleaning activities. Exposure to steam/heat/splashing can result in scalding/burns, eye injury, and puncture wounds. Proper PPE will be worn during all steam cleaning activities including rain gear or tyvek, hardhat equipped with splashguard, and water resistant gloves and boots.

4.3 Biological Hazards

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals, insects and plants. Workers should be aware of these potential hazards that are discussed below.

4.3.1 Animals

During the conduct of site operations, wild animals such as stray dogs or cats, raccoons, and mice may be encountered. Workers shall use discretion and avoid all contact with wild animals. If these animals present a problem, efforts will be made to remove these animals from the site by contacting a licensed animal control technician.

4.3.2 Insects

Insects, including bees, wasps, hornets, mosquitoes, ticks, and spiders, may be present at the Site making the chance of a bite possible. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. Some insect bites can transmit diseases such as Lyme Disease or a virus such as West Nile; any individuals who have been bitten or stung by an insect should notify the SSO. The following is a list of preventive measures:

- Apply insect repellent prior to performing any field work and as often as needed throughout the work shift
- Wear proper protective clothing (work boots, socks and light colored pants)
- When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible
- Field personnel who may have insect allergies shall have bee sting allergy medication on site and should provide this information to the SSO prior to commencing work

4.3.2.1 Lyme Disease

Lyme disease is caused by infection from a deer tick that carries a spirochete. During the painless tick bite, the spirochete may be transmitted into the bloodstream often after feeding on the host for 12 to 24 hours. The ticks that cause the disease are often no bigger than a poppy seed or a comma in newsprint. The peak months for human infection are from May to September.

Symptoms appear in three stages. First symptoms usually appear from 2 days to a few weeks after a person is bitten by an infected tick. Symptoms usually consist of a ring-like red rash on the skin where the tick was attached. The rash is often bulls-eye like with red on the outside and clear in the center. The rash may be warm, itchy, tender, and/or "doughy." Unfortunately, this rash appears in only 60 to 80% of infected persons. An infected person also has flu-like symptoms of a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. These symptoms often disappear after a few weeks.

The second stage symptoms, which occur weeks to months later include meningitis, severe headache, drooping of the muscles on the face, called Bell's Pals, encephalitis, numbness, withdrawal and lethargy. These symptoms may last for several weeks to several months. Third stage symptoms, which occur months or years later include arthritis, heart problems, and loss of memory. The third stage symptoms may mimic multiple sclerosis and Alzheimer's disease.

It is recommended that personnel check themselves when in areas that could harbor deer ticks, wear light color clothing and visually check themselves and their buddy when coming from wooded or vegetated areas. If a tick is found biting an individual, the SSO should be contacted immediately. The tick can be removed by pulling gently at the head with tweezers. If tweezers are not available, cover your fingers (e.g. tissue paper) and use to grasp the tick. It is important to grasp the tick as close to the site of attachment and use a firm steady pull to remove it. Wash hands immediately after with soap and water. The affected area should then be disinfected with an antiseptic wipe. All mouth parts must be removed from the skin. If the tick is removed with breaking off the mouth parts, an irritation or infection may occur. Also, the organism that is causing the disease can still enter the body through the skin. The employee will be offered the option for medical treatment by a physician, which typically involves antibiotics. If personnel feel sick or have signs similar to those above, they should notify the SSO immediately.

Treatment with antibiotics is effective and recovery is usually complete. In the first stage antibiotics are usually given orally. Second and third stage treatment, however is prolonged and recovery may take longer. Antibiotic treatment is usually provided intravenously for second and third stage Lyme disease.

4.3.2.2 West Nile Virus

West Nile Virus (WNV) is a mosquito-borne infection transmitted through the bite of an infected mosquito. The symptoms of WNV can be asymptomtic (no symptoms) or in more serious cases can lead to West Nile fever. West Nile Fever can include fever, headache, tiredness, body ache, an occasional rash on the trunk of the body, and swollen lymph glands, In severe cases, people have developed West Nile encephalitis or meningitis which symptoms include fever, headache, neck stiffness, tremors, coma and in some cases death. The incubation period for the disease is usually 2 to 15 days. The symptoms can range from a few days to several weeks.

Since the initial outbreak in 1999, the virus has spread rapidly throughout New York State. There are about 65 different species of mosquitoes in New York State, but only a small percentage has been associated with the WNV. Most mosquitoes are not infected and the chance of infection from a mosquito bite of an on-site worker is very small. All residents of areas where virus activity has been identified are at risk of getting WNV, but those of the highest risk for becoming seriously ill from WNV are people are over 50 and individuals with some immunocompromised person (transplant patients).

The following precautions will be used to help reduce the risk of mosquito bites:

- Reduce mosquito-breeding areas by making sure wheelbarrows, buckets, and other containers are turned upside down when not used so that they do not collect standing water.
- Wear shoes, long pants with bottoms tucked into boots or socks, and a lon-sleeved shirt when outdoors for long periods of time, or when many mosquitoes are most active (between dawn and dusk).
- Use mosquito repellant according to the manufacturers directions when outdoors for long periods of time and when mosquitoes are most active.

4.3.3 Plants

The potential for contact with poisonous plants exists when performing fieldwork in undeveloped and wooded areas. Poison ivy, sumac, and oak may be present on site. Poison ivy can be found as vines on tree trunks or as upright bushes. Poison ivy consists of three leaflets with notched edges. Two leaflets form a pair on opposite sides of the stalk, and the third leaflet stands by itself at the tip. Poison ivy is red in the early spring and turns shiny green later in the spring. Poison sumac can be present in the form of a flat-topped shrub or tree. It has fern-like leaves, which are velvety dark green on top and pale underneath. The branches of immature trees have a velvety "down." Poison sumac has white, "hairy" berry clusters. Poison oak can be present as a sparingly branched shrub. Poison oak is similar to poison ivy in that it has the same leaflet configuration; however, the leaves have slightly deeper notches. Prophylactic application of Tecnu® may prevent the occurrence of exposure symptoms. Post exposure over the counter products are available and should be identified at the local pharmacist. Susceptible individuals should identify themselves to the SSO.

Contact with poison ivy, sumac, or oak may lead to a skin rash, characterized by reddened, itchy, blistering skin which needs first aid treatment. If you believe you have contacted one of these plants, immediately wash skin thoroughly with soap and water, taking care not to touch your face or other body parts.

4.3.4 Blood Poisoning

Blood poisoning is a term used to indicate a large number of bacteria present in the circulating blood. The most common symptom of blood poisoning is the reddening of skin which advances toward the heart. For example, if the point of contact is the hand, then a red line will appear at the hand and extend up the arm towards the heart.

Signs and symptoms include swelling, stiffness and tenderness in the affect area, fatigue chills and fever, pustules, abscesses. If allowed to progress without treatment, the organisms may multiply and cause an overwhelming infection which can lead to death.

Personal protective equipment shall be worn to prevent direct contact with equipment that may be contaminated with bacteria such as well caps and soil.

4.4 Hazard Analysis

This section includes an AHA to assess and control potential site hazards for each general project task. A more detailed Contractor Project-specific AHA is included in Appendix B, which addresses the health and safety hazards of each specific project task or operation and includes requirements and procedures for worker protection.

[INSERT CONTRACTOR PROJECT-SPECIFIC AHA IN APPENDIX B. PREPARE AHA FOR SITE-SPECIFIC ACTIVITIES.]

WORK TASK	POTENTIAL HAZARDS	CONTROLS

5.0 TRAINING

5.1 General Health and Safety Training

In accordance with 29 CFR 1910.120, hazardous waste site workers shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations unless otherwise noted in the above reference. At a minimum, the training shall have consisted of instruction in the topics outlined in the standard. Personnel who have not met the requirements for initial training shall not be allowed to work in any site activities in which they may be exposed to hazards (chemical or physical). Proof of training shall be submitted to the SSO prior to the start of field activities.

5.2 Annual Eight-Hour Refresher Training

Annual eight-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualifications for fieldwork. The training will cover a review of 29 CFR 1910.120 requirements and related company programs and procedures. Proof of current 8-hour refresher training shall be submitted to the SSO prior to the start of field activities.

5.3 Supervisor Training

Personnel acting in a supervisory capacity shall have received 8 hours of instruction in addition to the initial 40 hours training.

5.4 Site Safety Officer (SSO)

The SSO shall have completed the following training and work experience prior to the commencement of site activities:

- One year of construction experience
- 40-Hour Hazardous Materials training course

Training specific to work activities (i.e., excavation and trenching activities, lock out/tag out, etc.

5.5 Site-Specific Training

Prior to commencement of field activities, the SSO will ensure all field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the site operations. It will include site and facility layout, hazards and emergency services at the site and will highlight all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity. Personnel that have not received site-specific training will not be allowed on-site.

5.6 On-Site Safety Briefings

Project personnel and visitors will be given health and safety briefings daily by the SSO to assist site personnel in safely conducting work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. The meetings will also be an opportunity to periodically update the crews on monitoring results.

5.7 First Aid and CPR

The SSO will identify individuals certified in first aid and CPR, or identify individuals for such training in order to ensure that emergency medical treatment is available during field activities. The training will be consistent with the requirements of the American Red Cross Association and will include training on blood borne pathogens.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protective equipment (PPE) specified in Table 6-1 represents PPE selection required by 29 CFR 1910.132, and will be based on the AHA of Section 4 that will be prepared by the Contractor. The PPE program addresses elements, such as PPE selection based on site hazards, use and limitations, donning and doffing procedures, maintenance and storage, decontamination and disposal, training and proper fitting, inspection procedures prior to / during / and after use, evaluation of the effectiveness of the PPE program, and limitations during temperature extremes, heat stress, and other appropriate medical considerations.

A summary of PPE for each level of protection is as follows:

Safety Equipment	Level A	Level B	Level C	Level D
Tyvek™ suit or work overalls				•
Hard hats with splash shields or safety glasses			•	•
Steel-toe boots with overboots			•	•
Chemical-resistant gloves as appropriate for work being performed and materials handled			•	•
Half- or full-face respirators with organic/HEPA cartridges as approved by the SSO			•	
Tyvek™ splash-resistant suit			•	
Chemical-resistant clothing		•		
Pressure-demand, full-face SCBA or pressure-demand supplied air respirator with escape SCBA	•	•		
Inner and outer chemical-resistant gloves	•	•		
Chemical-resistant safety boots or shoes	•	•		
Two-way radio	•	•		
Hard hat	•	•		
Fully encapsulating chemical-resistant suit	•			

[MODIFY SAFETY EQUIPMENT BASED UPON SITE-SPECIFIC INFORMATION (if necessary)]

Table 6-1 describes the anticipated task-specific PPE. For activities not covered by Table 6-1, SSO/CHSO will revise the hazard assessment and select the appropriate PPE.

6.1 PPE Abbreviations

HEAD PROTECTION	EYE/FACE PROTECTION	FOOT PROTECTION
HH = Hard Hat HEARING PROTECTION EP = ear plugs EM = ear muffs	APR = Full Face Air Purifying Respirator with HEPA filter and organic vapor cartridge MFS = Mesh Face shield PFS =Plastic Face shield SG = ANSI approved safety glasses with side shields	Neo = Neoprene OB = Overboot Poly = Polyethylene coated boot Rub = Rubber slush boots STB = Leather work boots with steel toe

HAND PROTECTION	BODY PROTECTION	RESPIRATORY PROTECTION
Cot = cotton But = Butyl LWG = Leather Work Gloves Neo = Neoprene Nit = Nitrile Sur = Surgical Nit Sur - Nitrile Surgical	Cot Cov = Cotton Coveralls Poly = Polyethylene coated tyvek coveralls Saran = Saranex coated tyvek coveralls Tyvek = Uncoated paper tyvek coveralls WC = Work clothes	Level D = No respiratory protection required Level C = Full face air purifying respirator with approved cartridges Level B = Full face air supplied respirator with escape bottle

[UPDATE TABLE 6-1 BELOW BASED UPON THE AHA PRESENTED IN SECTION 4.4]

TABLE 6-1

PERSONAL PROTECTIVE EQUIPMENT SELECTION

TASK	HEAD	EYE/FACE	FEET	HANDS	BODY	HEARING	RESPIRATOR

7.0 MEDICAL SURVEILLANCE

All personnel performing field work where potential exposure to contaminants exists at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120(f) and, where applicable, expanded health standards.

7.1 Medical Surveillance Requirements

A physician's medical release for work will be confirmed by the SSO before a worker can enter the exclusion zone. The examination will be taken annually at a minimum and upon termination of hazardous waste site work if the last examination was not taken within the previous six months. Additional medical testing may be required by the CHSO in consultation with the SSO if an over-exposure or accident occurs, if an employee exhibits symptoms of exposure, or if other site conditions warrant further medical surveillance.

8.0 MONITORING

Monitoring shall be performed to identify and quantify airborne levels of hazardous substances and safety and health hazards in order to determine the appropriate level of worker protection needed on site.

The Consultant conducts perimeter air monitoring, and work zone monitoring for Consultant employees. The Consultant will monitor and document daily site conditions and operations on Owner's/Contractor's behalf.

The Contractor is responsible for the health and safety of Contractor and Subcontractor employees, and conducts work zone monitoring for Contractor and Subcontractor workers.

The CONTRACTOR may be required to provide the following equipment for health and safety monitoring of its personnel:

- Photoionization Detector (PID), or Flame Ionization Detector (FID),
- Particulate Meter (PM-10 capable)
- Multiple gas Meter with Combustible Gas Indicator (CGI)/Oxygen (O^2) / H2S / HCN sensors
- Drager Chip Measurement System (or equivalent instrument)
- Sound Level Meter if deemed necessary by the SSO and CESM (type to be appropriate to the activities performed)

The Consultant and Contractor will adopt the air monitoring action levels and contingency plan presented within the Table 8-1 below. The perimeter air monitoring will be conducted to conform with the community air monitoring plan (CAMP) guidelines presented by the New York State Department of Health in Appendix 1A of the Draft New York State Department of Conservation DER-10 Technical Guidance for Site Investigation and Remediation.

[APPEND THE CAMP OR SITE-SPECIFIC AIR MONITORING PROGRAM TO THIS HASP]

Total volatile organic compounds (VOCs), hydrogen cyanide, hydrogen sulfide, oxygen, respirable particulate matter, dust, and odor will be monitored during all intrusive activities in accordance with the CAMP. Table 8-1 provides a summary of real time air monitoring action levels and contingency plans for work zone activities.

TABLE 8-1: Work Zone Air Monitoring Action Levels

Air Monitoring Instrument	Monitoring Location	Action Level	Site Action
PID/FID	Breathing Zone	0.5 ppm	Use detector tube for benzene or Znose™ to verify if concentration is benzene.
PID/FID	Breathing Zone	0 - 10 ppm	If benzene is not present, no respiratory protection is required
		10 - 250 ppm	Stop work, withdrawal from work area, institute engineering controls, if levels persist Upgrade to Level C
		> 250 ppm	Stop work, withdraw from work area; notify SSO & CHSO
Oxygen meter	Breathing Zone	< 19.5%	Stop work; withdraw from work area; ventilate area, notify SSO & CESM.
		> 22%	Stop work; withdraw from work area; notify SSO & CHSO.
H2S meter	Breathing Zone	<5 ppm	No respiratory protection is required
		>5 ppm	Stop work, cover excavation, withdraw from work area, institute engineering controls, notify SSO & CHSO
HCN meter	Breathing Zone	<1.0 ppm	Run CMS Drager tube, continue monitoring with real time meter, continue work if CMS Drager Tube Reading is less than 2ppm.
		1.0< HCN Conc<2.0 ppm	Run CMS Drager tube and confirm concentration is less than 2.0 ppm, notify SSO and CHSO. Run CMS drager tube for sulfur dioxide, hydrogen sulfide, and phosphine chip potential interferences. Continue to monitor with real time meter.
		>2.0 ppm	Stop work, and move (with continuous HCN monitoring meter) at least 25 ppm upwind of the excavation until continuous meter reads less than 1 ppm, Notify SSO & CHSO Run CMS Drager hydrogen cyanide chip and re-evaluate activity, continue monitoring with a real time meter, resume work if concentrations read less than 1.0 ppm.
CGI	Excavation/ Work Zone	< 10 % LEL	Investigate possible causes, allow excavation to ventilate; use caution during procedures.
		> 10% LEL	Stop work; allow excavation, borehole to ventilate to < 10% LEL; if ventilation does not result in a decrease to < 10% LEL, withdraw from work area; notify SSO & CESM.
Particulate Meter	Excavation/ Work Zone	0.150 ug/m^3	Implement work practices to reduce/minimize airborne dust generation, e.g., spray/misting of soil with water

9.0 SITE CONTROL MEASURES

9.1 Site Zones

Site zones are intended to control the potential spread of contamination and to assure that only authorized individuals are permitted into potentially hazardous areas. A three-zone approach will be utilized. It shall include an Exclusion Zone (EZ), Contamination Reduction Zone (CRZ) and a Support Zone (SZ). Specific zones shall be established on the work site when operations begin for each task requiring such delineation (i.e. drilling, construction, excavation, trenching in impacted areas of the site). Maps depicting the zones will be available at the Site.

This project is being conducted under the requirements of 29 CFR 1910.120, and any personnel working in an area where the potential for exposure to site contaminants exists, will only be allowed access after proper training and medical documentation as required by The Owner/Contractor. These records are maintained by the CHSO, and copies are provided to the SSO prior to mobilization for project activities.

The following shall be used for guidance in revising these preliminary zone designations, if necessary.

Support Zone - The SZ is an uncontaminated area that will be the field support area for most operations. The SZ provides for field team communications and staging for medical emergency. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.

Contamination Reduction Zone - The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides an area for decontamination of personnel and portable hand-held equipment, tools and heavy equipment. A personnel decontamination area will be prepared at each exclusion zone. The CRZ will be used for Exclusion Zone entry and egress in addition to access for heavy equipment and emergency support services.

Exclusion Zone - All activities which may involve exposure to site contaminants, hazardous materials and/or conditions should be considered an exclusion zone. This zone will be clearly delineated by cones, tapes or other means. The SSO may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the site SSO allowing adequate space for the activity to be completed, field members and emergency equipment.

9.2 Communications

The following communications equipment shall be specified as appropriate:

- Telephones - A cellular telephone will be located in the SZ for communication with emergency support services/facilities and the home office. Personnel in the EZ can carry cellular telephones for communication as well if Level D PPE has been determined to be appropriate. Cellular phones will not be permitted in the EZ if work is being conducted in Level C PPE.

10.0 DECONTAMINATION

PPE help prevent the wearer from becoming contaminated or inhaling contaminants, and good work practices help reduce contamination on protective clothing, instruments, and equipment. Even with these safeguards, contamination may occur. Harmful materials can be transferred to clean areas, exposing unprotected personnel. To prevent such occurrences, the following contamination reduction and decontamination procedures have been developed.

10.1 Minimization of Contact with Contaminants

During completion of all site activities, personnel should attempt to minimize the degree of contact with contaminated materials. This involves a conscientious effort to keep "clean" during site activities. All personnel should minimize kneeling, splash generation, and other physical contact with contamination. This may ultimately minimize the degree of decontamination required and the generation of waste materials from site operations.

10.2 Personnel Decontamination

Personnel hygiene, coupled with diligent decontamination, will significantly reduce the potential for exposure. Consideration will be given to prevailing wind directions so that the decontamination line, the support zone, and contamination reduction zone exit is upwind from the exclusion zone and the first station of the decontamination line. Decontamination will be performed by removing all PPE used in EZ and placing in drums/trash cans at CRZ. Disinfecting hand wipes shall be available for wiping hands and face. For Level D Decontamination, personnel should wash and rinse gloves, and wash and rinse hands and face with potable water. For Level C Decontamination, personnel should wash and rinse gloves and overboots, remove boot covers, remove outer gloves, remove Poly-coated suit, wash inner gloves, remove respirator, rinse inner gloves, remove inner gloves and wash and rinse hands and face.

10.3 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination, wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment. If the injured person can be moved, he/she will be moved to the exclusion zone boundary and decontaminated by site personnel as described above before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury (a back or neck injury) provisions shall be made to ensure that emergency response personnel will be able to respond to victim without being exposed to potentially hazardous atmospheric conditions. The only time an injured person should be removed is if the worker’s life is threatened to a greater degree than if he/she is left in the spot where the accident occurred. If emergency response personnel have to enter hazardous conditions to respond to victim this should communicated when the emergency call is made and responders can come prepared in appropriate PPE. If the potential for inhalation hazards exist, such as with an

open excavation, this area will be covered with plastic sheeting, or similar controls, to eliminate any potential inhalation hazards. All emergency personnel are to be immediately informed of the injured person's condition, potential contaminants, and provided with all pertinent chemical data.

10.4 Hand Held Equipment Decontamination

Hand held equipment includes all monitoring instruments, samples, hand tools, and notebooks. The hand held equipment is dropped at the first decontamination station to be decontaminated by one of the decontamination team members. These items must be decontaminated or discarded as waste prior to removal from the exclusion zone.

To aid in decontamination, monitoring instruments can be sealed in plastic bags or wrapped in polyethylene. This will also protect the instruments against contaminants. The instruments will be wiped clean using wipes or paper towels if contamination is visually evident.

Decontamination procedures for sampling equipment, hand tools, etc., shall include the use of steam cleaning or a detergent wash, as appropriate for the site conditions.

10.5 Heavy Equipment Decontamination

Decontamination of chemically contaminated heavy equipment will be accomplished using high -pressure steam or dry decontaminated with brushes and shovels. Decontamination shall take place on a decontamination pad and all liquids used in the decontamination procedure will be collected. Vehicles or equipment brought into an exclusion zone will be treated as contaminated, and will be decontaminated prior to removal. All liquids used in the decontamination procedure will be collected, stored and disposed of in accordance with federal, state and local regulations. Personnel performing this task will wear the proper PPE as prescribed in Table 6-1.

11.0 EMERGENCY RESPONSE PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff are essential. Specific elements of emergency support procedures which are addressed in the following subsections include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on-site, record keeping, and emergency site evacuation procedures.

11.1 Pre-emergency Planning

Before the field activities begin, the local emergency response personnel may be notified by the Owner/Contractor of the schedule for field activities and about the materials that are thought to exist on the site so that they will be able to respond quickly and effectively in the event of a fire, explosion, or other emergency.

In order to be able to deal with any emergency that might occur during remedial activities at the Site, emergency telephone numbers will be readily available in the SSO vehicle or construction office. These telephone numbers are presented in Appendix A. Hospital route maps will also be readily available in the SSO vehicle and/or Construction Office, and are also located in Appendix B.

11.2 Roles and Responsibilities

11.2.1 Corporate Health and Safety Officer (CHSO)

The CHSO oversees and approves the Emergency Response Plan and performs audits to determine that the plan is in effect and that all pre-emergency requirements are met. The CHSO acts as a liaison to applicable regulatory agencies and notifies OSHA of reportable accidents.

11.2.2 Site Safety Officer (SSO)

The SSO is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The SSO is required to immediately notify the Consultant and l and CHSO of any fatalities or injuries requiring more than basic first aid treatment. The CHSO will notify OSHA within the required time frame if a reportable incident has occurred. The CHSO will be notified of all OSHA recordable injuries, fires, spills, releases or equipment damage in excess of $500 within 24 hours.

The SSO also serves as the Emergency Coordinator. In the event of an emergency, the Emergency Coordinator shall make contact with Local Emergency Response personnel. In these contacts, the Emergency Coordinator will inform response personnel about the nature of work on the Site, the type of contaminants and associated health or safety effects, and the nature of the emergency, particularly if it is related to exposure to contaminants.

The Emergency Coordinator shall review this plan and verify emergency phone numbers, identify hospital routes, and shall ensure the appropriate emergency equipment is available and in working order prior to beginning work on Site.

The Emergency Coordinator shall implement the Emergency Response Plan whenever conditions at the Site warrant such action.

11.2.3 Site Personnel

Site personnel are responsible for knowing the Emergency Response Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a Site emergency.

11.3 Evacuation Routes and Procedures

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs at the work area, including but not limited to fire, explosion or significant release of toxic gas into the atmosphere, immediate evacuation of all personnel is necessary due to an immediate or impending danger. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at a pre-determined location.

11.4 Contingency Plans

11.4.1 Fire Prevention and Protection

In the event of a fire or explosion, procedures will include immediately evacuating the work area. The Emergency Coordinator will immediately notify the local fire and police departments. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials
- Storage of flammable liquids and gases away from oxidizers
- No smoking in the exclusion zone or any work area
- No hot work without a properly executed hot work permit
- Shutting off engines to refuel
- Grounding and bonding metal containers during transfer of flammable liquids
- Use of UL approved flammable storage cans
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities
- Monthly inspections of all fire extinguishers.

The SSO is responsible for the maintenance of fire prevention and/or control equipment. The SSO is responsible for the control of fuel source hazards.

11.4.2 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet will be followed as necessary. If first aid or emergency medical treatment is necessary the Emergency Coordinator will contact the appropriate emergency facilities.

SKIN AND EYE CONTACT:	Use copious amounts of soap and water. Wash/rinse affected areas thoroughly, then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination. Skin should also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs. Transport to hospital or local medical provider.
INHALATION:	Move to fresh air. Decontaminate. Transport to hospital or local medical provider.
INGESTION:	Decontaminate and transport to emergency medical facility.
PUNCTURE WOUND OR LACERATION:	Decontaminate and transport to emergency medical facility.

11.4.3 Decontamination During Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or postponed. The SSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on site, a plastic barrier between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

11.4.4 Adverse Weather Conditions

In the event of adverse weather conditions, the SSO will determine if work can continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries
- Potential for cold stress and cold-related injuries
- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds)
- Limited visibility (fog)
- Potential for electrical storms
- Earthquakes
- Other major incidents

Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The SSO will determine the need to cease field operations or observe daily weather reports and evacuate, if necessary, in case of severe inclement weather conditions.

11.4.5 Spill Control and Response

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining the best means of containment and cleanup. For small spills, absorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid or caustic spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas should be blocked. All spill containment materials will be properly disposed. An exclusion zone of 50-100 feet around the spill area should be established depending on the size and type of the spill.

The Emergency Coordinator should take the following steps:

1. Determine the nature, identity and amounts of major spill components
2. Make sure all unnecessary persons are removed from the spill area
3. Notify appropriate response teams and authorities
4. Use proper PPE in consultation with the SSO and information provided on the MSDS for the spilled material
5. If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.)
6. If possible, try to stop the leak with appropriate material
7. Remove all surrounding materials that can react or compound with the spill

11.5 Emergency Contact Information

[INSERT TABLE OF SITE SPECIFIC EMERGENCY CONTACT INFORMATION]

11.6 Emergency Equipment

The following minimum emergency equipment should be kept and maintained on-site.

- Industrial first aid kit
- Portable eye washes
- Fire extinguishers (one per vehicle and heavy equipment)
- Absorbent material
- Bloodborne pathogen kit

11.7 Postings

The following information shall be posted or be readily visible and available at conspicuous locations throughout the site:

- Emergency telephone numbers
- Hospital Route Map

11.8 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers;
- Refilling medical supplies;
- Recharging eyewashes and/or showers
- Replenishing spill control supplies
- Replacing used air horns

12.0 LOGS, REPORTS, AND RECORD KEEPING

The following is a summary of required health and safety logs, reports, and record keeping. The SSO will maintain an on-site file for all the following logs, reports, and records. The CHSO or designee will maintain a parallel file off-site.

12.1 Medical and Training Records

Copies or verification of training (40 hour, 8 hour, supervisor, and site-specific training) and medical clearance for hazardous waste site work and respirator use will be maintained by the CHSO and copies provided to the SSO prior to the initiation of work on-site.

12.2 On-Site Log

A log of personnel on-site each day will be kept by the SSO in a field logbook.

12.3 Exposure Records

All personal monitoring results, laboratory reports, calculations and air sampling data sheets will be maintained by the SSO during site work. At the end of the project they may be maintained in employee files if deemed necessary by the CHSO.

12.4 Accident/Incident Reports

The incident reporting and investigation during site work will follow the Incident Reporting Program in Appendix J.

12.5 OSHA Form 300

An OSHA Form 300 will be maintained at the Contractor or Consultant home office. The SSO may retain a copy of the OSHA Form 300 on-site . All recordable injuries or illnesses will be recorded on this form.

12.6 Hazard Communication Program/MSDS

Material Safety Data Sheets (MSDSs) will be obtained for applicable substances and included in the site hazard communication file.

13.0 FIELD PERSONNEL REVIEW

This form serves as documentation that field personnel have read, or have been informed of, and understand the provisions of this HASP for the One Edgewater Street Property in Staten Island, New York. It is maintained on-site by the SSO as a project record. Each field team member shall sign this section after training on the contents of this HASP has been completed. Site workers must sign this form after site-specific training is completed and before being permitted to work on-site.

I have read, or have been informed of, the Health and Safety Plan and understand the information presented. I have also completed site-specific training for the work detailed in the project Work Plan. I will comply with the provisions contained therein.

NAME (PRINT AND SIGN)	DATE

APPENDIX A

ORGANIZATIONAL STRUCTURE / CONTACT INFORMATION

INSERT TEAM INFO

INSERT CONSULTANT PROJECT TEAM INFO

INSERT CONTRACTOR PROJECT TEAM INFO

APPENDIX B

SITE-SPECIFIC INFORMATION

INSERT SITE-SPECIFIC SITE LOCATION MAP

INSERT SITE PLAN FOR PROPOSED ACTIVIIES THAT INCLUDES (but not limited to)

Street Names

Site Boundaries

Proposed Scope of Work

Work Area

INSERT HOSPITAL ROUTE MAP
Includes
Hospital Name
Hospital Address
Distance from the site
Telephone Number
Written driving directions from the site

Appendix C

Field Sampling Plan (FSP) (Electronic only)

GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

Appendix C
Field Sampling Plan

One Edgewater Street
Staten Island, New York

In association with:
Clifton Former Manufactured Gas Plant
Operable Unit 2
ACO Index No. D2-0001-98-04
Site ID: 2-43-023

Prepared for:
National Grid
287 Maspeth Ave
Brooklyn, New York

Prepared by:
GEI Consultants, Inc.
455 Winding Brook Drive
Glastonbury, CT 06033

March 2010

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Abbreviations and Acronyms

CAMP	Community Air Monitoring Plan
COC	Chain-of-Custody
DNAPL	Dense Nonaqueous Phase Liquids
EDDs	Electronic Data Deliverables
EPA	United States Environmental Protection Agency
FSP	Field Sampling Plan
HASP	Health and Safety Plan
LQA	Laboratory Quality Assurance Officer
MDL	Method Detection Limit
MGP	Manufactured Gas Plant
MS/MSDs	matrix spike/matrix spike duplicates
NYCDEP	New York City Department of Environmental Protection
NYSASP	New York State Analytical Services Protocol
NYSDEC	New York State Department of Environmental Conservation
NYSDEP	New York State Department of Environmental Protection
NYSDOH	New York State Department of Health
NIST	National Institute of Standards and Technology
OU	Operable Unit
PE	Performance Evaluation
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts per Million
PQAM	Project Quality Assurance Manager
QA/QC	Quality Assurance/Quality Control
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
RPD	Relative Percent Difference
SMP	Site Management Plan
SVOC	Semivolatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TCL	Target Compound List
UFPO	Underground Facilities Protective Organization
USCS	United Soil Classification Systems
USGS	United States Geological Survey
VOC	Volatile Organic Compound

1. Introduction

GEI Consultants, Inc. has prepared this Field Sampling Plan (FSP) on behalf of National Grid to provide guidance for field-sampling activities to be completed as part of the at the One Edgewater Street property in Staten Island, New York. This FSP is Appendix C to the *Final Site Management Plan (SMP) One Edgewater Street* dated March 2010. This FSP covers the proposed SMP monitoring activities as well potential future activities that could be proposed by the current property owner. A description of the Site, including the monitoring well network, is provided in the SMP.

A Quality Assurance Project Plan (QAPP) dated March 2010 has been prepared as **Appendix D** of the SMP. The QAPP details the project data objectives and quality assurance/quality control (QA/QC) measures that will be utilized during the implementation of the SMP. An example generic health and safety plan (HASP) is provided as **Appendix B** of the SMP.

1.1 Overview of Field Activities

The scope of work for annual groundwater monitoring and annual certification activities at One Edgewater Street is included in the SMP.

If intrusive work is proposed by the property owner within areas that contain residual impacts, the property owner will provide a Work Plan to National Grid and New York State Department of Environmental Protection (NYSDEC) for approval prior to the start of work. The scope of work will define the field methods to be used or will adopt and modify, as needed the guidance provided in this FSP.

2. General Field Guidelines

2.1 Utility Clearance

Underground utilities, including electric, telephone, cable television, sewers, water, natural gas, etc., will be identified by owners/operators prior to any intrusive activity. The excavation contractor will place a call to the New York City/ Long Island One Call Center (1-800-272-4480) at least two, but not more than 10 days, prior to the commencement of work activities. The New York City and Long Island One Call Center is open 24 hours a day, 7 days a week. The excavation contractors will make note of ticket reference number and names of the utility operators that will be notified by the New York City and Long Island One Call Center. Public and privately owned utilities will be located by responsible agencies at least 48 hours prior to field activities. The contractor will check that each notified operator has either marked the work site or given an "all clear" prior to commencing work. Other potential on-site hazards such as sharp objects, known subsurface structures, overhead power lines, and building hazards will be identified during the site visit.

If intrusive activity occurs on private property, then a private mark out company will be contracted to identify any subsurface utilities or obstructions prior to sample collection at the discretion of the property owner. As a precaution, the first 5 feet or 1 foot below the nearest identified utility of the boring location should be cleared utilizing hand tools, vacuum excavation, or non-intrusive methods.

2.2 Field Log Books

The field notebook is intended to serve as a record of significant field activities performed or observed during the project. The field notebook will serve as a factual basis for preparing field observation reports, if required, and reports to clients and regulatory agencies.

Procedure

1. Use a separate all-weather bound notebook for each site/location/project number.
2. Write neatly using black or blue waterproof pen (or note if field conditions [i.e., cold or wet weather] require use of pencil).
3. Write the project name, project number, and book number (i.e., 1 of 3) on the front cover. On the inside cover, identify the project name, project number, and "Return Book To:" the office address of the Project Manager (PM).
4. Number all of the pages of the field book starting with the first entry.
5. Record activities as they occur.
6. Neatly cross out mistakes using a single line and initial them. Erasures are not permitted. If an error is made on an accountable document assigned to one individual, that individual will make all corrections. The person who made the entry will correct any subsequent error discovered on an accountable document. All subsequent corrections will be initialed and dated.
7. Sign or initial and date the bottom of every page with an entry. Cross out unused portions of a page.
8. Record the following information upon each arrival at the site:
    a. Date/time/weather/project number
    b. Consultant personnel
    c. Purpose of visit/daily objectives
9. Record conversations with: [Recommendation - If possible, record telephone numbers of individual contacts for the site in the field notebook.]
    a. Contractors
    b. Clients
    c. Visitors (include complete names, titles, and affiliations whenever possible).
    d. Consultant office staff
    e. Landowners (site or abutters)
    f. Note time of arrival and departure of individuals visiting the site.
10. Examples of the field information to be recorded include time of occurrences.
    a. General site work activities
    b. Subcontractor progress
    c. Type and quantity of monitoring well construction materials used
    d. Use of field data sheets or electronic logging equipment (i.e., boring logs, monitoring well sampling logs, etc.)
    e. Ambient air monitoring data
    f. Locations and descriptions of sampling points
    g. Sample media (soil, sediment, groundwater, etc.)
    h. Sample collection method
    i. Number and volume of sample(s) collected and sample bottle preservatives used
    j. Sample identification number (s) and date and time of sample collection

k. Approximate volume of groundwater removed before sampling
l. Field observations
m. Any field observations made such as pH, temperature, turbidity, conductivity, water level, etc.
n. References for all maps and photographs of the sampling site(s)
o. Information pertaining to sample documentation such as; bottle lot numbers/ dates and method of sample shipments/chain-of custody record numbers and overnight shipping air bill numbers.
p. Surveying data (including sketches with north arrows)
q. Changes in weather
r. Rationale for critical field decisions
s. Recommendations made to the client representative and PM.

11. Record the following information upon departure.
    a. Include a site sketch or representative site photograph of conditions at the end of the day, if required.
    b. Time
    c. Summarize work completed/work remaining
    d. Place a diagonal line though and sign portions of pages not used or skipped.

Precautions

- Only record facts.
- Do not fail to record an observation because it does not appear to be relevant at that time.
- Identify conditions or events that could affect/impede your ability to observe conditions.
- Do not use spiral notebooks because pages can be easily removed.

2.3 Daily Activity Report Procedure

A daily activity report will be generated daily from the field database or field notebook to summarize the activities, observations, and decisions made during the day's fieldwork.

Procedure

At the completion of the day's fieldwork, all pertinent field observations will be recorded in a hard copy paper form if requested by the PM. If the electronic database is used, the database will generate the daily activity report that includes all samples collected and submitted to the laboratory for analysis. A daily activity report form is located in **Appendix A**. This report must be completed at the end of the workday. The daily activity report will be forwarded to the PM and site manager once completed. Field reports will be maintained at the site electronically and/or in hard copy form.

Contents of the report should include, at a minimum, the following information:

1. Date, project name, project number/phase/task, and site location.
2. A record of person(s) present at the site during the workday.
3. A brief description of the daily activities performed (e.g., drilled five borings in the overburden).
4. A summary of any significant field observations to include:
    a. A summary of deviation(s) from the work plan or objectives.
    b. A summary of field decision(s) made, who made it/them, and the basis for such decision(s).
    c. Any recommendations that may result from field observations and any actions that resulted from those recommendations.
5. A summary of specific fieldwork completed (e.g. SB-01, drilled depth 20 feet).
6. A summary of samples submitted for laboratory analysis.

Precautions

- The daily activity report should be based solely upon information. Any speculation should be clearly noted in the report as such.
- The daily activity report should never be released to anyone other than the PM or client unless explicitly authorized by the PM or client.

2.4 Field Boring Data Logging

This section is applicable if soil borings or monitoring wells are installed within areas that contain residual impacts.

To prepare and record a succinct, accurate representation of subsurface conditions, drilling and soil sampling activities, monitoring well installation details, and borehole abandonment procedures. A completed boring log should contain sufficient information to facilitate the preparation of geologic cross sections and to offer readers a thorough account of drilling and borehole abandonment procedures.

Procedures

1. All borings will be recorded in a field notebook and/or electronically on a personal data assistant (PDA) in utilizing pLog™ or similar soil logging program. Prior to beginning drilling activities, generic project header information, project staff, subcontractors, and anticipated geologic formations should be entered into the pLog™ database and downloaded to the PDA. If a field notebook is used, then logging will be completed in accordance with procedures described above in Section 2.2.
2. Complete the log concurrently with drilling procedures (i.e., do not let the driller work faster than your ability to accurately represent the subsurface conditions).

3. If applicable, record the conventional geotechnical parameters during Standard Penetration Testing as per American Society for Testing and Materials (ASTM)-D1586, including blow counts of the hammer per 6-inch increment, total penetration of the split-spoon sampler, and length of the entire sample recovered. Record the weight of the hammer, size of the split-spoon sampler, and distance of the hammer fall.
4. Record the depth at which casing, augers, or drilling equipment are seated and the sizes of the equipment. Be certain to include sizes and seating depths of telescoped casing (if used).
5. Record the time at which each sample is retrieved from the borehole.
6. Record the results of any headspace tests performed on samples collected from discrete depths and also the type of field equipment used.
7. Provide soil descriptions in accordance with soil description procedures located below in Section 5.
8. Use the field book to record any relevant drilling observations that cannot be recorded on the PDA such as advance rate, water levels, drilling difficulties, changes in drilling method or equipment, amounts and types of any drilling fluids, running sands, and borehole stability.
9. Record the procedures and material used to abandon or seal each borehole upon completion.
10. At the completion of the day's activities, download the PDA to the database and generate, review, and edit (if necessary) the completed boring log. If a field notebook is used, make photocopies of the field notebook at the end of each day.

Precautions

- Electronic files should be backed up daily to prevent loss of data. A hardcopy of the boring logs for work performed each day should be generated as a backup. Hardcopy documents should be backed up also.
- Keep boring logs and rock core logs focused on actual observations. Record only factual information on the logs.

3. Stockpile Soil Sample Collection Procedure

This section is applicable if soils that contain residual impacts are excavated and stockpiled.

Procedure

1. Remove poly sheeting covering the soil stockpile or cut a small opening in the poly sheeting to access the stockpiled soils. Choose locations that are representative of the excavated materials and are spatially distributed.

2. Remove soils at the surface of each stockpiled location.

3. Soil samples will be collected using decontaminated stainless steel or disposable sampling equipment.

4. Soils from each sample location will be placed directly into laboratory provided containers for VOC analysis. Soils for the remainder of the analyses will be composited into a decontaminated stainless steel container and homogenized for all remaining parameters identified in the Site Work Plan and as required by the National Grid-approved disposal facility.

5. All samples collected for analysis will be placed immediately into laboratory sample jars. Samples will be stored in a cooler with ice to 4°C before transport to the laboratory.

6. Procedures for logging, sample collection, and field classification are presented in Section 5.4. In addition, the surface soil sample will be described including:
   - Site;
   - Location number;
   - Interval sampled;
   - Date;
   - Initials of sampling personnel;
   - Soil type;
   - Color;
   - Moisture content;
   - Texture;
   - Grain size and shape;
   - Consistency;
   - Visible evidence of residues; and
   - Miscellaneous observations (including organic vapor readings).

4. Subsurface Soil Sample Collection Procedure

This section is applicable if soil subsurface borings are completed within soils that exhibit residual impacts.

The following subsurface soil sample collection procedure is applicable to the collection of representative subsurface soil using direct push Geoprobe® drilling methods. Conventional hollow-stem auger or resonant sonic drilling technologies may also be used if drilling conditions warrant. Alternative methods may be used at the field representative's discretion with the authorization of NYSDEC.

4.1 Sampling Methods

Location, equipment, and sampling situations will dictate the applicable method of sample collection for each boring location. Borings could generally be accomplished through the use of one of the following samplers or techniques:

- Geoprobe® Drilling Techniques
- Conventional Hollow-Stem Auger Drilling Methods
- Resonant Sonic Drilling Methods

These samplers and sampling techniques will result in the collection of representative samples.

4.2 Sample Interferences

Proper sampling procedures will be used to collect samples in accordance with the standard operating procedures (SOP) to prevent cross contamination and improper sample collection. Common causes of sample interferences are listed below to ensure that the samplers can avoid potential sample collection problems.

1. Cross Contamination: Eliminated or minimized through the use of dedicated or disposable sampling equipment where appropriate. Where the use of dedicated or disposable sampling equipment is not possible or practical, the equipment will be decontaminated in accordance with the SOP for Decontamination of Field Sampling Equipment is located in Section 9.

2. Improper Sample Collection: Typical improper sample collection techniques include:

- Improper decontamination of sampling equipment
- Use of sampling equipment or sample containers that are not compatible with the contaminants of concern or the laboratory analytical method.
- Sample collection in an obviously disturbed or non-representative area.

4.3 Equipment/Apparatus

Equipment needed for collection of subsurface soil samples may include (depending on technique chosen):

- Geoprobe® Sampling Apparatus
- Rotary Hollow-Stem Auger Sampling Apparatus
- Rotosonic Sampling Apparatus
- Stainless Steel Sampling Tools
- Laboratory Provided Sample bottles
- Resealable plastic bags
- Ice
- Coolers, packing material
- Chain of Custody (COC) records, custody seals
- Decontamination equipment/supplies
- Maps/plot plan
- Safety equipment
- Tape measure
- Digital Camera
- Field data sheets/Logbook/waterproof pen
- Permanent markers
- Sample bottle labels
- Paper towels
- Personal protection equipment (PPE)

4.4 Subsurface Soil Sample Procedure

Subsurface sampling will be conducted in accordance with the following general procedures and specific guidance for the methods discussed below.

4.4.1 General Procedures

Prior to sampling, New York City and Long Island One Call will be contacted and an accurate utility mark out will be established as described in subsection 2.1. If drilling on private property, then a private mark out company may be contracted to identify any subsurface utilities or obstructions prior to sample collection.

At each location, plastic sheet, plywood sheet, or other suitable cover will be placed around the augers during conventional hollow stem auger drilling rig to contain soil cuttings.

Procedures for geologic logging, sample collection, and field classification are presented in Section 5.

All the borings will be backfilled using a tremie pipe from the bottom to the top of the bore hole with cement/bentonite grout in accordance with NYSDEC guidelines for standard grout mixtures:

- One 94-pound bag Type I Portland cement
- 3.9 pounds powdered bentonite
- 7.8 gallons potable water

The boring will be grouted to the surface and allowed to cure overnight. If excessive settling is observed in the borehole due to seepage of the grout into the formation, then additional grout may be applied. The surface conditions including any asphalt/concrete surface will then be restored to its original condition.

Investigation derived wastes will be handled as specified in investigation-derived waste handling procedure located in Section 11.

4.4.2 Direct Push Geoprobe® Procedures

For direct push Geoprobe® methods, discrete soil samples will be collected from each boring using a 4-foot or 5-foot close piston Macro-Core® sampler configuration. Macro-Core® will be advanced to the beginning of the intended sample interval, the piston will be released, and the Marco-Cores® will be driven to the end the intended sample interval. This method will ensure that sampling of "slough" does not occur. The Macro-Core® will then be retrieved and the collected soil core will be extruded from the sampler along with the liner. After decontamination, the Macro-Core® sampler will be re-assembled using a new liner. The Macro-Core®, rods and other sample collection equipment will be decontaminated as indicated below in subsection 9.2.2.

4.4.3 Rotary Hollow Stem Auger Procedures

For rotary hollow-stem auger methods, split-spoon sampling will be conducted in accordance with ASTM Specification D-1586-84 for standard penetration test and split barrel sampling. Soil samples will be collected continuously through split-spoon sampling methods at the boring location. Split spoon samples will be collected ahead of the lead auger flight.
Upon collection of each split spoon sample, the lead auger will be advanced over the sampled interval prior to collection of the next split spoon sample. This method will ensure that

"double-spooning" ahead of the augers does not occur. In addition, while the augers are being advanced a temporary auger plug will be placed at the bottom of the lead auger to minimize or eliminate the potential for formation materials to run up into the augers. The use of an auger plug will help assure that split spoon samples are representative of in-situ formation materials. Split-spoons will be decontaminated after each sample is collected as indicated below in subsection 9.2.2.

4.4.4 Rotosonic Procedures

For rotosonic methods, soil samples will be collected utilizing a stainless steel core barrel that is advanced utilizing resonant sonic energy. A larger diameter casing is then advanced over the core barrel. The core barrel is retrieved to the surface for sample extrusion. Core samples will be taken directly from the core barrel by extruding it into a plastic baggie-like sleeve, stainless steel tray, or retained in a clear plastic liner. The core barrel will be cleaned with tap water following each use. The field geologist will classify and sample the soil located within the liner. Upon completion, the excess soil will be placed into a 55-gallon drum for disposal and the inner liner properly disposed as indicated in Section 13. The core barrel will then be advanced within the isolation casing on the same borehole to collect the next soil core interval. The core barrel, casing, and other sample collection equipment will be decontaminated as indicated below in subsection 9.2.2.

5. Test Pit Excavation

The following test pit soil sample collection procedure is applicable to the collection of representative subsurface soil using a backhoe. Alternative methods may be used at the field representative's discretion with the authorization of National Grid and NYSDEC.

5.1 Test Pit Specifications

Test Pits will be installed according to the following specifications:

a. When specified in the Site Work Plan, test pits will be excavated using a rubber-tired backhoe. In the event deep excavations are required, a track hoe will be utilized.
b. Locations of test pits will be finalized in the field, based on the location of potential source areas and existing underground utilities.
c. If the prospective test pit location is covered by asphalt or concrete, the area will be saw cut prior to excavation.
d. During excavation activities, personnel will stand upwind of the excavation area to the extent possible. Air monitoring will be conducted in accordance with the HASP.
e. Test pit materials will be visually described, as well as photographed for future reference.
f. Material removed from the test pit will be placed on polyethylene sheeting.
g. Should sampling of excavated material be performed, samples will be collected from the stockpiled material and/or the backhoe bucket.
h. Upon completion, the materials from the test pit will be placed back in the excavation in the reverse order in which it was excavated.
i. Visually clean soils, such as surface soils, will be segregated from soils that may be impacted. The visually clean soils will be used to cover the impacted soils/source materials when placed back in the excavation.
j. Test pits will be backfilled as soon as possible after completion. No test pit excavation will remain open overnight.
k. For gravel roadways and parking areas, the backfill will be tamped down in 18-inch lifts. A six (6) inch layer of clean run of crushed gravel will be tamped in-place as the final lift. For test pits located in asphalt-covered areas, the surface will be replaced with cold or hot asphalt mix, compacted by rolling, and trimmed flush with the adjoining surface. Test pits located in grassed areas will be reseeded.
l. Following restoration of the excavation, the test pit will be staked to facilitate subsequent location by surveying crews, if necessary.

6. Soil Description Procedure

The following soil description procedure is applicable for use in describing soils. Any deviation from this standard will be documented in the field-sampling book and in the report at the completion of the intrusive activities.

6.1 Description Method

All soils will be described using the Unified Soil Classification System/ASTM D2488. The use of one standard will allow continuity of sampling descriptions between sample locations and personnel.

6.2 Sample Interferences

Proper handling of cores while recording descriptions will be used to ensure that handling does not affect sample collection or cause cross contamination within the core sample.

Cross Contamination: Eliminated or minimized with dedicated or disposable sampling equipment where appropriate. Where the use of dedicated or disposable sampling equipment is not possible or practical, the equipment will be decontaminated in accordance with the procedure for the decontamination of field sampling equipment located below in Section 10.

6.3 Equipment/Apparatus

Equipment needed for description of soil samples may include:

- Stainless steel sampling tools
- Decontamination equipment/supplies
- Safety equipment
- Tape measure
- Camera
- Field data sheets/field notebook/waterproof pen
- Permanent marker
- PPE

6.4 Soil Sample Description Procedure

The sampling procedure is as follows:

All soils are to be logged using ASTM D2488 *Standard Practice for Description and Identification of Soils*. The description of each sample interval should be prepared as follows:

1. The specific intervals for description should be noted for each sample. The description should not necessarily be for the entire subsurface soil interval. Geologic horizons, small-scale units, or other changes in soil conditions within the subsurface soil sample should be identified and described separately.
2. Soil description should include particular notes if the field representative believes that there is a possibility the soil sample being described is not representative of the interval sampled.
3. The following data will be recorded on the sample collection method, if applicable:
    a. Method of collection, hollow stem auger, rotosonic, Geoprobe®, etc.
    b. Interval sampled vs. amount recovered.
    c. Blow counts, weight of hammer, and hammer free fall distance for split spoon samplers, if used.
4. **For course grained soils with less than 50% fines:**
    a. **GROUP NAME (SYMBOL), Structure, % Gravel Sand and Fines in order of predominance, % Cobbles and/or boulders (by Volume), Maximum Particle Size, Other (moisture, depositional descriptions, representativeness), Color, Local or Geologic Name, environmental/geologic descriptions.**
5. **For fine grained soils with greater than or equal to 50% fines:**
    a. **GROUP NAME (SYMBOL), Structure, Plasticity, Plasticity characteristics (if performed), % Gravel Sand, and size ranges, Other (moisture, depositional descriptions, representative nature), Color, Local, or Geologic Name, Field Soil Strength measurements (if performed), environmental/geologic descriptions.**
6. **Specific descriptions of each of the above description categories are described in Appendix B or below.**
7. Soil moisture will be described as Dry, Moist, or Wet.
8. Soil color will be described using the color chart in **Appendix B**. Colors may be combined: e.g., red-brown. Color terms should be used to describe the "natural color" of the sample as opposed to staining caused by contamination.
9. The representative nature of the sample interval should be noted if there is a possibility the soil sample being described is not representative of the interval sampled.

10. Visual evidence of contamination should be described in the sample log with the specific depths or depth intervals where the contamination was noted. Descriptions of visual, olfactory, and product observed should conform to the following standards.
    a. **Sheen** - iridescent petroleum-like sheen. Not to be used to describe a "bacterial sheen" this can be distinguished by its tendency to break up on the water surface at angles, whereas petroleum sheen will be continuous and will not break up. A field test for sheen is to put a soil sample in a jar of water and shake the sample (jar shake test), then observe the presence/absence of sheen on the surface of the water in the jar.
    b. **Stained** - used w/color (i.e., black or brown stained) to indicate that the soil matrix is stained a color other than the natural (non-impacted) color of the soil.
    c. **Coated** - soil grains are coated with tar/free product – there is not sufficient free-phase material present to saturate the pore spaces.
    d. **Blebs** - observed discrete sphericals of tar/free product - but for the most part the soil matrix was not visibly contaminated or saturated. Typically, this is residual product.
    e. **Saturated** - the entirety of the pore space for a sample is saturated with the tar/free product. Care should be taken to ensure that you are not observing water saturating the pore spaces if you use this term. Depending on viscosity, tar/free-phase saturated materials may freely drain from a soil sample.
    f. **Oil**. Used to characterize free and/or residual product that exhibits a distinct fuel oil or diesel fuel like odor; distinctly different from MGP-related odors/impacts.
    g. **Tar**. Used to describe free and/or residual product that exhibits a distinct "coal tar" type odor (e.g., naphthalene-like odor). Colors of product can be brown, black, reddish-brown, or gold.
    h. **Solid Tar**. Used to describe product that is solid or semi-solid phase. The magnitude of the observed solid tar should be described (e.g. discrete granules or a solid layer).
    i. **Purifier Material**. Purifier material is commonly brown/rust or blue/green wood chips or granular material. It is typically associated with a distinctive sulfur-like odor. Other colors may be present.
    j. **Olfactory Descriptors.** Use terms such as " tar-like odor" or "naphthalene-like odor" or "fuel oil-like odor" that provide a qualitative description (opinion) as to the possible source of the odor. Use modifiers such as strong, moderate, faint to indicate intensity of the observed odor.
    k. **Dense Non-Aqueous Phase Liquid (DNAPL)/Light Non-Aqueous Phase Liquid (LNAPL).** A jar shake test should be performed to identify and determine whether observed tar/free-phase product is either denser or lighter than water. In addition, MGP residues can include both light and dense phases

- this test can help determine if both light and dense phase materials are present at a particular location.

l. **Viscosity of Free-Phase Product** – If free-phase product/tar is present, a qualitative description of viscosity should be made. Descriptors such as:

Highly viscous (e.g. taffy-like)
Viscous (e.g. No. 6 fuel oil or bunker crude like)
Low viscosity (e.g. No. 2 fuel oil like)

11. A photo ionization detector or flame ionization detector (PID/FID) will be used to screen all soil samples at the core location at 6 to 12-inch intervals. This screening data may be used to aid in selection of specific analytical sampling intervals. In addition, the PID or FID will be used to screen samples using the jar headspace method described below in subsection 6.5. The maximum readings from the jar headspace screening will be recorded and included on the logs. PID or FID will be calibrated daily at a minimum.

6.5 Soil Screening Procedure

The objective of field screening of soils is to measure the relative concentrations of volatile organic compounds (VOCs) present in soil at the project site. This information can be used to: 1) segregate soil based upon the degree of impacts, 2) to identify samples for laboratory analysis of VOCs, and 3) as a qualitative method to evaluate the presence or absence of VOCs in soils. A PID or FID may be used.

Procedure

1. Prior to sampling event, the instrument must be calibrated to the appropriate standard and have the appropriate detector for the contaminants expected to be encountered at the site. The type of standard and detector to be used is indicated in the QAPP.
2. Record background readings of atmospheric conditions in the work area while walking across the work area. The highest meter response should be recorded in the field notebook.
3. Fill a clean, glass jar approximately half way with soil. Use a clean stainless steel sampling implement. Quickly cover the top of the jar with a sheet of aluminum foil and affix the lid to the jar. Each jar should be labeled to indicate the sample location and depth from which the sample was collected.
4. Allow the soil to volatilize for at least 10 minutes. Shake vigorously at the beginning and at the end of the headspace development period. If ambient temperatures are below 50 °F, headspace development should occur, if possible, with a heated area.

5. After headspace development, gently remove the screw cap and expose the foil seal. Quickly puncture the foil seal with the instruments tip to approximately ½ of the headspace depth.
6. Following the probe insertion through the foil seal, record the highest meter response as the jar headspace concentration. Maximum response should occur within 3 to 5 seconds after probe insertion.

Precautions

- Follow safety procedures defined within the Site Health and Safety Plan (HASP).
- The various instruments may work poorly in rain, high humidity, or in cold temperatures. In these instances, headspace readings will be completed in dry or warm areas.
- Care must be taken to prevent water or soil particulates from entering the tip of the instrument. If this occurs, the probe tip should be cleaned before further use.
- While establishing background conditions and performing jar headspace screening, care should be taken to avoid extraneous VOC sources such as vehicle emissions or other organic vapor sources.

6.6 Air Monitoring Procedure

Air monitoring will be conducted as specified in the HASP. Air monitoring will be conducted utilizing a PID during all intrusive activities within soils with residual impacts. A multiple gas meter will be used to monitor will be used to monitor for total VOCs, hydrogen cyanide, hydrogen sulfide, lower explosive limit (LEL) and percent oxygen during intrusive activities. During intrusive activities, particulate monitoring will be conducted with a personal mini-ram digital particulate meter (PM-10 capable) up wind and downwind of the work zone. All monitoring equipment will be calibrated at the beginning of the day and more frequently, if needed, with manufacturer specified calibration gas.

6.7 Quality Assurance/Quality Control

There are no specific QA activities that apply to the implementation of these procedures. However, the following general QA procedures apply:

- All data must be documented on field data sheets or within site logbooks.
- All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation and they must be documented.

6.8 Sample Labeling Procedure

All samples collected will be labeled in accordance with the table listed below.

PRIMARY SAMPLES TYPES	QA/QC SAMPLE TYPES
SOIL SAMPLES Stockpile Soil-ID SP-01 Boring -ID (SAMPLE DEPTH-FEET) SB-01 (10-15) **GROUNDWATER SAMPLES** Monitoring Well-ID CF-MW-20	**FIELD BLANKS** SAMPLE-ID – [DATE] CF-SB-FB-063010 CF-MW-FB-063010 **MATRIX SPIKE/DUP** SAMPLE [ID] [DEPTH] [EITHER MS OR MSD] CF-SB-01 (10-15) MS/MSD CF-MW-01 (10-15) MS/MSD **TRIP BLANKS** SAMPLE- ID [DATE] CF-TB-063007 **BLIND DUPLICATES** SAMPLE -ID[XX][DATE] CF-SB-XX-063010 CF-MW-XX-063010

In addition to the information listed above, each sample will be labeled with the date and time the sample was collected, laboratory analysis requested, initials of the sampler(s), and the project number. Sample handling procedures are located in the QAPP.

7. Monitoring Well Installation and Development

Monitoring wells could be installed at the Site. If installed, all permanent wells will be developed prior to the collection of groundwater samples. The following procedures will be used to install and develop all permanent monitoring wells.

7.1 Monitoring Well Specifications

Monitoring wells installed in unconsolidated deposits that do not penetrate a presumed confining layer will be constructed according to the following specifications:

2. Install polyvinyl chloride (PVC) 1.5-inch pre-packed or 2-inch diameter, threaded, flush-joint casing, and 1.5-inch pre-packed or 2-inch diameter inner diameter screens.
3. Wells will be screened in the unconsolidated deposits. Screens will be 10 feet in length, and slot openings will be 0.010 inch. Alternatives may be used at the discretion of the field geologist, based on site-specific geologic conditions.
4. If appropriate, a sump, at least 2 feet in length, may be attached to the bottom of the screen to collect DNAPLs.
5. Where appropriate, the annulus around the screens will be backfilled with clean silica sand (based on Site-specific geologic conditions and screen slot size) to a minimum height of 1 to 2 feet above the top of the screen.
6. Where appropriate a bentonite pellet seal or bentonite slurry will be placed above the sand pack. If a pellet seal is used, it will be allowed to hydrate for at least 30 minutes before placement of grout above the seal. Where possible, the bentonite pellet seal will be a minimum of 24-inches in depth, except in those instances where the top of the well screen is in close proximity to the ground surface. In these instances, the well will be completed in accordance with specifications provided by the field geologist who will incorporate an adequate surface seal into the well design.
7. The remainder of the annular space will be filled with a cement grout up to the ground surface. The grout will be pumped from the bottom up. The grout will be mixed in the following relative proportions: One 94-pound bag Type I Portland cement, 3.9 pounds powdered bentonite, and 7.8 gallons potable water. The grout will be allowed to set for a minimum of 48 hours before wells are developed.
8. The top of the casing will be finished using flush-mount casings with keyed-alike locks.
9. A concrete surface pad (2 feet x 2 feet x 6 inches) will be sloped to channel water away from the well casing.
10. A weep hole will be drilled at the base of the protective standpipe casing to allow any water between the inner and outer casing to drain.

11. The top of the PVC well casing will be marked and surveyed to 0.01 foot, and elevations will be determined relative to a fixed benchmark or datum. The measuring point on all wells will be on the innermost PVC casing.
12. Characteristics of each newly installed well will be recorded in the field notebook. A monitoring well checklist is shown on Figure 1 and a generic overburden well monitoring diagram is shown on Figure 2 attached within **Appendix C**.

7.2 Monitoring Well Development

After a minimum of 48 hours after completion of permanent monitoring wells, one or a combination of the following techniques will be used in the monitoring well development:

1. Surging;
2. Bailing;
3. Using a centrifugal pump and dedicated polyethylene tubing; and/or
4. Positive displacement pumps and dedicated polyethylene tubing.

Development water will initially be monitored for organic vapors with a PID. In addition, the development water will be observed for the presence of non-aqueous phase liquids NAPLs or sheens. The development water will be contained in a tank and/or 55-gallon steel drums on-site. The purge water will be disposed of in accordance with NYSDEC requirements. The wells will be developed until the water in the well is reasonably free of visible sediment (<50 nephelometric turbidity units (NTU) if possible). Well development will not exceed 10 well volumes. Following development, wells will be allowed to recover for at least two weeks before groundwater is purged and sampled. All monitoring well development will be overseen by a field representative and recorded in the field logbook.

8. Groundwater Sampling Procedure

The following is a step-by-step sampling procedure to be used to collect groundwater samples from the monitoring wells and temporary groundwater monitoring points. Well sampling procedures will be recorded in the field notebook. Sample management is detailed in the QAPP.

1. Groundwater samples will not be collected until at minimum, two weeks following well development of permanent wells.
2. Prior to sampling, a round of groundwater elevation measurements will be collected. The measurements will be made from the surveyed well elevation mark on the top of the inner PVC casing with a decontaminated electric water/product level probe. The measurements will be made in as short a period as practical to minimize temporal fluctuations in hydraulic conditions. The time, date, and measurement to nearest 0.01 foot will be recorded in the field logbook. The water probe will be decontaminated between measurements.
3. Place a plastic sheet on the ground to prevent contamination of the bailer rope and/or the tubing associated with the purging (pump) equipment.
4. Each monitoring well will be purged with a centrifugal, submersible, peristaltic, or whale pump and dedicated polyethylene tubing, or other methods at the discretion of the field geologist, and with the prior approval of KeySpan and NYSDEC.
5. Monitoring wells will be purged at a rate to minimize drawdown within the well to the extent practicable.
6. The water quality parameters of temperature, pH, conductivity, salinity, oxygen reduction potential, turbidity, and dissolved oxygen (DO) will be measured and recorded, at 3 to 5 minute intervals with a multi-parameter water quality probe. At least, one well volume of water will be removed prior to sampling. When the parameters stabilize over three consecutive readings, sampling may commence. Stability is achieved when pH is within 0.1 standard unit, temperature is within 0.5ºC, Eh is within 10% and specific conductivity is within 10% for three consecutive readings. Record results in the field logbook prior to sample collection.
7. Collect VOC samples with a dedicated polyethylene bailer lowered by a dedicated polypropylene rope or other methods as indicated. Other parameters may be collected with a submersible or peristaltic pump using the low-flow sampling technique. The pump should be capable of throttling to a low flow rate suitable for sampling.
8. If the well goes dry before the required volumes are removed, the well may be sampled when it recovers sufficiently.
9. After all samples are collected, the water level in the monitoring well will be gauged and the locking cap will be re-installed.

10. Investigation derived water will be stored in 55-gallon drums, roll-off or frac tank. PPE will be disposed of dedicated disposable sampling equipment in garbage bags or stored in 55-gallon drums

9. Equipment Decontamination Procedure

The following equipment decontamination procedure is applicable for use in decontaminating sampling tools used in collection of analytical samples from surface soils, subsurface soils, and groundwater. Equipment decontamination will prevent cross-contamination and maintain analytical sample integrity. This procedure may be varied or changed as required, dependent upon site conditions and equipment limitations. Any deviation from this standard should be documented in the field-sampling book and in the final report.

9.1 Equipment/Apparatus

Equipment needed for decontamination of sampling equipment may include:

- Alconox or non-phosphate soap
- Simple Green
- Methanol
- 10% Nitric acid solution
- De-ionized water
- Decontamination buckets
- Secondary containment vessels
- Plastic sheeting
- Scrub brushes
- PPE

9.2 Equipment Decontamination Procedure

Equipment will be decontaminated in accordance with procedures specified in the Work Plan as summarized below. Equipment decontamination procedures are also detailed within the QAPP.

9.2.1 Sampling Equipment and Tools

Prior to sampling, all non-dedicated equipment (i.e., bowls, spoons, bailers, and soil sampling apparatus (i.e. Macro-Core Shoe and split spoon equipment) will be decontaminated as follows.

- Decontamination of sampling equipment and hand tools may take place at the sampling location as long as all liquids are contained in pails, buckets, etc.
- All sampling equipment will be washed with water and a non-phosphate detergent (Alconox, Simple Green, etc.) to remove gross contamination.
- All sampling equipment will then be rinsed with de-ionized water.

- All equipment used to collect samples for VOC and semi-volatile organic compounds (SVOC) analysis will then receive a methanol rinse followed by a de-ionized water rinse.
- All equipment used to collect samples for metals analysis will then receive a 10% nitric acid solution rinse followed by a de-ionized water rinse.
- At no time will decontaminated equipment be placed directly on the ground.
- Equipment will be wrapped in polyethylene plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location, where appropriate.

9.2.2 Drill Rig and Backhoe Decontamination

A decontamination pad will be constructed of High Density Polyethylene (HDPE) sheeting on a prepared surface sloped to a sump. If possible, the decontamination pad will be constructed onsite, even if work is to be performed offsite. If contaminated soils are encountered offsite, the need for a temporary off-site decontamination pad will need to be evaluated.

The size of the pad shall be sufficient to drive the drill rig on without tearing the sides or bottom of the plastic sheet. Sides of the pad will be bermed so that all decontamination water is contained. Upon completion of all field activities, the decontamination pad will be properly decommissioned. To accomplish decommissioning, all free liquids will be removed from the surface of the HDPE sheeting, including the sump area, and allowed to air dry. The HDPE sheeting will then be cut to manageable size, folded or rolled, and placed in the waste container (roll-off container or 55-gallon drum). The wood timbers used to construct the containment berm will be inspected to ascertain if the material has come in contact with decontamination liquids during use. If they have, the materials will be steam cleaned or disposed in the waste container for subsequent disposal at an appropriate facility. If the materials have not been in contact with decontamination liquids, they may be reused.

Geoprobe® rig drilling implements will be decontaminated with water and a non-phosphate detergent and water rinse. Decontamination will be completed in close proximity to the proposed borings and will be completed over a temporary decontamination pad or plastic containers because of site constraints. The macro-core sampling shoe will be decontaminated in accordance with subsection 9.2.1.

All equipment used in intrusive work including backhoe, drilling rig, augers, bits, tools, split-spoon samplers, and tremie pipe will be cleaned with a high-pressure hot water or steam cleaning unit. The equipment will be broom-cleaned with a wire brush to remove dirt, grease, and oil before beginning fieldwork and before leaving the project Site upon completion of the last sampling activity. Tools, drill rods, and augers will be placed on sawhorses or polyethylene plastic sheets following steam cleaning. Direct contact with the ground should be minimized. The augers, rods, and tools will be decontaminated between each drilling

location according to the above procedures. The backhoe bucket, arm, and any other part of the equipment, which may have contacted excavated soil, will be decontaminated between each test pit location. Decontamination water will be containerized on-site prior to disposal.

Unless sealed in manufacturers packaging, monitoring well casing and screens will be steam cleaned immediately before installation. The screen and casing shall then be wrapped in polyethylene plastic and transported from the designated decontamination area to the well location.

9.3 Quality Assurance/Quality Control

There are no specific QA activities that apply to the implementation of these procedures. However, the following general QA procedures apply:

- All data must be documented on field data sheets or within site field notebooks.
- All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation and they must be documented.

10. Analytical Sample Handling and Transport

Subsurface soils collected will be handled and submitted for laboratory analysis according to the following procedure. The QAPP provides a detail description of sample handling and transport.

1. Samples will be transferred from the sample equipment into suitable, labeled sample containers specific for the laboratory analyses to be performed. Use laboratory-provided, pre-preserved sample bottles for specific analyses. Do not overfill bottles if they are pre-preserved.
2. Secure the sample container with the appropriate cap, place the sample container in a resealable plastic bag or bubble wrap, and place it inside of a sample cooler provided by the laboratory. Use ice to cool the sample cooler to 4 degrees Celsius.
3. Record all pertinent sample identification data in the site database and/or field notebook.
4. Print the completed COC record from the database, sign, and photocopy. If necessary, a hard copy COC may be used in the place of the electronic database. A COC is attached in **Appendix D**. Place the original COC in a resealable plastic bag and affix it to the inside of the top of the cooler/or will transmitted to the laboratory courier upon a sample pick-up.
5. Attach a custody seal to the outside of the cooler prior to shipment/pickup.

11. Investigation-Derived Waste Handling Procedure

11.1 General Waste Handling Procedures

The following procedure provides guidelines for the management of investigation derived wastes. Wastes anticipated to be generated as part of the SMP or other intrusive activities , may include the following materials: subsurface soils, groundwater, decontamination fluids, PPE, and miscellaneous investigation-derived field supplies. All wastes will be segregated into sediment and subsurface soil, fluids and PPE/miscellaneous investigation-derived materials. Investigation derived wastes will be placed in a United States Department of Transportation (USDOT)-approved 55-gallon drum, roll-off or tank. Each waste vessel will labeled with a "Non-Hazardous Waste Label" designated with "Pending Characterization." Information on the label should include:

Generator: National Grid
Address: 1 Edgewater Street Property, Staten Island, New York.

At the end of each day, each waste container should be secured and placed onto the drum containment pad at the nearby National Grid property at 25 Willow Avenue. Each container should be covered and sealed at the end of waste handling activities. The field representative will document the number and type of investigation-derived wastes. Investigation -derived wastes will be documented on the waste-tracking sheet and provided to the National Grid PM. A waste tracking sheet is attached in **Appendix E**.

11.2 Investigation Derived Waste Sample Collection Procedure

If required, the field representative will obtain a waste profile sample of soil and fluid investigation derived wastes. A sample will be collected from each of the investigation-derived wastes that require analysis for disposal. Soil wastes will be collected by using shovels, hand auger or other equipment, composited and then placed into laboratory provided sample jars. The waste profile parameters will be provided to the field representative prior to collection of the waste profile sample. Samples will be collected into laboratory-preserved bottles, chilled with ice, and submitted to the laboratory under COC as described in above Section 10.

Appendix A

Daily Activity Report (electronic only)

DAILY ACTIVITY REPORT

DATE:	**Consultant Personnel:**	
PROJECT:	**KeySpan Personnel:**	
PROJECT NO.:	**Other Personnel:**	
SITE LOCATION:	**NYSDEC Personnel:**	
	Site Visitors:	

Description of Activities and Summary of Significant Field Observations (Indicate Times as Appropriate)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Drilling Summary

Completed Boring ID	Completed Well ID	Total Depth of Soil Sampling	Well Screen Bottom Depth	Well Screen Top Depth	Isolation Casing Depths	Other

Summary of Soil Samples Submitted for Laboratory Analyses

Soil Sample ID	Boring ID	Depth Interval	Time Collected	Analyses Requested	Duplicate Sample ID	MS/MSD (yes/no)

Summary of Groundwater Samples Submitted for Laboratory Analyses

Groundwater Sample ID	Well ID	Time Collected	Analyses Requested	Sample Tube Intake Depth	Purge/Sample Flow Rate	Duplicate Sample ID

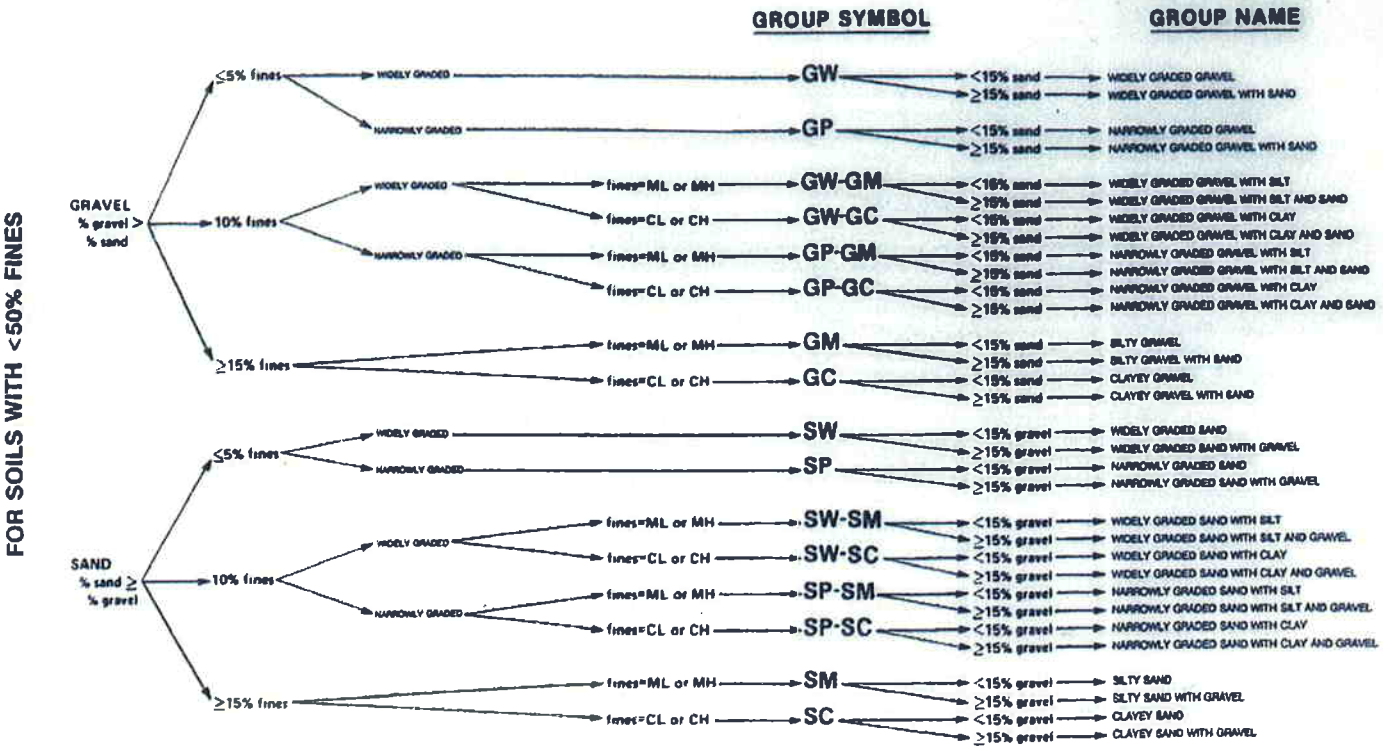
Appendix B

Visual-Manual Description Standards (electronic only)

GEI Consultants

COARSE GRAINED SOILS

VISUAL-MANUAL DESCRIPTIONS

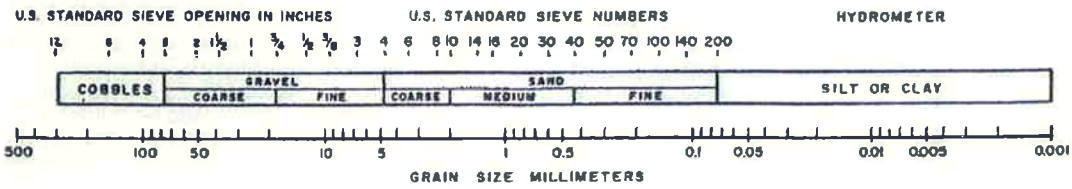


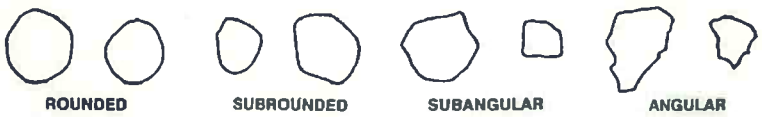
SOIL DESCRIPTION FORMAT

1. GROUP NAME and SYMBOL
2. Structure: stratified, laminated (layers <6 mm thick), lensed, homogeneous
3. Percent gravel, sand, fines (by dry weight), in order of predominance:
   - gravel - fine, coarse, and angularity
   - sand - fine, medium, coarse, and angularity
   - fines - plasticity characteristics
4. Percent cobbles and/or boulders (by volume)
5. Maximum particle size
6. Other - if appropriate - odor, roots, cementation, reaction with HCl, particle shape, moisture condition
7. Color
8. Local or geologic name

EXAMPLES

1. NARROWLY GRADED SAND (SP); mostly fine sand; <5% fines; brown.
2. SILTY SAND WITH GRAVEL (SM); ~60% fine to coarse, subangular sand; ~20% silty fines with low plasticity; ~20% fine, subangular gravel, max. size 10 mm; sample contained ~5% (by volume) subrounded cobbles to 200 mm; gray, Basal Glacial Till.
3. CLAYEY SAND (SC) and WIDELY GRADED SAND (SW); stratified layers ranging from ~6 to 20 mm thick; SC layers consist of fine sand with low plasticity clayey fines ranging from ~20 to 40%; SW layers consist of fine to coarse subrounded sand with <5% fines; SC layers are olive-gray, SW layers are brown; Hydraulic Fill.





TYPICAL SOIL COLORS

STANDARD\GEOLOGY_SOIL_CHARTS.DWG

GEI Consultants

FINE GRAINED SOILS

VISUAL-MANUAL DESCRIPTIONS

FOR SOILS WITH ≥50% FINES

GROUP SYMBOL				GROUP NAME
CL	<30% plus No. 200	<15% plus No. 200		LEAN CLAY
		15-25% plus No. 200	% sand ≥% gravel	LEAN CLAY WITH SAND
			% sand <% gravel	LEAN CLAY WITH GRAVEL
	≥30% plus No. 200	% sand ≥% of gravel	<15% gravel	SANDY LEAN CLAY
			≥15% gravel	SANDY LEAN CLAY WITH GRAVEL
		% sand <% gravel	<15% sand	GRAVELLY LEAN CLAY
			≥15% sand	GRAVELLY LEAN CLAY WITH SAND
ML	<30% plus No. 200	<15% plus No. 200		SILT
		15-25% plus No. 200	% sand ≥% gravel	SILT WITH SAND
			% sand <% gravel	SILT WITH GRAVEL
	≥30% plus No. 200	% sand ≥% of gravel	<15% gravel	SANDY SILT
			≥15% gravel	SANDY SILT WITH GRAVEL
		% sand <% gravel	<15% sand	GRAVELLY SILT
			≥15% sand	GRAVELLY SILT WITH SAND
CH	<30% plus No. 200	<15% plus No. 200		FAT CLAY
		15-25% plus No. 200	% sand ≥% gravel	FAT CLAY WITH SAND
			% sand <% gravel	FAT CLAY WITH GRAVEL
	≥30% plus No. 200	% sand ≥% of gravel	<15% gravel	SANDY FAT CLAY
			≥15% gravel	SANDY FAT CLAY WITH GRAVEL
		% sand <% gravel	<15% sand	GRAVELLY FAT CLAY
			≥15% sand	GRAVELLY FAT CLAY WITH SAND
MH	<30% plus No. 200	<15% plus No. 200		ELASTIC SILT
		15-25% plus No. 200	% sand ≥% gravel	ELASTIC SILT WITH SAND
			% sand <% gravel	ELASTIC SILT WITH GRAVEL
	≥30% plus No. 200	% sand ≥% of gravel	<15% gravel	SANDY ELASTIC SILT
			≥15% gravel	SANDY ELASTIC SILT WITH GRAVEL
		% sand <% gravel	<15% sand	GRAVELLY ELASTIC SILT
			≥15% sand	GRAVELLY ELASTIC SILT WITH SAND
OL/OH	<30% plus No. 200	<15% plus No. 200		ORGANIC SOIL
		15-25% plus No. 200	% sand ≥% gravel	ORGANIC SOIL WITH SAND
			% sand <% gravel	ORGANIC SOIL WITH GRAVEL
	≥30% plus No. 200	% sand ≥% gravel	<15% gravel	SANDY ORGANIC SOIL
			≥15% gravel	SANDY ORGANIC SOIL WITH GRAVEL
		% sand <% gravel	<15% sand	GRAVELLY ORGANIC SOIL
			>15% sand	GRAVELLY ORGANIC SOIL WITH SAND

SOIL DESCRIPTION FORMAT

1. GROUP NAME and SYMBOL
2. Structure; stratified, laminated, fissured, slickensided, blocky, lensed, homogeneous
3. Plasticity
4. Plasticity characteristics (if performed) - dilatancy, dry strength, toughness at PL
5. Percent gravel, sand; size ranges
6. Other - if appropriate - odor, roots, cementation, reaction with HCl, particle shape, moisture condition
7. Color
8. Local or geologic name
9. Field soil strength measurements:
   Q_p = unconfined compressive strength from pocket penetrometer
   S_v = undrained shear strength from torvane

EXAMPLES

1. LEAN CLAY (CL); homogeneous, medium plasticity, occasional small shell fragments, gray, Boston Blue Clay.
2. SANDY SILT (ML); hetergeneous till structure, nonplastic, ~30% fine to coarse, subangular sand; ~10% angular to subangular fine gravel, max. size 88 mm; brown, Glacial Till.
3. ELASTIC SILT WITH GRAVEL (MH); homogeneous, medium plasticity, medium dry strength, no dilantancy, low toughness; ~20% fine gravel, max. size 10 mm; brown, Q_p = 0.70, 0.75 tsf; S_v = 0.35, 0.40, tsf

TABLE 12 Identification of Inorganic Fine-Grained Soils from Manual Tests

Soil Symbol	Dry Strength	Dilatancy	Toughness
ML	None to low	Slow to rapid	Low or thread cannot be formed
CL	Medium to high	None to slow	Medium
MH	Low to medium	None to slow	Low to medium
CH	High to very high	None	High

TABLE 11 Criteria for Describing Plasticity

Description	Criteria
Nonplastic	A ⅛-in. (3-mm) thread cannot be rolled at any water content
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit

TABLE 9 Criteria for Describing Dilatancy

Description	Criteria
None	No visible change in the specimen
Slow	Water appears slowly on the surface of the specimen during shaking and does not disappear or disappears slowly upon squeezing
Rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing

TABLE 8 Criteria for Describing Dry Strength

Description	Criteria
None	The dry specimen crumbles into powder with mere pressure of handling
Low	The dry specimen crumbles into powder 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. Specimen will break into pieces between thumb and a hard surface
Very high	The dry specimen cannot be broken between the thumb and a hard surface

TABLE 10 Criteria for Describing Toughness

Description	Criteria
Low	Only slight pressure is required to roll the thread near the plastic limit. The thread and the lump are weak and soft
Medium	Medium pressure is required to roll the thread to near the plastic limit. The thread and the lump have medium stiffness
High	Considerable pressure is required to roll the thread to near the plastic limit. The thread and the lump have very high stiffness

Appendix C

Monitoring Well Information (electronic only)

Figure 1

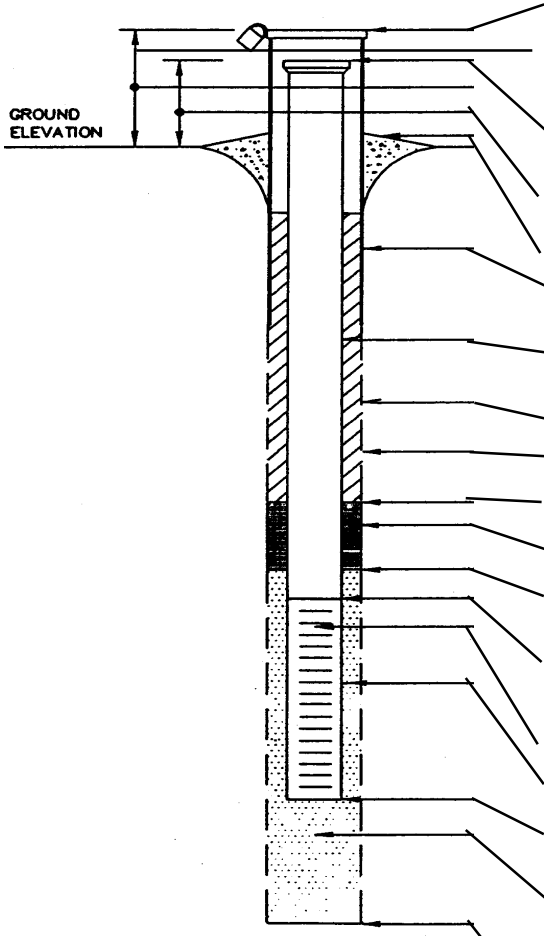
WELL INSTALLATION CHECKLIST

Project Name		Drilling Co.		Boring No.	
Project Number		Drillers		Date Started	
Project Location				Date Completed	
Site Location		Inspector			

Final depth of boring and bore hole diameter	
Depth bottom of sand pack and sand used (e.g. Morie #0)	
Type of casing (e.g. 2-in SCH 40 PVC)	
Depth bottom of screen and screen type (e.g. 10-slot)	
Depth top of screen	
Depth top of sand pack	
Depth top of seal and type of seal (e.g. cement/bentonite grout)	
Type of surface seal	
Well completion (e.g. stickup or flush mount)	

Figure 2
Overburden Monitoring Well Construction Diagram

Project		Driller	
Project No.		Drilling Method	
Date		Development Method	
Elevation		Boring No.	
Field Geologist		Well No.	



Elevation of Top of Surface Casing	
Stick Up Casing Above Ground Surface	
Elevation of Top of Riser Pipe	
Riser Pipe Above Ground Surface	
Type of Surface Seal	
Surface Casing I.D.	
Type of Surface Casing	
Riser Pipe I.D.	
Type of Riser Pipe	
Borehole Diameter	
Type of Backfill	
Elevation/Depth Top of Seal	
Type of Seal	
Elevation/Depth Top of Sand Pack	
Elevation/Depth Top of Screen	
Type of Screen	
Slot Size and Length	
Type of Sand Pack	
Elevation/Depth Bottom of Screen	
Elevation/Depth Bottom of Sand Pack	
Type of Backfill Below Monitoring Well	
Elevation/Depth of Hole	
NOT TO SCALE	

GEI Consultants

MONITORING WELL SAMPLING RECORD

OVM Reading _____ Job Name _____

Job Number _____ By _____ Date _____

Location _____ Measurement Datum _____

Well Number _____

Pre-Development Information Time (start) _____

Water Level _____ Total Depth of Well _____

One Purge Vol _____ Three Well Volume _____

Water Characteristics

Color _____ Clear ____ Cloudy ____

Odor ____ None ____ Weak ____ Moderate ____ Strong

Any films or immiscible material? _____ None _____

Volume (gal)	Time	pH	Temp (EC)	Spec. Conductance (ΦS/cm)	Turbidity (NTU)	DO Conc. (mg/L)	ORP (mV)	TDS

Total Volume Removed (gal) _____ pH _____

Temperature (EC) _____ Specific Conductance (ΦS/cm) _____

DO Concentration (mg/L) _____ ORP (mV) _____

_____ TDS _____

Post Development Information Time (Finished) _____

Water Level _____ Total Depth of Well _____

Approximate Volume Removed (gal) _____

Water Characteristics

Color _____ Clear ____ Cloudy ____

Odor ____ None ____ Weak ____ Moderate ____ Strong

Any films or immiscible material None

_____

Comments:

Appendix D

Chain-of-Custody (electronic only)

Chain of Custody Record

STL Connecticut
128 Long Hill Cross Road
Shelton, CT 06484
Tel: 203-929-8140

SEVERN TRENT **STL**
Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client	Project Manager	Date	Chain of Custody Number 00732
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page _____ of _____
City / State / Zip Code	Site Contact	Lab Contact	
Project Name and Location (State)	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH		Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By			1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Appendix E

Waste Tracking Form (electronic only)

Monthly Tracking Inventory of Former MGP Site Investigation Derived Waste:

Site Name	Address	Project Start Date(dd/mm/yy)	Project Completion Date(dd/mm/yy)	Profile samples collected(Y/N)	Description of Waste On-site			
					55-gal. Drums	Roll-Offs	Frac Tank	Miscellaneous

Appendix D

Quality Assurance Project Plan (QAPP) (Electronic only)

GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

Appendix D
Quality Assurance Project Plan

One Edgewater Street
Staten Island, New York

In association with:
Clifton Former Manufactured Gas Plant
Operable Unit 2
ACO Index No. D2-0001-98-04
Site ID: 2-43-023

Prepared for:
National Grid
287 Maspeth Ave
Brooklyn, New York

Prepared by:
GEI Consultants, Inc.
455 Winding Brook Drive
Glastonbury, CT 06033

March 2010

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Figure 1 – Sample Chain of Custody Record

Appendix

Appendix A – Example Laboratory Quality Manual

Abbreviations and Acronyms

BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CAS	Chemical Abstract Number
CMS	Chip Management System
CLP	Contract Laboratory Protocol
COC	Chain-of-Custody
DQO	Data Quality Objective
EDDs	Electronic Data Deliverables
ELAP	Environmental Laboratory Approval Program
DUSR	Data Usability Summary Report
FSP	Field Sampling Plan
GEI	GEI Consultants, Inc.
HASP	Health and Safety Plan
LCS	Labortory Control Sample
MDL	Method Detection Limit
MTA	Metropolitan Transit Authority
MGP	Manufactured Gas Plant
MS/MSDs	Matrix spike/matrix spike duplicates
ug/L	Microgram per liter
NAVD	North American Vertical Datum
NYC	New York City
NYS	New York State
NYS ASP	New York State Analytical Services Protocol
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
%R	Percent Recovery
ppb	Parts per billion
PID	Photo-ionization detector
PAH	Polycyclic Aromatic Hydrocarbon
PQL	Practical Quantitation Limit
PM	Project Manager
QA/QC	Quality Assurance/Quality Control
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
RL	Reporting Limit
RPD	Relative Percent Difference
SMP	Site Management Plan
SCO	Soil Clean-up Objective
SOP	Standard Operating Procedure
SVOC	Semi-Volatile Organic Compound
VOC	Volatile Organic Compound
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency

Quality Assurance Glossary

"Analytical Services Protocol" or "ASP" means the New York State Department of Environmental Conservation (NYSDEC's) compendium of approved EPA and NYSDEC laboratory methods for sample preparation and analysis and data handling procedures.

"Confirmatory Sample" means a sample taken after remedial action is expected to be complete to verify that the cleanup requirements have been met. This term has the same meaning as "post remediation sample."

"Contract laboratory program" or "CLP" means a program of chemical analytical services developed by the United States Environmental Protection Agency (EPA) to support CERCLA.

"Data Usability Summary Report, (DUSR)" is a document that provides a thorough evaluation of the analytical data to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and use.

"Effective solubility" means the theoretical aqueous solubility of an organic constituent in groundwater that is in chemical equilibrium with a separate phase mixed product (product containing several organic chemicals). The effective solubility of a particular organic chemical can be estimated by multiplying its mole fraction in the product mixture by its pure phase solubility.

"Environmental Laboratory Accreditation Program" or "ELAP" means a program conducted by the New York State Department of Health (NYSDOH), which certifies environmental laboratories through on-site inspections and evaluation of principles of credentials and proficiency testing.

"Intermediate Sample" means a sample taken during the investigation process that will be followed by another sampling event to confirm that remediation was successful or to confirm that the extent of contamination has been defined to below a level of concern.

"Method detection limit" or "MDL" means the minimum concentration of a substance that can be measured and reported with a 99 percent confidence that the analyte concentration is greater than zero and is determined from the analysis of a sample in a given matrix containing the analyte.

"Non-targeted compound" means a compound detected in a sample using a specific analytical method that is not a targeted compound, a surrogate compound, a system monitoring compound or an internal standard compound.

"Practical quantitation level" or "PQL" means the lowest quantitation level of a given analyte that can be reliably achieved among laboratories within the specified limits of precision and accuracy of a given analytical method during routine laboratory operating conditions.

"PAH" means polycyclic aromatic hydrocarbon as defined by United States Environmental Protection Agency (USEPA) Method 8270.

"Quality assurance" or "QA" means the total integrated program for assuring the reliability of monitoring and measurement data, which includes a system for integrating the quality planning, quality assessment and quality improvement efforts to meet data end-use requirements.

"Quality assurance project plan" or "QAPP" means a document, which presents in specific terms the policies, organization, objectives, functional activities, and specific quality assurance/quality control activities designed to achieve the data quality goals or objectives of a specific project or operation.

"Quality control" or "QC" means the routine application of procedures for attaining prescribed standards of performance in the monitoring and measurement process.

"Semi volatile organic compound" or "SVOC" means compounds amenable to analysis by extraction of the sample with an organic solvent. For the purposes of this section, semi volatiles are those target compound list compounds identified in the statement of work in the current version of the EPA Contract Laboratory Program.

"Target analyte list" or "TAL" means the list of inorganic compounds/elements designated for analysis as contained in the version of the EPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, and Multi-Concentration in effect as of the date on which the laboratory is performing the analysis. For the purpose of this chapter, a Target Analyte List scan means the analysis of a sample for Target Analyte List compounds/elements.

"Targeted compound," means a hazardous substance, hazardous waste, or pollutant for which a specific analytical method is designed to detect that potential contaminant both qualitatively and quantitatively.

"Target compound list plus 30" or "TCL+30" means the list of organic compounds designated for analysis (TCL) as contained in the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis, and up to 30 non-targeted organic compounds (plus 30) as detected by gas chromatography/mass spectroscopy (GC/MS) analysis. For the purposes of this chapter, a Target Compound List+30 scan means the analysis of a sample for Target Compound List compounds and up to 10 non-targeted volatile organic compounds and up to 20 non-targeted semi volatile organic compounds using GC/MS analytical methods. Non-targeted compound criteria should be pursuant to the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, and Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis.

"Tentatively identified compound" or "TIC" means a non-targeted compound detected in a sample using a GC/MS analytical method, which has been tentatively, identified using a mass spectral library search. An estimated concentration of the TIC is also determined.

"Unknown compound" means a non-targeted compound, which cannot be tentatively identified. Based on the analytical method used, the estimated concentration of the unknown compound may or may not be determined.

"Volatile organics" means organic compounds amenable to analysis by the purge and trap technique. For the purposes of this chapter, analysis of volatile organics means the analysis of a sample for either those priority pollutants listed as amenable for analysis using EPA method 624 or those target compounds identified as volatiles in the version of the EPA "Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration" in effect as of the date on which the laboratory is performing the analysis.

"**Waste oil"** means used and/or reprocessed engine lubricating oil and/or any other used oil, including but not limited to: fuel oil, engine oil, gear oil, cutting oil, transmission fluid, oil storage tank residue, animal oil and vegetable oil, which has not subsequently been refined.

1. Project Description

GEI Consultants, Inc. (GEI) prepared this example Quality Assurance Project Plan (QAPP) as part of the site management plan (SMP) for One Edgewater Street property located on Staten Island, Richmond County, New York (**Figure 1 of SMP**). The SMP was prepared to manage soils with residual manufactured gas plant (MGP) impacts associated with the nearby Clifton former MGP operations and comingled tar/petroleum impacts at the Site. The QAPP is a companion document to the *Final Site Management Plan* and draft Field Sampling Plan (FSP) [March 2010] for the One Edgewater Street property. The QAPP is included as **Appendix D** of the SMP.

The QAPP summarizes the project scope, organization, objectives, sample handling procedures and specific QA/QC (quality assurance/ quality control) procedures associated with the annual groundwater monitoring proposed within SMP. The QAPP also provides QA procedures and QA/QC framework for potential future intrusive activities within impacted soils. The QAPP should be updated for specific intrusive work within impacted materials at the property. The QAPP also identifies project responsibilities, prescribes guidance and specifications to make certain that:

- Samples are identified and controlled through sample tracking systems and chain-of-custody (COC) protocols
- Field and laboratory analytical results are valid and usable by adherence to established protocols and procedures
- All aspects of the site management sample collection, from field to laboratory, are documented to provide data that are technically sound.

This QAPP was prepared based upon guidance provided by the NYSDEC guidance provided in *Draft DER-10, Technical Guidance for Site Investigation and Remediation.* New York State Department of Environmental Conservation. December 2002.

1.1 Site Description

The Site address is One Edgewater Street Staten Island, Richmond County, New York, and is identified as Block 2820 and Lot 95 on the City of New York Department of Finance Tax Map for the Borough of Staten Island. The location of the Site is shown in **Figure 1** of the SMP. The property encompasses approximately 18.29-acres; 7.41 acres is located on the landside and 10.88 acres are submerged beneath the Narrows of the New York Harbor (**Plate 1 of SMP**). The Site was previously owned by IPC Commercial Properties, which was acquired by Behringer Harvard REIT, Inc. (Behringer Harvard), in December 2007.

The property is zoned M2-1, manufacturing and commercial. The property is bounded by The Narrows of New York Harbor to the northeast and east, Staten Island Railroad Metropolitan Transit Authority (MTA) New City Transit repair facility to the northwest, the former New York City (NYC) Transit Authority property to the south (125 Edgewater Street), and Edgewater Street to the west. The site topography is relatively flat, with elevation ranging from approximately 10 feet North American Vertical Datum (NAVD) at Edgewater Street to 8 feet NAVD at the boundary with New York Harbor (**Plate 1 of the SMP**).

A seven-story commercial office building referred to as Edgewater Plaza is located on the southeastern portion of the property. The remainder of the property is paved with a sidewalk and an asphalt parking lot. The property is secured with a chain-link fence and a guarded entrance at the Willow Avenue/Edgewater Street intersection. A permitted stormwater outfall is located along the northern portion of the Site and a large combined sewer overflow is located on the adjacent property to the south.

1.2 Scope of Work

The scope of work for annual groundwater monitoring at One Edgewater Street is included in the SMP.

All analytical samples collected by National Grid will be analyzed using United States Environmental Protection Agency (USEPA) SW-846 *Test Methods for Evaluating Solid Waste*. A New York State (NYS) Environmental Laboratory Approval Program (ELAP)-certified laboratory, will analyze all samples.

If intrusive work is proposed by the property owner within areas that contain residual impacts, the property owner will provide a Work Plan that will be submitted to National Grid and New York State Department of Environmental Protection (NYSDEC) for approval prior to the start of work. The scope of work will define the QA/QC methods to be used or will adopt and modify as needed the guidance provided in this QAPP.

2. Project Organization

National Grid's Consultant will be responsible for the implementation of the annual groundwater monitoring and certification activities. For intrusive activities that are not part of the SMP, the property owner's consultant representative will direct site activities including the supervision of contractors, field activities, sample collection, laboratory coordination, and the evaluation of data. Prior to commencing site activities, the project organization will be established and key staff will be identified. All work will be coordinated with the National Grid Site Contact provided in subsection 2.4 of the SMP.

A typical Project organization and key personnel for the Consultant are listed below:

Project Manager:
Field Team Leader:
Quality Assurance Officer:
Corporate Health & Safety Officer:
Data Validator:
Data Manager:

The primary responsibilities of each of these personnel are described below :

Personnel and Responsibilities		
Position	**Consultant Personnel**	**Areas of Responsibilities**
Project Manager	TBD	▪ Client contact regarding project related issues ▪ Coordination of contractors ▪ Compliance with scope of work, QAPP and FSP ▪ Personnel and resource management ▪ Preparation and review of project submittals
Field Team Leader	TBD	▪ Client contact regarding project related issues on day to day basis as part of field operations ▪ Coordination of contractors ▪ Implementation of scope of work, QAPP and FSP ▪ Personnel and resource management ▪ Preparation of project submittals
QA Officer	TBD	▪ QA/QC for sampling and laboratory performance
Data Validator	TBD	▪ Perform data validation activities ▪ Prepare data usability summary reports ▪ Evaluate data with regards to quality objectives
Data Managers	TBD	▪ Manage raw data from the laboratory

3. Quality Assurance/Quality Control Objectives for Measurement of Data

This section establishes the QA objectives for measurements that are critical to the project. The QA objectives are developed for relevant data quality indicators. These indicators include the method detection limit, reporting limit, precision, accuracy, completeness, representativeness, and comparability. The data quality objectives (DQOs) are based on project requirements and ensure: (1) that the data generated during the project are of known quality and (2) that the quality is acceptable to achieve the project's technical objectives provided in the SMP or scope of work. All analytical data will be provided by the laboratory using the New York State ASP Category B deliverable format.

Quantitation Limits are laboratory-specific and reflect those values achievable by the laboratory performing the analyses. However, in order to ensure that the analytical methodologies are capable of achieving the DQOs, measurement performance criteria have been set for the analytical measurements in terms of accuracy, precision, and completeness. The analytical methods to be used at this site will provide a level of data quality and can be used to evaluate potential impacts to soil and groundwater compared to Title 6, Chapter 100, Part 700-705 of the New York State Code of Rules and Regulations (6NYCRR) Part 375 Soil Cleanup Objectives (SCOs) dated December 14,2006 and New York State Ambient Groundwater Standards, Criteria and Guidance values (TOGS 1.1.1) dated June 1998, and for purposes of risk assessment.

The overall QA objective is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, and reporting which will provide results that are scientifically valid, and the levels of which are sufficient to meet DQOs. Specific procedures for sampling, chain of custody, laboratory instruments calibration, laboratory analysis, reporting of data, internal quality control, and corrective action are described in other sections of the QAPP.

The data quality indicators are presented in subsections 3.1 through 3.6. Procedures to assess the data quality indicators are given below in Section 12.

3.1 Required Quantification Limit

The required quantification limit is the quantitative analytical level for individual analytes needed to make decisions relative to the objectives of the project. Quantitative limits may be expressed as the MDL or some quantitative level defined in terms relative to the program. It should be noted that there is some ambiguity in the definitions and use of terms that define

quantification limits. The MDL presented herein is a well-defined and accepted entity, although attainable only under ideal laboratory conditions.

Method Detection Limit: The MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. MDL is determined from analysis of a sample in a given matrix type containing the analyte.

Practical Quantitation Limit: The PQL [also referred to as the reporting limit (RL)] is the concentration in the sample that corresponds to the lowest concentration standard of the calibration curve.

Laboratory MDLs and PQLs for groundwater and soils are located on **Tables 3 and 4**.

3.2 Accuracy

Accuracy is the closeness of agreement between an observed value and an accepted reference value. The difference between the observed value and the reference value includes components of both systematic error (bias) and random error.

Accuracy in the field is assessed through the adherence to all field instrument calibration procedures, sample handling, preservation, and holding time requirements, and through the collection of equipment blanks prior to the collection of samples for each type of equipment being used (i.e. sampling implements).

The laboratory will assess the overall accuracy of their instruments and analytical methods (independent of sample or matrix effects) through the measurement of "standards," materials of accepted reference value. Accuracy will vary from analysis to analysis because of individual sample and matrix effects. In an individual analysis, accuracy will be measured in terms of blank results, the percent recovery (%R) of surrogate compounds in organic analyses, or %R of spiked compounds in matrix spikes (MSs), matrix spike duplicates (MSDs) and/or laboratory control samples (LCSs). This gives an indication of expected recovery for analytes tending to behave chemically like the spiked or surrogate compounds. The laboratory accuracy will be evaluated in accordance with laboratory quality assurance plan and standard operating procedures. An example laboratory quality assurance manual is provided in **Appendix A.**

3.3 Precision

Precision is the agreement among a set of replicate measurements without consideration of the "true" or accurate value: i.e., variability between measurements of the same material for the same analyte. In environmental sampling, precision is the result of field sampling and

analytical factors. Precision in the laboratory is easier to measure and control than precision in the field. Replicate laboratory analyses of the same sample provide information on analytical precision; replicate field samples provide data on overall measurement precision. The difference between the overall measurement precision and the analytical precision is attributed to sampling precision. Precision is measured in a variety of ways including statistically, such as calculating variance or standard deviation. The difference between the overall measurement precision and the analytical precision is attributed to sampling precision.

Precision in the field is assessed through the collection and measurement of field duplicates. Field duplicates will be collected at a frequency of one per twenty investigative samples per matrix per analytical parameter, with the exception of the waste characterization parameters. Precision will be measured through the calculation of relative percent differences (RPDs) as described below in subsection 12.2. The resulting information will be used to assess sampling and analytical variability. Field duplicate RPDs must be less than 50% for soil samples and less than 30% for aqueous samples. These criteria apply only if the sample and/or duplicate results are >5x the quantitation limit; if both results are <5x the quantitation limit, the criterion will be doubled. Duplicate samples are described in below in subsection 5.1.5. **Table 2** summarizes the number of duplicates.

Precision in the laboratory is assessed through the calculation of RPD for duplicate samples. For organic analyses, laboratory precision will be assessed through the analysis of MS/MSD samples and field duplicates. For the inorganic analyses, laboratory precision will be assessed through the analysis of matrix duplicate pairs and field duplicate pairs. MS/MSD samples or matrix duplicate pairs will be performed at a frequency of one per twenty primary samples per matrix. Duplicate samples are described in below in subsection 4.1.2. **Table 2** summarizes the number of duplicates per media sampled.

3.4 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. “Normal conditions” are defined as the conditions expected if the sampling plan was implemented as planned. The objective for completeness is a sufficient amount of valid data to achieve a predetermined statistical level of confidence. Critical samples must be identified and plans must be formulated to secure requisite valid data for these samples.

Field completeness is a measure of the amount of (1) valid measurements obtained from all the measurements taken in the project and (2) valid samples collected. The field completeness objective is greater than 90 percent.

Laboratory completeness is a measure of the amount of valid measurements obtained from all valid samples submitted to the laboratory. The laboratory completeness objective is greater than 95 percent.

To ensure that these percentages are met, materials for crucial parameters will be retained if re-sampling is required and strict adherence to holding times will be required.

3.5 Representativeness

Representativeness is a qualitative parameter that expresses the degree to which data accurately and precisely represents either a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. To ensure representativeness, the sampling locations have been selected to provide coverage over a wide area and to highlight potential trends in the data.

Representativeness will be satisfied by ensuring that this QAPP, SMP, and FSP are followed and that proper sampling, sample handling, and sample preservation techniques are used.

Representativeness in the laboratory is ensured by using the proper analytical procedures, appropriate methods, and meeting sample-holding times (**Table 2).** An example laboratory quality manual is provided within **Appendix A**.

3.6 Comparability

Comparability is a qualitative parameter that expresses the confidence with which one data set can be compared to another. Comparability will be satisfied by ensuring that this QAPP, SMP, and FSP are followed and that proper sampling techniques are used. Maximization of comparability with previous data sets is expected because field protocols are consistent with those previously used.

Comparability is dependent on the use of recognized USEPA or equivalent analytical methods and the reporting of data in standardized units. To facilitate data comparison, the data-reporting format as presented below will be used:

- Conventions (units reported as): for solids (weight/unit weight [i.e., mg/kg]); for liquids (weight/unit volume [i.e., ug/L (parts per billion)].
- Use common chemical name with corresponding chemical abstract system (CAS) code.
- Report all data for soils on a dry-weight basis.

4. Sampling Program

Environmental sampling will include annual groundwater sampling of monitoring wells provided in the SMP (**Figure 4 of SMP**). Groundwater samples will be collected utilizing low-flow sampling methods, peristaltic pumps and bailers. Performing grab or composite sampling by appropriate hand-held sampling equipment will be the preferred method for waste characterization sampling. Analytical samples and analysis methods are described in the SMP. Sampling methods and procedures are described in the FSP (**Appendix C of SMP**).

4.1 Sample Type, Location, and Frequency

4.1.1 Groundwater

Groundwater samples will be collected annually in accordance with the SMP (**Figure 4 of SMP**). Groundwater samples will be collected and submitted for laboratory analysis in general accordance with this QAPP, FSP and the SMP. Water quality parameters including temperature, pH, turbidity, salinity, dissolved oxygen (DO), and specific conductance, will be collected prior to laboratory analysis in general accordance with the Work Plan and the FSP. A summary of groundwater samples and analysis are located on **Table 1**.

4.1.2 Field QC Sample Collection

Field QC samples are used to monitor the reproducibility and representativeness of field sampling activities. The field QC samples are handled transported and analyzed in the same manner as the associated field samples. Field QC samples will include equipment blanks, trip blanks, field duplicates and MS/MSDs. The quantity, field QC sample type and analysis is detailed on **Table 2.**

Equipment Blank Samples are used to monitor the adequacy of decontamination procedures and possible sources of contamination such as potential laboratory methodologies. Equipment blanks will consist of laboratory-supplied, distilled or de-ionized water and will be used to check for potential contamination of the equipment, which may cause sample contamination. Equipment blanks will be collected by routing the distilled water through decontaminated piece of sampling equipment or disposable sampling equipment into laboratory supplied bottles. Non-dedicated field equipment will be decontaminated as specified below in subsection 4.3. Equipment blanks will be submitted to the laboratory at a frequency of one per 20 samples per matrix per type of equipment being used per parameter. Equipment blanks will not be completed for waste characterization sampling activities.

Trip Blank Samples will consist of analyte free water and will be prepared and provided by the laboratory. (Trip blanks are used to assess the potential for VOC contamination of samples due to contaminant migration during sample shipment and storage. Trip blanks will be transported to the project location unopened, stored with the site characterization samples, and kept closed until analyzed by the laboratory. Trip blanks will be submitted to the laboratory at a frequency of one per cooler, which contains samples submitted for VOC analysis. Trip blanks will not be completed for waste characterization sampling activities.

Field Duplicate Samples, also referred as blind duplicate samples, are two samples that are submitted from the same interval using the same sample procedures. Field duplicates will be used to assess the sampling and analytical reproducibility. Both samples are collected utilizing the same methods and are submitted for the same laboratory analysis; however, different sample identification numbers are used. Field duplicates will be submitted at a frequency of one per 20 samples for all matrices and all parameters. Field duplicates will not be completed for waste characterization sampling activities.

MS/MSD Samples are two additional aliquots of the same sample submitted for the same parameters as the original sample. However, the additional aliquots are spiked by the laboratory with the known compounds. Matrix spikes provide information about the effect of the sample matrix on the measurement methodology. MS/MSDs will be submitted at a frequency of one per 20 samples per matrix. MS/MSDs will not be completed for waste characterization sampling activities.

Refer to **Table 2** for a summary of QC sample preservation and container requirements.

4.1.3 Waste Characterization Sample Collection

Waste classification sampling will be conducted for soils and liquid wastes. The purpose of characterizing a waste is for its proper off-site disposal. Composite samples will be collected from the on-site waste storage vessels (drums or roll-off) for parameters required by the approved disposal facility. Soil samples will be collected utilizing stainless steel sampling tools, shovel, or auger that had been decontaminated. Liquid samples will be collected utilizing disposable bailer, peristaltic pump, a pump with tubing, or other similar methods. These samples will be handled in general accordance with sample handling procedures presented in the FSP. Investigation derived waste samples will be analyzed for parameters that are required by the National Grid-approved facility.

4.2 Sample Preservation and Containerization

The analytical laboratory will supply the sample containers for the chemical samples. These containers will be cleaned by the manufacturer to meet or exceed all analyte specifications established in the latest USEPA's Specifications and Guidance for Contaminant-Free Sample

Containers. Certificates of analysis are provided with each bottle lot and maintained on file to document conformance to USEPA specifications. The containers will be pre-preserved, where appropriate (**Table 2**).

4.3 Equipment Decontamination

All non-dedicated sampling equipment shall be cleaned between each use in the following manner:

- Wash/scrub with a biodegradable degreaser ("Simple Green") if there is oily residue on equipment surface
- Tap water rinse
- Wash and scrub with Alconox (or non-phosphate soap) and water mixture
- Tap water rinse
- All equipment used to collect samples for VOCs and SVOC analysis will then receive a methanol rinse followed by a de-ionized water rinse.
- All equipment used to collect samples for metals analysis will then receive a 10% nitric acid solution rinse followed by a de-ionized water rinse.
- Equipment will be wrapped in polyethylene plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location, where appropriate.

If used, drilling and excavation equipment will be decontaminated in general accordance with methods described in the FSP.

Groundwater sampling pumps will be cleaned by washing and scrubbing with an Alconox/water solution, rinsing with tap water and irrigating with de-ionized water.

Decontamination fluids will be containerized into United States Department of Transportation (USDOT)/UN-approved 55-gallon drums or containment vessels and will be characterized and disposed of by National Grid at an approved disposal facility.

5. Sample Documentation and Custody

5.1 Sample Documentation

5.1.1 Field Notes

Field notes documenting field activities will be maintained in a field notebook in general accordance with the FSP. Field logbooks will provide the means of recording the chronology of data collection activities performed during the investigation. The logbook will be a bound notebook with water-resistant pages. Logbook entries will be dated, legible, and contain accurate and inclusive documentation of the activity. Each page of the logbook will be signed in permanent ink and dated. No erasures or obliterations of field notes will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark, which is signed and dated by the sampler. The correction shall be written adjacent to the error.

Field logbooks will be reviewed at regular intervals by the field team leader, site manager and project manager for completeness and representativeness. Logbooks will be supported by daily activity reports as described in the FSP.

5.1.2 COC Records

Sample custody is discussed in detail below in subsection 5.2. COC records are initiated by the samplers in the field. The field portion of the custody documentation should include:

- The project name
- Signature(s) of sampler (s) responsible for sample custody
- Sample ID number
- Date and time of collection
- Whether the sample is grab or composite
- Names of individuals involved in sampling
- Air bill or other shipping number (if applicable)

On a regular basis (daily or on such a basis that all holding times will be met), samples will be transferred to the custody of the respective laboratories, via third-party commercial carriers or via laboratory courier service. Sample packaging and shipping procedures, and field COC procedures are described below in subsection 5.2.1 of this Plan. Sample receipt and log-in procedures at the laboratory are described below in subsection 5.2.2 of this Plan.

5.1.3 Sample Labeling

Each sample will be labeled with an adhesive label using indelible ink. The label should include the date and time of collection, sampler's initials, tests to be performed, preservative (if applicable), and a unique identification. The following identification scheme will be used:

PRIMARY SAMPLES TYPES	QA/QC SAMPLE TYPES
GROUNDWATER SAMPLES Monitoring Well-ID CF-MW-20	**FIELD BLANKS** SAMPLE-ID – [DATE] CF-MW-FB-063010 **MATRIX SPIKE/DUP** SAMPLE [ID] [DEPTH] [EITHER MS OR MSD] CF-MW-01 (10-15) MS/MSD **TRIP BLANKS** SAMPLE- ID [DATE] CF-TB-063007 **BLIND DUPLICATES** SAMPLE -ID[XX][DATE] CF-MW-XX-063010

This sample label contains the authoritative information for the sample. Inconsistencies with other documents will be settled in favor of the vial or container label unless otherwise corrected in writing from the field personnel collecting samples or the Data Manager and/or the Project QA Officer.

5.1.4 Sample Handling

Samples will be handled in general accordance with the FSP.

5.2 Sample Custody

The COC provides a record of the custody of any environmental field sample from the time of collection to the delivery to the laboratory. Sample custody is addressed in three parts: field sample collection, laboratory analysis, and project files.

A sample is considered to be under a person's custody if:

- The item is in the actual possession of a person
- The item is in the view of the person after being in actual possession of the person
- The item was in the actual physical possession of the person but is locked up to prevent tampering
- The item is in a designated and identified secure area

5.2.1 Field Custody Procedures

Samples will be collected following the sampling procedures indicated in the Work Plan and the FSP. A summary of samples and collection methods are provided above in Section 4 of this QAPP. Documentation of sample collection is described above in subsection 5.1. Sample COC and packaging procedures are summarized below. These procedures will ensure that the samples will arrive at the laboratory with the COC intact.

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or dispatched properly. Field procedures have been designed such that as few people as possible will handle the samples.
- All bottles will be identified by the use of sample labels with sample numbers, sampling locations, date/time of collection, and type of analysis. The sample numbering system is presented above in subsection 5.1.3.
- Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions.
- Samples will be accompanied by a completed COC form. The sample numbers and locations will be listed on the COC form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents the transfer of custody of samples from the sampler to another person, to a mobile laboratory, and to the laboratory facility.
- All shipments will be accompanied by the COC record identifying the contents. The original record will accompany the shipment, and copies will be retained by the sampler and placed in the project files.
- Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler. Shipping containers will be secured with strapping tape and custody seals for shipment to the laboratory. The custody seals will be attached to the cooler and covered with clear plastic tape after being signed by field personnel.
- If the samples are sent by common carrier, the air bill will be used. Air bills will be retained as part of the permanent documentation. Commercial carriers are not required to sign off on the custody forms since the custody forms will be sealed inside the sample cooler and the custody seals will remain intact.
- Samples remain in the custody of the sampler until transfer of custody is completed. This consists of delivery of samples to the laboratory sample custodian, and signature of the laboratory sample custodian on COC document as receiving the samples and signature of sampler as relinquishing samples.

5.2.2 Laboratory Custody Procedures

After accepting custody of the shipping containers, the laboratory will document the receipt of the shipping containers by signing the COC record. The laboratory will:

- Examine the shipping containers to verify that the custody tape is intact
- Examine all sample containers for damage
- Determine if the temperature required for the requested testing program has been maintained during shipment and document the temperature on the COC records
- Compare samples received against those listed on the COC
- Verify that sample holding times have not been exceeded
- Examine all shipping records for accuracy and completeness
- Determine sample pH (if applicable) and record on COC forms
- Sign and date the COC immediately (if shipment is accepted) and attach the air bill
- Note any problems associated with the coolers and/or samples on the cooler receipt form and notify the laboratory project manager, who will be responsible for contacting the GEI data manager
- Attach laboratory sample container labels with unique laboratory identification and test
- Place the samples in the proper laboratory storage.

Following receipt, samples will be logged in according to the following procedure:

- The samples will be entered into the laboratory tracking system. At a minimum, the following information will be entered: project name or identification, unique sample numbers (both client and internal laboratory), type of sample, required tests, date and time of laboratory receipt of samples, and field ID provided by field personnel.
- The completed COC, air bills, and any additional documentation will be placed in the project file.

6. Calibration Procedures

6.1 Field Instruments

Field instruments will be calibrated according to the manufacturer's specifications. Air monitoring instruments will be calibrated to a known reference gas standard and ambient air outside the work zone. Calibration will be completed daily. Water quality meters will be calibrated with known reference solutions. All calibration procedures performed will be documented in the field logbook and will include the date/time of calibration, name of person performing the calibration, reference standard used, and the readings. The following equipment has been identified for use to implement activities within the SMP or during intrusive work within impacted soils.

Subsurface Soil Sampling Activities (if required):

- RAE Systems MultiRAE Plus equipped with VOC (10.6 eV lamp), lower explosive limit (LEL), percent oxygen, hydrogen sulfide and hydrogen cyanide [Health and Safety Monitoring]
- RAE Systems MiniRAE 2000 (PID) with 10.6 eV lamp [VOC monitoring]
- Drager Chip Measurement System (CMS) and compound specific chips (including benzene, hydrogen sulfide, hydrogen cyanide, etc.) [Health and Safety Monitoring]
- TSI Dusttrak real time aerosol monitor [particulate monitor]

Groundwater Sampling Activities

- YSI 6280 XLM water quality meter
- Geopump peristaltic pump

Similar field equipment can be substituted that perform the same functions can be substituted if selected equipment is not available from equipment supplier.

6.2 Laboratory Instruments

Calibration procedures for a specific laboratory instrument will consist of initial calibrations, initial calibration verifications, and/or continuing calibration verification. Detailed descriptions of the calibration procedures for a specific laboratory instrument are included in the laboratory's quality assurance plan, which describe the calibration procedures, their frequency, acceptance criteria, and the conditions that will require recalibration. An example laboratory quality manual is provided in **Appendix A**. These procedures are as required in the respective analytical methodologies summarized in **Table 1** and **Table 2** of this QAPP.

7. Analytical Procedures

Analytical samples will be collected in general accordance with the FSP and as specified in the SMP. Groundwater samples will be analyzed by:

- EPA method 8260 - volatile organic compounds (VOC)-[Benzene, toluene, ethylbenzene and (total) xylenes (BTEX) fraction]
- EPA method 8270 - semi-volatile organic compounds (SVOC)-[Polycyclic aromatic hydrocarbon (PAH) fraction]

Analytical samples will be collected into laboratory-preserved sample containers and will be analyzed as indicated in **Table 1 and 2**.

8. Data Reduction, Validation, and Reporting

Appropriate QC measures will be used to ensure the generation of reliable data from sampling and analysis activities. Proper collection and organization of accurate information followed by clear and concise reporting of the data is a goal in this project. Complete data packages suitable for data validation to support the generation of a DUSR according to NYSDEC requirements will be provided by the analytical laboratory.

8.1 Field Data Evaluation

Measurements and sample collection information will be transcribed directly into the field logbook or onto standardized forms. If errors are made, results will be legibly crossed out, initialed and dated by the person recording the data, and corrected in a space adjacent to the original (erroneous) entry. Reviews of the field records by the field team leader, site manager, and project manager will ensure that:

- Logbooks and standardized forms have been filled out completely and that the information recorded accurately reflects the activities that were performed.
- Records are legible and in accordance with good record keeping procedures, i.e., entries are signed and dated, data are not obliterated, changes are initialed, dated, and explained.
- Sample collection, handling, preservation, and storage procedures were conducted in accordance with the protocols described in the FSP and Work Plan, and that any deviations were documented and approved by the appropriate personnel.

8.2 Analytical Data Validation

National Grid's consultant for SMP activities will be responsible for performing an independent validation of the analytical data. Project-specific procedures will be used to validate analytical laboratory data. The basis for the validation will be the USEPA CLP National Functional Guidelines for Organic Data Review (February 2005) and the USEPA CLP National Functional Guidelines for Inorganic Data Review (October 2004), modified to accommodate the criteria in the analytical methods used in this program, and Region II Standard Operating Procedures (SOPs) for CLP Organic Data review (Revision 11, June 1996) and Evaluation of Metals for the CLP Program (Revision 11, February 1992). Critical functions for determining the validity of generated data are: (1) strict adherence to the analytical methods, (2) assurance that the instrumentation employed was operated in accordance with defined operating procedures, (3) assurance that quality parameters built

into the analytical procedures have been adhered to, and (4) confirmation that the DQOs have been met.

Table 2 highlights the QC criteria and holding time requirements for all analyses conducted under this program. These criteria will be used to evaluate and qualify the data during validation.

GEI or qualified contracted personnel will validate all analytical samples collected as part of the SMP activities at the One Edgewater Street property. Samples collected for waste classification will not be validated. Validation will include all technical holding times, as well as QC sample results (blanks, surrogate spikes, laboratory duplicates, MS/MSDs, and LCSs), tunes, internal standards, calibrations, target compound identification, and results calculations.

For all analyses, the laboratory will report results, which are below the laboratory's reporting limit; these results will be qualified as estimated (J) by the laboratory. The laboratory may be required to report TICs for the VOC and SVOC analyses; this will be requested by National Grid's Consultant on an as-needed basis

The overall completeness of the data package will also be evaluated by the data validator. Completeness checks will be administered on all data to determine whether full data deliverables were provided. The reviewer will determine whether all required items are present and request copies of missing deliverables.

Upon completion of the validation, a report will be prepared. This report will summarize the samples reviewed, elements reviewed, any nonconformance with the established criteria, and validation actions. Data qualifiers will be consistent with USEPA National Functional Guidelines. This report will be in a format consistent with NYSDEC's DUSR.

Laboratory deliverables will consist of an original hard copy data package that is in general accordance with NYSDEC ASP Category B data deliverable requirements.

9. Internal Quality Control

Laboratory and field quality internal control checks will be used to ensure the data quality objectives. At a minimum, this will include:

- MS/MSD samples
- Duplicate analyses
- Trip blank samples for VOC analysis
- Laboratory control spike samples
- Instrument calibrations
- Instrument tunes for VOC 8260B and SVOC 8270C analyses
- Method and/or instrument blanks
- Surrogate spikes for organic analyses
- Internal standard spikes for VOC 8260B and SVOC 8270C analyses
- Detection limit determination and confirmation by analysis of low-level calibration standard

An example ELAP-approved laboratory quality plan is located in **Appendix A**.

Field quality control samples will include:

- Equipment blanks as outlined in **Table 2**
- Field duplicate samples as outlined in **Table 2**
- Trip blanks as outlined in **Table 2**
- MS/MSDs as outlined in **Table 2**

10. Performance and System Audits

Audits are an independent means of: 1) evaluating the operation or capability of a measurement system, and 2) documenting the use of QC procedures designed to generate data of know and acceptable quality.

Field audits may be completed to assess sample collection protocols, determine the integrity of COC procedures, and evaluate sample documentation and data handling procedures. Field audits may be scheduled by the QA officer, Project Manager (PM), site manager or in-house consultant, at their discretion. Written records of audits and any recommendations for corrective action will be submitted to the PM.

The QA officer is the interface between management and project activities in matters of project quality. The QA officer will review the implementation of the QAPP. Reviews will be conducted at the completion of field activities and will include the results of any audits and an evaluation of the data quality.

11. Preventive Maintenance Procedures and Schedules

Preventative maintenance will be performed on field equipment in accordance with the manufacturer's recommendations. Preventative maintenance to field will be provided by equipment vendor, U.S Environmental Rental Corporation, Pine Environmental Services, or other selected vendors. The following equipment has been identified for use to implement if intrusive activities occur.

Subsurface Soil Sampling Activities (if required):

- RAE Systems MultiRAE Plus equipped with VOC (10.6 eV lamp), lower explosive limit (LEL), percent oxygen, hydrogen sulfide and hydrogen cyanide [Health and Safety Monitoring]
- RAE Systems MiniRAE 2000 (PID) with 10.6 eV lamp [VOC monitoring]
- Drager Chip Measurement System (CMS) and compound specific chips (including benzene, hydrogen sulfide, hydrogen cyanide, etc.) [Health and Safety Monitoring]
- TSI Dusttrak real time aerosol monitor [particulate monitor]

Groundwater Sampling Activities:

- YSI 6280 XLM water quality meter
- Geopump peristaltic pump

Similar equipment will be substituted that perform the same functions can be substituted if selected equipment is not available from equipment supplier.

Laboratory equipment calibration and maintenance procedures are specified in the example laboratory quality manual located in **Appendix A**.

12. Specific Procedures to Assess Data Quality Indicators

QC analyses conducted as a part of the testing program will provide a quantitative quality assessment of the data generated and their adherence to the data quality indicators. The data quality indicators ensure that the quality assurance objectives for the project are met.

12.1 Detection Limits

12.1.1 Method Detection Limit

The MDL is defined as follows for all measurements:

$$MDL = (t[n-1,1-a=0.99]) \times (s)$$

where: s = standard deviation of the replicate analysis,
t(n-1, 1-a=0.99) = student's t-value for a one-sided, 99 percent confidence level and a standard deviation estimate with n-1 degrees of freedom

The MDLs calculated by the laboratory are determined under ideal conditions. MDLs for environmental samples are dependent on the sample aliquot, the matrix, the concentration of analyte, and interference present in the matrix, the percent of moisture, dilution factor, etc. The MDL for each sample analysis will be adjusted accordingly.

12.1.2 Reporting Limit

The RL is the concentration of an analyte in the sample that corresponds to the lowest concentration standard of the calibration curve. As with the MDLs, the RLs are dependent on the sample aliquot, the final sample volume, the percent of moisture, dilution factor, etc.

The RL is determined as follows:

$$RL = \frac{Lowest\ conc.\ std\ (ng)}{Volume\ injected\ (uL)}\ x\ \frac{Sample\ aliquot\ (mL\ or\ g)}{Final\ volume\ (mL)}\ x\ DF\ x\ \frac{100}{(100 - \%M)}$$

where:

DF = dilution factor, including all dilutions or lost samples not accounted for in a sample aliquot/final volume ratio

%M = percent moisture for solid samples.

12.2 Precision

Variability will be expressed in terms of the RPD when only two data points exist. The RPD is calculated as:

$$RPD = \frac{(Larger\ Value - Smaller\ Value)}{[(Larger\ Value + Smaller\ Value)/2]}\ x\ 100\%$$

For data sets greater than two points, the percent relative standard deviation (percent RSD) is used as the precision measurement. It is defined by the equation:

$$Percent\ RSD = \frac{Standard\ Deviation}{Mean}\ x\ 100\%$$

Standard deviation (SD) is calculated as follows:

$$SD = \sqrt{\sum_{i=1}^{n} \frac{(y_i - y)^2}{n - 1}}$$

where: SD = standard deviation
yi = measured value of the ith replicate
y = mean of replicate measurements
n = number of replicates

For measurements such as pH, where the absolute variation is more appropriate, precision is usually reported as the absolute range (D) of duplicate measurements:

$$D = \left| \text{first measurement - second measurement} \right|$$

or as the absolute standard deviation previously given. RPD, %RSD, and D are independent of the error of the analyses and reflect only the degree to which the measurements agree with each other, not the degree to which they agree with the true value for the parameter measured.

12.3 Accuracy

Accuracy is related to the bias in a measurement system. Accuracy describes the degree of agreement of a measurement with a true value. Accuracy will be expressed as percent recovery for each matrix spike analyte by using the following equation:

$$\%\ Recovery = \frac{Css - Cus}{Csa}\ X\ 100\%$$

where: Css = measured concentration in spiked sample
Cus = measured concentration in unspiked sample
Csa = known concentration added to the sample

Accuracy for a measurement such as pH is expressed as bias in the analysis of a standard reference sample according to the equation:

$$Bias = pH_m - pH_t$$

where: pH_m = measured pH
pH_t = the true pH of the standard reference sample

12.4 Completeness

Data completeness is a measure of the amount of usable data resulting from a measurement effort. For this program, completeness will be defined as the percentage of valid data obtained compared to the total number of measurements necessary to achieve our required statistical level of confidence for each test. The confidence level is based on the total number of samples proposed in the Work Plan.

Data completeness is calculated as:

$$Completeness = \frac{Number\ of\ valid\ data\ points}{Number\ of\ data\ points\ necessary\ for\ confidence\ level} x\ 100\%$$

The completeness goal is to generate a sufficient amount of valid data. Data validation criteria discussed in the work plan and Section 8 of this QAPP will be used to determine data completeness. Any data deficiencies and their effect on project goals will be evaluated in the DUSR.

12.5 Representativeness

Representativeness is a qualitative statement that expresses the extent to which the sample accurately and precisely represents the characteristics of interest of the study. Representativeness is primarily concerned with the proper design of the sampling program and is best ensured by proper selection of sampling locations and the taking of a sufficient number of samples. It is addressed by describing the sampling techniques, the matrices sampled, and the rationale for the selection of sampling locations, which are discussed in the FSP and SMP

12.6 Comparability

Comparability is a qualitative parameter expressing the confidence that one set of data can be compared to another. Comparability is possible only when standardized sampling and analytical procedures are used.

13. Corrective Action

If unacceptable conditions are identified as a result of audits or are observed during field sampling and analysis, the PM, Field Team Leader, and QA officer will document the condition and initiate corrective procedures. The specific condition or problem will be identified, its cause will be determined, and appropriate action will be implemented.

The entire sampling program will be under the direction of the PM and QA officer. The emphasis in this program is on preventing problems by identifying potential errors, discrepancies, and gaps in the data collection, laboratory analysis, and interpretation process. Any problems identified will be promptly resolved. Likewise, follow-up corrective action is always an option in the event that preventative corrective actions are not effective.

The acceptance limits for the sampling and analyses to be conducted in this program will be those stated in the method. Corrective actions are likely to be immediate in nature and most often will be implemented by the contracted laboratory analyst or the PM. The corrective action will usually involve recalculation, reanalysis, or repeating a sample run.

13.1 Immediate Corrective Action

Corrective action in the field may be needed when the sample requirements are changed (i.e., more/less samples, sampling locations other than those specified in the SMP), or when sampling procedures and/or field analytical procedures require modification, etc., due to unexpected conditions. The field team may identify the need for corrective action. The Field Team Leader, Site Manager, and PM will approve the corrective action and notify the QA officer. The PM and QA officer will approve the corrective measure. The Field Team Leader and Site Manager will ensure that the corrective measure is implemented by the field team.

Corrective actions will be implemented and documented in the field record book. Documentation will include:

- A description of the circumstances that initiated the corrective action
- The action taken in response
- The final resolution
- Any necessary approvals

No staff member will initiate corrective action without prior communication of findings through the proper channels.

Corrective action in the laboratory will be completed in accordance with the quality assurance procedures. An example laboratory quality manual is located in the **Appendix A**. Any corrective actions completed by the laboratory will be documented in both the laboratory's corrective action files, and the narrative data report sent from the laboratory to the PM. If the corrective action does not rectify the situation, the laboratory will contact the PM, who will determine the action to be taken and inform the appropriate personnel.

If potential problems are not solved as an immediate corrective action, the contractor will apply formalized long-term corrective action if necessary.

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Tables

Table 1
Groundwater Sampling Matrix
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

Sample I.D.	Sample Number			Water Quality Measurements							Analysis (Method[1])	
	Number Samples Proposed	Number Samples Collected	Date Collected	pH	Specific Conductance	Temperature	Oxidation Reduction Potential (ORP)	Turbidity	Salinity	Dissolved Oxygen	VOCs [BTEX Only] (EPA Method 8260B)	SVOCs [PAH Only] (EPA 8270C)
RW-20	1										X	X
RW-21	1										X	X
RW-22	1										X	X
RW-23	1										X	X
RW-24	1										X	X

Notes:
VOCs [BTEX Only] - volatile organic compounds [Benzene, toluene, ehtylbenzene, xylene fraction]
SVOCs [PAH Only] - semivolatile organic compounds [polycyclic aromatic hydrocarbons]
1. Chemical analysis test methods specified are from USEPA SW-846 test methods.

Table 2
Analytical Methods/Quality Assurance Summary
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

Media	Number of Primary Samples	QA/QC Samples				Total Number of Samples	Analytical Parameters	Method	Preservative	Holding Time	Container
		TB	FB[2]	DUP	MS/MSD						
Ground Water	4	1	1	1	1	8	VOCs	8260B	pH<2 with HCl, Cool to 4°C	14 days to analysis	(2) 40 mL VOA vials
	4	0	1	1	1	7	SVOCs	8270C	Cool to 4°C	7 days to extraction; 40 days from extraction to analysis	(2) 1 L amber glass jar

VOCs - volatile organic compounds
SVOCs - semivolatile organic compounds
°C- Degrees Celsius
L - Liter
oz. - ounce
mL - Milliliter
HCl - Hydrochloric Acid

Table 3
Quantitation Limits for Groundwater
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

	Reporting Detection Limit	Method Detection Limit	Units
Semivolatile Organic Compounds (SVOCs) by EPA Method 8270C [PAH Fraction]			
2-Methylnaphthalene	10	0.64	ug/L
Acenaphthene	10	0.8	ug/L
Acenaphthylene	10	0.75	ug/L
Anthracene	10	0.99	ug/L
Benzo(a)anthracene	10	1.19	ug/L
Benzo(a)pyrene	10	1.08	ug/L
Benzo(b)fluoranthene	10	1.54	ug/L
Benzo(ghi)perylene	10	1.04	ug/L
Benzo(k)fluoranthene	10	0.91	ug/L
Chrysene	10	0.97	ug/L
Dibenzo(a,h)anthracene	10	1.34	ug/L
Fluoranthene	10	1.08	ug/L
Fluorene	10	0.77	ug/L
Indeno(1,2,3-cd)pyrene	10	1.17	ug/L
Naphthalene	10	0.66	ug/L
Phenanthrene	10	0.66	ug/L
Pyrene	10	1.01	ug/L
Volatile Organic Compounds (VOCs) by EPA Method 8260B [BTEX Fraction]			
Benzene	5	0.4	ug/L
Ethylbenzene	5	1	ug/L
Toluene	5	0.3	ug/L
Xylenes (total)	5	1	ug/L

Table 4
Quantitation Limits for Soils
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

	Reporting Detection Limit	Method Detection Limit	Units
Subsurface Soils			
Metals by EPA Method 6000/7000 series			
Aluminum	258	20	mg/Kg
Antimony	11.7	1.14	mg/Kg
Arsenic	8	1.22	mg/Kg
Barium	2	0.18	mg/Kg
Beryllium	2	0.5	mg/Kg
Cadmium	3	1	mg/Kg
Calcium	85	11.6	mg/Kg
Chromium	3	0.34	mg/Kg
Cobalt	2	0.42	mg/Kg
Copper	5	0.8	mg/Kg
Iron	145	10.2	mg/Kg
Lead	9	0.76	mg/Kg
Magnesium	35	9.2	mg/Kg
Manganese	2.5	0.64	mg/Kg
Mercury	0.05	0.02	mg/Kg
Nickel	6.25	0.44	mg/Kg
Potassium	200	40	mg/Kg
Selenium	16	1.6	mg/Kg
Silver	3	0.32	mg/Kg
Sodium	94	20	mg/Kg
Thallium	20	4.17	mg/Kg
Vanadium	4	0.36	mg/Kg
Zinc	20	3.8	mg/Kg
Semivolatile Organic Compounds (SVOCs) by EPA Method 8270C			
1,2,4-Trichlorobenzene	333	55.96	ug/Kg
1,2-Dichlorobenzene	333	56.43	ug/Kg
1,2-Diphenylhydrazine	333	32.86	ug/Kg
1,3-Dichlorobenzene	333	50.49	ug/Kg
1,4-Dichlorobenzene	333	52.75	ug/Kg
2,2-oxybis (1-chloropropane)	333	47.18	ug/Kg
2,4,5-Trichlorophenol	1667	120.96	ug/Kg
2,4,6-Trichlorophenol	333	85.18	ug/Kg
2,4-Dichlorophenol	333	108.95	ug/Kg
2,4-Dimethylphenol	333	172.3	ug/Kg
2,4-Dinitrophenol	1667	114.87	ug/Kg
2,4-Dinitrotoluene	333	60.09	ug/Kg
2,6-Dinitrotoluene	333	60.57	ug/Kg
2-Chloronaphthalene	333	48.46	ug/Kg
2-Chlorophenol	333	86.27	ug/Kg
2-Methylnaphthalene	333	52.92	ug/Kg
2-Methylphenol	333	89.03	ug/Kg
2-Nitroaniline	1667	42.32	ug/Kg
2-Nitrophenol	333	115.71	ug/Kg
3,3-Dichlorobenzidine	667	88.96	ug/Kg
3-Nitroaniline	1667	68.54	ug/Kg
4,6-Dinitro-2-methylphenol	1667	239.28	ug/Kg
4-Bromophenyl phenyl ether	333	51.16	ug/Kg

Table 4
Quantitation Limits for Soils
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

	Reporting Detection Limit	Method Detection Limit	Units
Subsurface Soils			
Semivolatile Organic Compounds (SVOCs) by EPA Method 8270C (Continued)			
4-Chloro-3-methylphenol	333	112.76	ug/Kg
4-Chloroaniline	333	107.34	ug/Kg
4-Chlorophenyl phenyl ether	333	45.74	ug/Kg
4-Methylphenol	333	179.39	ug/Kg
4-Nitroaniline	667	48.17	ug/Kg
4-Nitrophenol	1667	141.69	ug/Kg
Acenaphthene	333	55.32	ug/Kg
Acenaphthylene	333	40.59	ug/Kg
Aniline	333	73.83	ug/Kg
Anthracene	333	54.55	ug/Kg
Benzidine	3333	1134.9	ug/Kg
Benzo(a)anthracene	333	45.31	ug/Kg
Benzo(a)pyrene	333	41.16	ug/Kg
Benzo(b)fluoranthene	333	93.11	ug/Kg
Benzo(ghi)perylene	333	36.99	ug/Kg
Benzo(k)fluoranthene	333	37.12	ug/Kg
Benzoic acid	1667	90.33	ug/Kg
Benzyl alcohol	333	62.93	ug/Kg
Bis(2-chloroethoxy)methane	333	57.03	ug/Kg
Bis(2-chloroethyl)ether	333	44.86	ug/Kg
Bis(2-ethylhexyl)phthalate	333	44.37	ug/Kg
Butyl benzyl phthalate	333	43.04	ug/Kg
Carbazole	333	48.63	ug/Kg
Chrysene	333	41.6	ug/Kg
Dibenzo(a,h)anthracene	333	36.71	ug/Kg
Dibenzofuran	333	52.67	ug/Kg
Diethyl phthalate	333	48.88	ug/Kg
Dimethyl phthalate	333	51.27	ug/Kg
Di-n-butyl phthalate	333	43.98	ug/Kg
Di-n-octyl phthalate	333	34.97	ug/Kg
Fluoranthene	333	41.87	ug/Kg
Fluorene	333	43.39	ug/Kg
Hexachlorobenzene	333	48.52	ug/Kg
Hexachlorobutadiene	333	67.85	ug/Kg
Hexachlorocyclopentadiene	333	247.96	ug/Kg
Hexachloroethane	333	59.22	ug/Kg
Indeno(1,2,3-cd)pyrene	333	33.74	ug/Kg
Isophorone	333	60.02	ug/Kg
Naphthalene	333	56.66	ug/Kg
Nitrobenzene	333	40.4	ug/Kg
n-Nitrosodimethylamine	333	48.87	ug/Kg
n-Nitroso-di-n-propylamine	333	44.63	ug/Kg
n-Nitrosodiphenylamine	333	49.76	ug/Kg
Pentachlorophenol	1667	287.85	ug/Kg
Phenanthrene	333	38.58	ug/Kg
Phenol	333	96.98	ug/Kg
Pyrene	333	45.56	ug/Kg
Pyridine	667	39.9	ug/Kg

Table 4
Quantitation Limits for Soils
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

	Reporting Detection Limit	Method Detection Limit	Units
Subsurface Soils			
Volatile Organic Compounds (VOCs) by EPA Method 8260B			
1,1,1-Trichloroethane	5	0.84	ug/Kg
1,1,2,2-Tetrachloroethane	5	1.21	ug/Kg
1,1,2-Trichloroethane	5	1.04	ug/Kg
1,1-Dichloroethane	5	0.81	ug/Kg
1,1-Dichloroethene	5	1.09	ug/Kg
1,2,3-Trichloropropane	5	1.62	ug/Kg
1,2,4-Trichlorobenzene	5	0.61	ug/Kg
1,2-Dichloroethane	5	0.99	ug/Kg
1,2-Dichloropropane	5	1.06	ug/Kg
2-Butanone (MEK)	10	1.78	ug/Kg
2-Chloroethylvinylether	5	1.37	ug/Kg
2-Hexanone	10	2.53	ug/Kg
4-Methyl-2-pentanone (MIBK)	5	1.18	ug/Kg
Acetone	20	3.15	ug/Kg
Acrolein	20	3.1	ug/Kg
Acrylonitrile	5	1.19	ug/Kg
Benzene	5	0.86	ug/Kg
Bromodichloromethane	5	0.84	ug/Kg
Bromoform	5	0.99	ug/Kg
Bromomethane	5	0.82	ug/Kg
Carbon disulfide	5	0.61	ug/Kg
Carbon tetrachloride	5	0.78	ug/Kg
Chlorobenzene	5	0.79	ug/Kg
Chloroethane	5	1.89	ug/Kg
Chloroform	5	0.53	ug/Kg
Chloromethane	5	0.9	ug/Kg
cis-1,2-Dichloroethene	5	1.04	ug/Kg
cis-1,3-Dichloropropene	5	0.78	ug/Kg
Dibromochloromethane	5	0.41	ug/Kg
Dichlorodifluoromethane	5	1.25	ug/Kg
Ethylbenzene	5	0.79	ug/Kg
Isopropyl ether	5	0.44	ug/Kg
Methylene chloride	20	2.21	ug/Kg
Methyl-tert-butyl-ether (MTBE)	5	0.93	ug/Kg
Styrene	5	1.06	ug/Kg
tert-Butyl alcohol	20	4.69	ug/Kg
Tetrachloroethene	5	0.7	ug/Kg
Toluene	5	0.84	ug/Kg
trans-1,2-Dichloroethene	5	0.58	ug/Kg
trans-1,3-Dichloropropene	5	0.92	ug/Kg
Trichloroethene	5	0.68	ug/Kg
Trichlorofluoromethane	5	0.6	ug/Kg
Trichlorotrifluoroethane	5	0.63	ug/Kg
Vinyl acetate	10	2.7	ug/Kg
Vinyl chloride	5	0.87	ug/Kg
Xylenes (total)	5	1.96	ug/Kg
Cyanide by EPA Method 9012A			
Cyanide	500	53	ug/Kg

Table 5
Groundwater Standards, Criteria and Guidelines
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

Parameter	DQL[1]
Volatile Organic Compounds	
Benzene	1
Ethylbenzene	5
Toluene	5
Xylenes	5
Semi-Volatile Organic Compounds	
Acenaphthene	20
Acenaphthylene	NS
Anthracene	50
Benzo(a)anthracene	0.002
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	0.002
Benzo(g,h,i)perylene	NS
Benzo(k)fluoranthene	0.002
Chrysene	0.002
Dibenz(a,h)anthracene	NS
Fluoranthene	50
Fluorene	50
Indeno(1,2,3-cd)pyrene	0.002
2-Methylnaphthalene	NS
Naphthalene	10
Phenanthrene	50
Pyrene	50

[1] DQL based on TOGS Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June, 1998)
DQL=Data Quality Level
NS = None specified
ND = Not detected when analyzed by method listed in Table 1

Table 6
Soil Cleanup Objectives
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

Analytes	Unrestricted Use (ppm)	Residential Use (ppm)	Restricted-Residential Use (ppm)	Restricted-Commercial Use (ppm)	Restricted-Industrial Use (ppm)	Protection of Groundwater (ppm)	Protection of Ecological Resources (ppm)
Volatile Organic Compounds							
Acetone	0.05	100	100	500	1,000	0.05	2.2
Benzene	0.06	2.9	4.8	44	89	0.06	70
Butanone, 2-	0.12	100	100	500	1,000	0.12	100
Butylbenzene, n-	12	100	100	500	1,000	12	NE
Butylbenzene, tert-	5.9	100	100	500	1,000	5.9	NE
Butylbenzene,sec-	11	100	100	500	1,000	11	NE
Carbon tetrachloride	0.76	1.4	2.4	22	44	0.76	NE
Chlorobenzene	1.1	100	100	500	1,000	1.1	40
Chloroform	0.37	10	49	350	700	0.37	12
Dichlorobenzene,1,2-	1.1	100	100	500	1,000	1.1	NE
Dichlorobenzene,1,3-	2.4	17	49	280	560	2.4	NE
Dichlorobenzene,1,4-	1.8	9.8	13	130	250	1.8	20
Dichloroethane,1,1-	0.27	19	26	240	480	0.27	NE
Dichloroethane,1,2-	0.02	2.3	3.1	30	60	0.02	10
Dichloroethene, cis-1,2-	0.25	59	100	500	1,000	0.25	NE
Dichloroethene,1,1-	0.33	100	100	500	1,000	0.33	NE
Dioxane,1,4-	0.1	9.8	13	130	250	0.1	0.1
Ethylbenzene	1	30	41	390	780	1	NE
Methyl tert-butyl ether	0.93	62	100	500	1,000	0.93	NE
Methylene chloride	0.05	51	100	500	1,000	0.05	12
Naphthalene	12	100	100	500	1,000	12	NE
Propylbenzene, n-	3.9	100	100	500	1,000	3.9	NE
Tetrachloroethene	1.3	5.5	19	150	300	1.3	2
Toluene	0.7	100	100	500	1,000	0.7	36
Trans-1,2-dichloroethene	0.19	100	100	500	1,000	0.19	NE
Trichloroethane, 1,1,1-	0.68	100	100	500	1,000	0.68	NE
Trichloroethene	0.47	10	21	200	400	0.47	2
Trimethylbenzene, 1,2,4-	3.6	47	52	190	380	3.6	NE
Trimethylbenzene, 1,3,5-	8.4	47	52	190	380	8.4	NE
Vinyl chloride	0.02	0.21	0.9	13	27	0.02	NE
Xylene, total	0.26	100	100	500	1,000	1.6	0.26

Table 6
Soil Cleanup Objectives
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

Analytes	Unrestricted Use (ppm)	Residential Use (ppm)	Restricted-Residential Use (ppm)	Restricted-Commercial Use (ppm)	Restricted-Industrial Use (ppm)	Protection of Groundwater (ppm)	Protection of Ecological Resources (ppm)
Semi-Volatile Organic Compounds							
Acenaphthene	20	100	100	500	1,000	98	20
Acenaphthylene	100	100	100	500	1,000	107	NE
Anthracene	100	100	100	500	1,000	1,000	NE
Benz[a]anthracene	1	1	1	5.6	11	1	NE
Benzo[a]pyrene	1	1	1	1	1.1	22	2.6
Benzo[b]fluoranthene	1	1	1	5.6	11	1.7	NE
Benzo[g,h,i]perylene	100	100	100	500	1,000	1,000	NE
Benzo[k]fluoranthene	0.8	1	3.9	56	110	1.7	NE
Chrysene	1	1	3.9	56	110	1	NE
Dibenz[a,h]anthracene	0.33	0.33	0.33	0.56	1.1	1,000	NE
Dibenzofuran	7	14	59	350	1,000	210	NE
Fluoranthene	100	100	100	500	1,000	1,000	NE
Fluorene	30	100	100	500	1,000	386	30
Hexachlorobenzene	0.33	0.33	1.2	6	12	3.2	NE
Indeno[1,2,3-cd]pyrene	0.5	0.5	0.5	5.6	11	8.2	NE
Methylphenol, 4-	0.33	34	100	500	1,000	0.33	NE
Cresol, m (methylphenol, 3-)	0.33	100	100	500	1,000	0.33	NE
Methylphenol,2-	0.33	100	100	500	1,000	0.33	NE
Pentachlorophenol	0.8	2.4	6.7	6.7	55	0.8	0.8
Phenanthrene	100	100	100	500	1,000	1,000	NE
Phenol	0.33	100	100	500	1,000	0.33	30
Pyrene	100	100	100	500	1,000	1,000	NE
Pesticides							
Aldrin	0.005	0.019	0.097	0.68	1.4	0.19	0.14
Alpha-bhc	0.02	0.097	0.48	3.4	6.8	0.02	0.04
Alpha-chlordane	0.094	0.91	4.2	24	47	2.9	1.3
Beta-BHC	0.036	0.072	0.36	3	14	0.09	0.6
DDD,4,4-	0.0033	2.6	13	92	180	14	0.0033
DDE,4,4-	0.0033	1.8	8.9	62	120	17	0.0033
DDT,4,4-	0.0033	1.7	7.9	47	94	136	0.0033
Delta-BHC	0.04	100	100	500	1,000	0.25	0.04
Dieldrin	0.005	0.039	0.2	1.4	2.8	0.1	0.006
Endosulfan I	2.4	4.8	24	200	920	102	NE
Endosulfan II	2.4	4.8	24	200	920	102	NE
Endosulfan sulfate	2.4	4.8	24	200	920	1,000	NE
Endrin	0.014	2.2	11	89	410	0.06	0.014
Gamma-BHC	0.1	0.28	1.3	9.2	23	0.1	6
Heptachlor	0.042	0.42	2.1	15	29	0.38	0.14
Silvex	3.8	58	100	500	1,000	3.8	NE
Polychlorinated Biphenyls (PCBs)							
Total PCBs	0.1	1	1	1	25	3.2	1

Table 6
Soil Cleanup Objectives
Appendix D-QAPP
1 Edgewater Street
Staten Island, New York

Analytes	Unrestricted Use (ppm)	Residential Use (ppm)	Restricted-Residential Use (ppm)	Restricted-Commercial Use (ppm)	Restricted-Industrial Use (ppm)	Protection of Groundwater (ppm)	Protection of Ecological Resources (ppm)
Total Metals							
Arsenic	13	16	16	16	16	16	13
Barium	350	350	400	400	10,000	820	433
Beryllium	7.2	14	72	590	2700	47	10
Cadmium	2.5	2.5	4.3	9.3	60	7.5	4
Chromium (VI)	1	22	110	400	800	19	1
Chromium (III)	30	36	180	1500	6800		41
Copper	50	270	270	270	10,000	1720	50
Lead	63	400	400	1000	3900	450	63
Manganese	1600	2000	2,000	10,000	10,000	2,000	1600
Mercury	0.18	0.81	0.81	2.8	5.7	0.73	0.18
Nickel	30	140	310	310	10,000	130	30
Selenium	3.9	36	180	1500	6800	4	3.9
Silver	2	36	180	1500	6800	8.3	2
Zinc	109	2200	10,000	10,000	10,000	2480	109
Cyanide							
Cyanide, Total	27	27	27	27	10,000	40	NE

TABLE 7: CORRECTIVE ACTION REQUEST

Number: _____ Date: _____

TO: _____

You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____

CONDITION:

REFERENCE DOCUMENTS:

RECOMMENDED CORRECTIVE ACTIONS:

_____	_____	_____	_____	_____	_____
Originator	Date	Approval	Date	Approval	Date

RESPONSE

CAUSE OF CONDITION:

CORRECTIVE ACTION

(A) RESOLUTION

(B) PREVENTION

(C) AFFECTED DOCUMENTS

C.A. FOLLOWUP:

CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

Figure

Chain of Custody Record

STL Connecticut
128 Long Hill Cross Road
Shelton, CT 06484
Tel: 203-929-8140

SEVERN TRENT **STL**
Severn Trent Laboratories, Inc.

STL-4124 (0901)

Client	Project Manager	Date	Chain of Custody Number 00732
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page _____ of _____
City / State / Zip Code	Site Contact	Lab Contact	
Project Name and Location (State)	Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil		Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH		Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By			1. Received By		
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Appendix A

Example Laboratory Quality Manual

Cover Page:

Quality Assurance Manual

TestAmerica Connecticut
128 Long Hill Cross Road
Shelton, CT 06484
Phone: 203.929.8140
Fax: 203.929.8142

www.testamericainc.com

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Title Page:

Quality Assurance Manual
Approval Signatures

Laboratory Director – Larry Decker	12-18-08 Date
Quality Manager - Dawn May	12/22/08 Date
Operations Manager – Donna Ruokonen	12/24/08 Date
Technical Director, **(Organics Manager)** - Kim Maturo	12/18/08 Date
Technical Director, **(Metals Manager)** – Nestor Petronchak	12/29/08 Date
Technical Director, **(Organic- SV)** - Magdalena Szymczuk	12/24/08 Date
Technical Director, **(Wet Chemistry)** - Doreen Nemeth	12/30/08 Date
Client Service Manager, **(Project Mgt.)** - Paul Hobart	12/31/08 Date

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REFERENCED CORPORATE SOPs AND POLICIES

SOP / Policy Reference	Title
CA-Q-S-001	Solvent and Acid Lot Testing and Approval
CA-Q-S-002	Acceptable Manual Integration Practices
CA-Q-S-004	Method Compliance & Data Authenticity Audits
CA-Q-S-006	Detection Limits
CW-Q-S-001	Corporate Document Control and Archiving
CW-Q-S-002	Writing a Standard Operating Procedure (SOPs)
CA-L-S-001	Internal Investigation of Potential Data Discrepancies and Determination for Data Recall
CA-L-S-002	Subcontracting Procedures
CA-L-P-001	Ethics Policy
CA-L-P-002	Contract Compliance Policy
CW-F-P-002	Authorization Matrix
CW-F-P-004	Procurement and Contracts Policy
CA-C-S-001	Work Sharing Process
CA-T-P-001	Qualified Products List
CW-F-S-007	Controlled Purchases Policy
CW-F-S-018	Vendor Selection
CA-Q-M-002	Corporate Quality Management Plan
CW-E-M-001	Corporate Environmental Health & Safety Manual

REFERENCED LABORATORY SOPs

SOP Reference	Title
CT-QAS-3	SOP for Document Control (Sec. 3.4.1)
CT-MKS-7	Complaint Resolution (Sec .10.1)
QAF00810 QAW01200/1300/1400 QAW1700 QAW01500 QAW01600	SOP Listing (Sec. 13.2) PT Tracking Equipment Table Master Certification Spreadsheet Personnel & Qualifications
CT-RPS-7	LIMS Final Reporting (Sec. 14.1.4)
CT-QAS-16	SOP for Employee Training (Sec. 17.3)
CT-QAS-8	Generating SOPs (Sec. 19.2)
CT-QAS-27	Demonstration of Capability (Sec. 19.4.2)
CT-QAS-17	Conducting MDL Studies (Sec. 19.7)
CT-SMS-11	SOP for Compositing, Homogenization and Subsampling Environmental Samples (Sec. 22.5)
CT-SMS-4	Sample Processing at Sample Arrival (Sec. 23.2.1.3)

SECTION 3

INTRODUCTION *(NELAC 5.1 - 5.3)*

3.1 INTRODUCTION AND COMPLIANCE REFERENCES

TestAmerica Connecticut's Quality Assurance Manual (QAM) is a document prepared to define the overall policies, organization objectives and functional responsibilities for achieving TestAmerica's data quality goals. The laboratory maintains a local perspective in its scope of services and client relations and maintains a national perspective in terms of quality.

The QAM has been prepared to assure compliance with the 2003 National Environmental Laboratory Accreditation Conference (NELAC) standards and ISO/IEC Guide 17025 (1999). In addition, the policies and procedures outlined in this manual are compliant with TestAmerica's Corporate Quality Management Plan(CQMP) and the various accreditation and certification programs listed in Appendix 3. The relevant NELAC section is included in the heading of each QAM section.

The QAM has been prepared to be consistent with the requirements of the following documents:

- EPA 600/R-95/131, *Methods for the Determination of Organic Compounds in Drinking Water,* Supplement III, EPA, August 1995.
- EPA 600/4-79-019, *Handbook for Analytical Quality Control in Water and Wastewater Laboratories,* EPA, March 1979.
- EPA SW-846, *Test Methods for the Evaluation of Solid Waste, 3rd Edition,* September 1986; Update I, July 1992; Update II, September 1994; and Update III, December 1996.
- Federal Register, 40 CFR Parts 136, 141, 172, 173, 178, 179 and 261.
- USEPA Contract Laboratory Program. *Statement of Work for Inorganics Analysis. Multi-Media, Multi-Concentration.* Document ILM04.0.
- USEPA Contract Laboratory Program. *Statement of Work for Organics Analysis. Multi-Media, Multi-Concentration.* Document Number OLMO3.1, August 1994, OLM04.2.
- APHA, *Standard Methods for the Examination of Water and Wastewater,* 18th Edition, 19th, 20th and 21st Edition.
- Nuclear Regulatory Commission (NRC) quality assurance requirements.

3.2 TERMS AND DEFINITIONS

A Quality Assurance Program is a company-wide system designed to ensure that data produced by the laboratory conforms to the standards set by state and/or federal regulations. The program functions at the management level through company goals and management policies, and at the analytical level through Standard Operating Procedures (SOPs) and quality control. The TestAmerica program is designed to minimize systematic error, encourage constructive, documented problem solving, and provide a framework for continuous improvement within the organization.

Refer to Appendix 2 for the Glossary/Acronyms.

3.3 SCOPE / FIELDS OF TESTING

The laboratory analyzes a broad range of environmental and industrial samples every month. Sample matrices vary among air, drinking water, effluent water, groundwater, hazardous waste, sludge and soils. The Quality Assurance Program contains specific procedures and methods to test samples of differing matrices for chemical, physical parameters. The Program also contains guidelines on maintaining documentation of analytical process, reviewing results, servicing clients and tracking samples through the laboratory. The technical and service requirements of all requests to provide analyses are thoroughly evaluated before commitments are made to accept the work. Measurements are made using published reference methods or methods developed and validated by the laboratory.

The methods covered by this manual include the most frequently requested methodologies needed to provide analytical services in the United States and its territories. The specific list of test methods used by the laboratory can be found in Appendix 4 of the QAM. The approach of this manual is to define the minimum level of quality assurance and quality control necessary to meet requirements. All methods performed by the laboratory shall meet these criteria as appropriate. In some instances, quality assurance project plans (QAPPs), project specific data quality objectives (DQOs) or local regulations may require criteria other than those contained in this manual. In these cases, the laboratory will abide by the requested criteria following review and acceptance of the requirements by the Laboratory Director/Manager and the Quality Assurance (QA) Manager. In some cases, QAPPs and DQOs may specify less stringent requirements. The Laboratory Director/Manager and the QA Manager must determine if it is in the lab's best interest to follow the less stringent requirements.

3.4 MANAGEMENT OF THE MANUAL

3.4.1 Review Process

This manual is reviewed annually by senior laboratory management to assure that it reflects current practices and meets the requirements of the laboratory's clients and regulators as well as the CQMP. Occasionally, the manual may need changes in order to meet new or changing regulations and operations. The QA Manager will review the changes in the normal course of business and incorporate changes into revised sections of the document. All updates will be reviewed by the senior laboratory management staff. The laboratory updates and approves such changes according to our Document Control & Updating procedures (refer to SOP No. CT-QAS-3).

SECTION 4

ORGANIZATION AND MANAGEMENT *(NELAC 5.4.1)*

4.1 OVERVIEW

TestAmerica Connecticut is a local operating unit of TestAmerica Laboratories, Inc.. The organizational structure, responsibilities and authorities of the corporate staff of TestAmerica Laboratories, Inc. are presented in the CQMP. TestAmerica Connecticut has day-to-day independent operational authority overseen by corporate officers (e.g., President, Chief Operating Officer, Corporate Quality Assurance, etc.). The TestAmerica Connecticut laboratory operational and support staff work under the direction of the Laboratory Director. The organizational structure for both Corporate & TestAmerica Connecticut is presented in Figure 4-1.

4.2 ROLES AND RESPONSIBILITIES

In order for the Quality Assurance Program to function properly, all members of the staff must clearly understand and meet their individual responsibilities as they relate to the quality program. The following descriptions briefly define each role in its relationship to the Quality Assurance Program.

4.2.1 Quality Assurance Program

The responsibility for quality lies with every employee of the laboratory. All employees have access to the QAM, are trained to this manual, and are responsible for upholding the standards therein. Each person carries out his/her daily tasks in a manner consistent with the goals and in accordance with the procedures in this manual and the laboratory's SOPs. Role descriptions for Corporate personnel are defined in the CQMP. This manual is specific to the operations of TestAmerica's Connecticut laboratory.

4.2.2 General Manager (GM)

Each GM reports directly to a COO. Each GM has full responsibility for the overall administrative and operational management of their respective laboratories. The GM's responsibilities include allocation of personnel and resources, long-term planning, setting goals, and achieving the financial, business, and quality objectives of TestAmerica. The GM ensures timely compliance with corporate management directives, policies, and management systems reviews. The GM is also responsible for restricting any laboratory from performing analyses that cannot be consistently and successfully performed to meet the standards set forth in this manual.

4.2.3 Laboratory Director

TestAmerica Connecticut's Laboratory Director is responsible for the overall quality, safety, financial, technical, human resource and service performance of the whole laboratory and reports to their respective GM. The Laboratory Director provides the resources necessary to implement and maintain an effective and comprehensive Quality Assurance and Data Integrity Program.

Specific responsibilities include, but are not limited to:

- Provides one or more technical directors for the appropriate fields of testing. The name(s) of the Technical Director will be included in the national database. If the Technical Director is absent for a period of time exceeding 15 consecutive calendar days, the Laboratory Director must designate another full time staff member meeting the qualifications of the Technical Director to temporarily perform this function. If the absence exceeds 65 consecutive calendar days, the primary accrediting authority must be notified in writing.
- Ensures that all analysts and supervisors have the appropriate education and training to properly carry out the duties assigned to them and ensures that this training has been documented.
- Ensures that personnel are free from any commercial, financial and other undue pressures which might adversely affect the quality of their work.
- Ensures TestAmerica's human resource policies are adhered to and maintained.
- Ensures that sufficient numbers of qualified personnel are employed to supervise and perform the work of the laboratory.
- Ensures that appropriate corrective actions are taken to address analyses identified as requiring such actions by internal and external performance or procedural audits. Procedures that do not meet the standards set forth in the QAM or laboratory SOPs may be temporarily suspended by the Laboratory Director.
- Reviews and approves all SOPs prior to their implementation and ensures all approved SOPs are implemented and adhered to.
- Pursues and maintains appropriate laboratory certification and contract approvals. Supports ISO 17025 requirements.
- Ensures client specific reporting and quality control requirements are met.
- Captains the management team, consisting of the QA Manager, CSM and the Technical Director(s), as direct reports.

4.2.4 Quality Assurance (QA) Manager

The QA Manager has responsibility and authority to ensure the continuous implementation of the quality system based on ISO 17025.

The QA Manager reports directly to the Laboratory Director and has access to Corporate QA for advice and resources. This position is able to evaluate data objectively and perform assessments without outside (i.e., managerial) influence. Corporate QA may be used as a resource in dealing with regulatory requirements, certifications and other quality assurance related items. The QA Manager directs the activities of the QA officers to accomplish specific responsibilities, which include, but are not limited to:

- Having functions independent from laboratory operations for which he/she has quality assurance oversight.
- Maintaining and updating the QAM.
- Monitoring and evaluating laboratory certifications; scheduling proficiency testing samples.
- Monitoring and communicating regulatory changes that may affect the laboratory to management.

- Training and advising the laboratory staff on quality assurance/quality control procedures that are pertinent to their daily activities.
- Having a general knowledge of the analytical test methods for which data audit/review is performed (and/or having the means of getting this information when needed).
- Arranging for or conducting internal audits on quality systems and the technical operation.
- The laboratory QA Manager will maintain records of all ethics-related training, including the type and proof of attendance.
- Maintain, improve, and evaluate the corrective action database and the corrective and preventive action systems.
- Notifying laboratory management of deficiencies in the quality system and ensuring corrective action is taken. Procedures that do not meet the standards set forth in the QAM or laboratory SOPs are temporarily suspended following the procedures outlined in Section 13.
- Monitoring standards of performance in quality control and quality assurance.
- Coordinating of document control of SOPs, MDLs, control limits, and miscellaneous forms and information.
- Review a percentage of all final data reports for internal consistency. Review of Chain of Custody (COC), correspondence with the analytical request, batch QC status, completeness of any corrective action statements, 5% of calculations, format, holding time, sensibility and completeness of the project file contents.
- Review of external audit reports and data validation requests.
- Follow-up with audits to ensure client QAPP requirements are met.
- Establishment of reporting schedule and preparation of various quality reports for the Laboratory Director, clients and/or Corporate QA.
- Development of suggestions and recommendations to improve quality systems.
- Research of current state and federal requirements and guidelines.
- Captains the QA team to enable communication and to distribute duties and responsibilities.

4.2.5 Supervisors

Supervisors (Technical Directors) report to the Laboratory Director. Each one is responsible to:

- Ensure that analysts in their department adhere to applicable SOPs and the QA Manual. They perform frequent SOP and QA Manual review to determine if analysts are in compliance and if new, modified, and optimized measures are feasible and should be added to these documents.
- With regard to analysts, participates in the selection, training (as documented in Section 8.1), development of performance objectives and standards of performance, appraisal (measurement of objectives), scheduling, counseling, discipline, and motivation of analysts and documents these activities in accordance with systems developed by the QA and Personnel Departments. They evaluate staffing sufficiency and overtime needs. Training consists of familiarization with SOP, QC, Safety, and computer systems.

- Encourage the development of analysts to become cross-trained in various methods and/or operate multiple instruments efficiently while performing maintenance and documentation, self-supervise, and function as a department team.
- Provide guidance to analysts in resolving problems encountered daily during sample prep/analysis in conjunction with the Technical Director, Operations Manager, and/or QA Manager. Each is responsible for 100% of the data review and documentation, non-conformance and CPAR issues, the timely and accurate completion of performance evaluation samples and MDLs, for his department.
- Ensure all logbooks are maintained, current, and properly labeled or archived.
- Report all non-conformance conditions to the QA Manager and Laboratory Director.
- Ensure that preventive maintenance is performed on instrumentation as detailed in the QA Manual or SOPs. He is responsible for developing and implementing a system for preventive maintenance, troubleshooting, and repairing or arranging for repair of instruments.
- Maintain adequate and valid inventory of reagents, standards, spare parts, and other relevant resources required to perform daily analysis.
- Achieve optimum turnaround time on analyses and compliance with holding times.
- Conduct efficiency and cost control evaluations on an ongoing basis to determine optimization of labor, supplies, overtime, first-run yield, capacity (designed vs. demonstrated), second- and third-generation production techniques/instruments, and long-term needs for budgetary planning.
- Develop, implement, and enhance calibration programs.
- Provide written responses to external and internal audit issues.

4.2.6 Laboratory Analysts

Laboratory analysts are responsible for conducting analysis and performing all tasks assigned to them by the group leader or supervisor. The responsibilities of the analysts are listed below:

- Perform analyses by adhering to analytical and quality control protocols prescribed by current SOPs, this QA Manual, and project-specific plans honestly, accurately, timely, safely, and in the most cost-effective manner.
- Document standard and sample preparation, instrument calibration and maintenance, data calculations, sample matrix effects, and any observed non-conformance on worklists, benchsheets, lab notebooks and/or the Non-Conformance Database.
- Report all non-conformance situations, instrument problems, matrix problems and QC failures, which might affect the reliability of the data, to their supervisor, the Technical Director, and/or the QA Manager or member of QA staff.
- Perform 100% review of the data generated prior to entering and submitting for secondary level review.
- Suggest method improvements to their supervisor, the Technical Director, and the QA Manager. These improvements, if approved, will be incorporated. Ideas for the optimum performance of their assigned area, for example, through the proper cleaning and maintenance of the assigned instruments and equipment, are encouraged.

- Work cohesively as a team in their department to achieve the goals of accurate results, optimum turnaround time, cost effectiveness, cleanliness, complete documentation, and personal knowledge of environmental analysis.

4.2.7 Environmental Health and Safety Officer

The Safety Officer reports to the Laboratory Director and ensures that systems are maintained for the safe operation of the laboratory. The Safety Officer is responsible to:

- Conduct ongoing, necessary safety training and conduct new employee safety orientation.
- Assist in developing and maintaining the Chemical Hygiene/Safety Manual.
- Administer dispersal of all Material Safety Data Sheet (MSDS) information.
- Perform regular chemical hygiene and housekeeping instruction.
- Give instruction on proper labeling and practice.
- Serve as chairman of the laboratory safety committee.
- Provide and train personnel on protective equipment.
- Oversee the inspection and maintenance of general safety equipment – fire extinguishers, safety showers, eyewash fountains, etc. and ensure prompt repairs as needed.
- Supervise and schedule fire drills and emergency evacuation drills.
- Determine what initial and subsequent exposure monitoring, if necessary to determine potential employee exposure to chemicals used in the laboratory.
- When determined necessary, conduct exposure monitoring assessments.
- Determine when a complaint of possible over-exposure is "reasonable" and should be referred for medical consultation.
- Assist in the internal and external coordination of the medical consultation/monitoring program conducted by TestAmerica's medical consultants.

4.2.8 Hazardous Waste Coordinator

The Hazardous Waste Coordinator reports directly to the Laboratory Director. The duties consist of:

- Staying current with the hazardous waste regulations.
- Continuing training on hazardous waste issues.
- Reviewing and updating annually the Hazardous Waste Contingency Plan in the Environmental Health & Safety Manual.
- Auditing the staff with regard to compliance with the Hazardous Waste Contingency Plan.
- Contacting the hazardous waste subcontractors for review of procedures and opportunities for minimization of waste.

4.2.9 Client Service Manager

The Client Service Manager reports to the Laboratory Director and serves as the interface between the laboratory's technical departments and the laboratory's clients. The staff consists of the Project Management team. With the overall goal of total client satisfaction, the functions of this position are outlined below:

- Technical training and growth of the Project Management team.
- Technical liaison for the Project Management team.
- Human resource management of the Project Management team.
- Responsible to ensure that clients receive the proper sampling supplies.
- Accountable for response to client inquiries concerning sample status.
- Responsible for assistance to clients regarding the resolution of problems concerning COC.
- Ensuring that client specifications, when known, are met by communicating project and quality assurance requirements to the laboratory.
- Notifying the supervisors of incoming projects and sample delivery schedules.
- Accountable to clients for communicating sample progress in daily status meeting with agreed-upon due dates.
- Responsible for discussing with client any project-related problems, resolving service issues, and coordinating technical details with the laboratory staff.
- Responsible for staff familiarization with specific quotes, sample log-in review, and final report completeness.
- Monitor the status of all data package projects in-house to ensure timely and accurate delivery of reports.
- Inform clients of data package-related problems and resolve service issues.
- Coordinate requests for sample containers and other services (data packages).

4.2.10 Project Manager

The Project Manager reports directly to the Division Manager and serves as liaison between the laboratory and its clients. The Project Manager's responsibilities include:

- Ensure client specifications are met by communicating project and quality assurance requirements to the laboratory. Ensure client specific reporting and quality control requirements are met.
- Notify laboratory personnel of incoming projects and sample delivery schedules.
- Monitor the status of all projects in-house to ensure timely delivery of reports.
- Inform clients of project-related problems, resolving service issues and coordinating technical issues with the laboratory staff.
- Coordinate client requests for sample containers and other services.
- Schedule sample pick-ups from client offices or project sites and notifying the laboratory staff of incoming samples.
- Coordinate subcontract work.
- Assist clients in procuring the proper sampling supplies.
- Respond to client inquiries concerning sample status.
- Assist clients with resolution of problems concerning Chains-of-Custody.

- Prepare laboratory quotes and project bids.
- Review sample log-in sheets, when there is a question regarding a Chain of Custody issue.

4.2.11 Sample Custodian

The Sample Custodian reports to the Project Management Department. The responsibilities of the Sample Manager are outlined below:

- Direct the logging of incoming samples into the LIMS.
- Insure timely and correct shipment of sample containers to clients. Maintain accurate records of sample container shipments.

- Perform sample collection and sample pick-up
- Ensures sample containers are prepared for sampling
- Performs field tests and measurements and operates and maintains equipment used for those purposes.

4.3 DEPUTIES

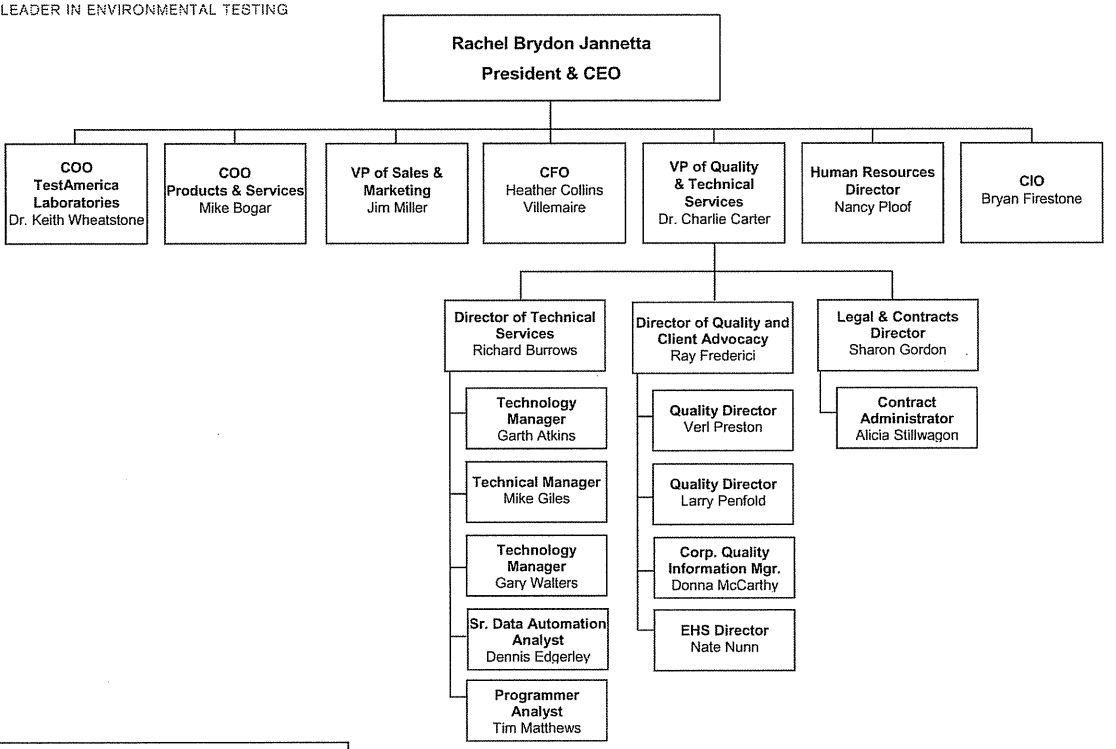
The following table defines who assumes the responsibilities of key personnel in their absence:

Key Personnel	Deputy	Comment
Laboratory Director Larry Decker	Paul Hobart	
QA Manager Dawn May	Patty Mercure	
Organic Technical Director Kim Maturo	Magdalena Szymczuk	
Metals Technical Director Nestor Petronchak	Joseph Voytek	
Wet Chemistry Technical Director Doreen Nemeth	David Madumadu	
EHS Coordinator Daniel Helfrich	Joseph Voytek	

Figure 4-1.

Corporate and Laboratory Organization Charts

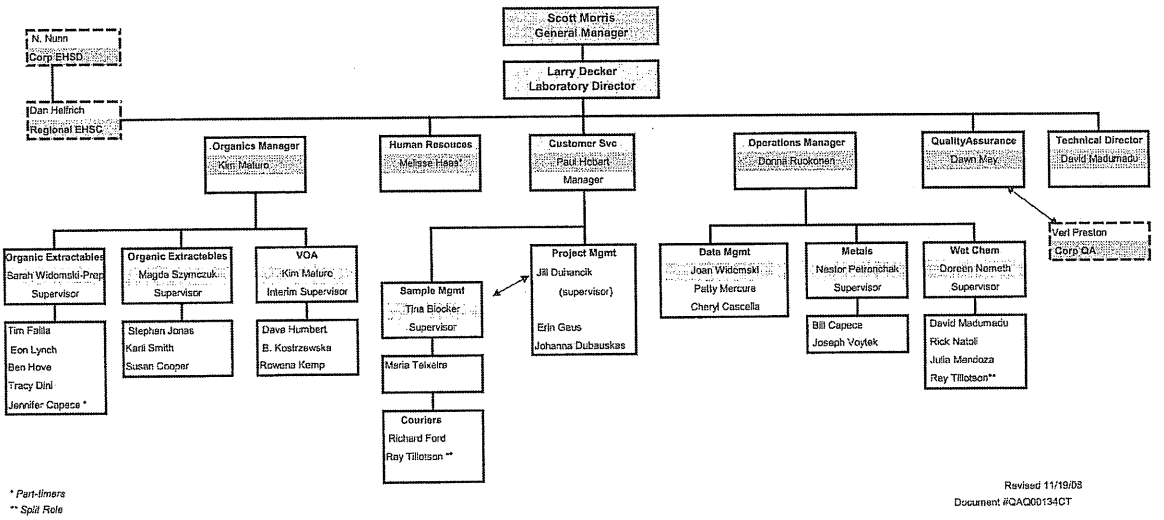
TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING



Note: QA Managers and Safety Coordinators in all laboratories and facilities have a dotted line reporting relationship to Corporate QA and EHS.

November 2008

TestAmerica Connecticut Organization



SECTION 5

QUALITY SYSTEM *(NELAC 5.4.2)*

5.1 QUALITY POLICY STATEMENT

It is TestAmerica's Policy to:

- Provide data of known quality to its clients by adhering to approved methodologies, regulatory requirements and the QA/QC protocols.
- Effectively manage all aspects of the laboratory and business operations by the highest ethical standards.
- Continually improve systems and provide support to quality improvement efforts in laboratory, administrative and managerial activities. TestAmerica recognizes that the implementation of a quality assurance program requires management's commitment and support as well as the involvement of the entire staff.
- Provide clients with the highest level of professionalism and the best service practices in the industry.

Every staff member at the laboratory plays an integral part in quality assurance and is held responsible and accountable for the quality of their work. It is, therefore, required that all laboratory personnel are trained and agree to comply with applicable procedures and requirements established by this document.

5.2 ETHICS AND DATA INTEGRITY

TestAmerica is committed to ensuring the integrity of its data and meeting the quality needs of its clients. The elements of TestAmerica's Ethics and Data Integrity Program include:

- An Ethics Policy (Corporate Policy No. CA-L-P-001) and Employee Ethics Statements.
- ~~An~~ Ethics and Compliance Officers (ECOs).
- A Training Program.
- Self-governance through disciplinary action for violations.
- A Confidential mechanism for anonymously reporting alleged misconduct and a means for conducting internal investigations of all alleged misconduct. (Corporate SOP No. CA-L-S-001.)
- Procedures and guidance for recalling data if necessary (Corporate SOP No. CA-L-S-001).
- Effective external and internal monitoring system that includes procedures for internal audits (Section 15).
- Produce results, which are accurate and include QA/QC information that meets client pre-defined Data Quality Objectives (DQOs).
- Present services in a confidential, honest and forthright manner.

- Provide employees with guidelines and an understanding of the Ethical and Quality Standards of our Industry.
- Operate our facilities in a manner that protects the environment and the health and safety of employees and the public.
- Obey all pertinent federal, state and local laws and regulations and encourage other members of our industry to do the same.
- Educate clients as to the extent and kinds of services available.
- Assert competency only for work for which adequate personnel and equipment are available and for which adequate preparation has been made.
- Promote the status of environmental laboratories, their employees, and the value of services rendered by them.

5.3 QUALITY SYSTEM DOCUMENTATION

The laboratory's Quality System is communicated through a variety of documents.

- Quality Assurance Manual – Each laboratory has a lab specific quality assurance manual.
- Corporate SOPs and Policies - Corporate SOPs and Policies are developed for use by all relevant laboratories. They are incorporated into the laboratory's normal SOP distribution, training and tracking system. Corporate SOPs may be general or technical.
- Work Instructions - A subset of procedural steps, tasks or forms associated with an operation of a management system (e.g., checklists, preformatted bench sheets, forms).
- Laboratory SOPs – General and Technical
- Corporate Quality Policy Memorandums

5.3.1 Order of Precedence

In the event of a conflict or discrepancy between policies, the order of precedence is as follows:

- Corporate Quality Policy Memorandum
- Corporate Quality Management Plan (CQMP)
- Corporate SOPs and Policies
- Laboratory Quality Assurance Manual (QAM)
- Laboratory SOPs and Policies
- Other (Work Instructions (WI), memos, flow charts, etc.)

Note: The laboratory's has the responsibility and authority to operate in compliance with regulatory requirements of the jurisdiction in which the work is performed. Where the CQMP conflicts with those regulatory requirements, the regulatory requirements of the jurisdiction shall hold primacy. The laboratory's (QAM) shall take precedence over the CQMP in those cases.

5.4 QA/QC OBJECTIVES FOR THE MEASUREMENT OF DATA

Quality Assurance (QA) and Quality Control (QC) are activities undertaken to achieve the goal of producing data that accurately characterize the sites or materials that have been sampled. Quality Assurance is generally understood to be more comprehensive than Quality Control. Quality Assurance can be defined as the integrated system of activities that ensures that a product or service meets defined standards.

Quality Control is generally understood to be limited to the analyses of samples and to be synonymous with the term *"analytical quality control"*. QC refers to the routine application of statistically based procedures to evaluate and control the accuracy of results from analytical measurements. The QC program includes procedures for estimating and controlling precision and bias and for determining reporting limits.

Request for Proposals (RFPs) and Quality Assurance Project Plans (QAPP) provide a mechanism for the client and the laboratory to discuss the data quality objectives in order to ensure that analytical services closely correspond to client needs. The client is responsible for developing the QAPP. In order to ensure the ability of the laboratory to meet the Data Quality Objectives (DQOs) specified in the QAPP, clients are advised to allow time for the laboratory to review the QAPP before being finalized. Additionally, the laboratory will provide support to the client for developing the sections of the QAPP that concern laboratory activities.

Historically, laboratories have described their QC objectives in terms of precision, accuracy, representativeness, comparability, completeness, selectivity and sensitivity (PARCCSS).

5.4.1 Precision

The laboratory objective for precision is to meet the performance for precision demonstrated for the methods on similar samples and to meet data quality objectives of the EPA and/or other regulatory programs. Precision is defined as the degree of reproducibility of measurements under a given set of analytical conditions (exclusive of field sampling variability). Precision is documented on the basis of replicate analysis, usually duplicate or matrix spike (MS) duplicate samples.

5.4.2 Accuracy

The laboratory objective for accuracy is to meet the performance for accuracy demonstrated for the methods on similar samples and to meet data quality objectives of the EPA and/or other regulatory programs. Accuracy is defined as the degree of bias in a measurement system. Accuracy may be documented through the use of laboratory control samples (LCS) and/or MS. A statement of accuracy is expressed as an interval of acceptance recovery about the mean recovery.

5.4.3 Representativeness

The laboratory objective for representativeness is to provide data which is representative of the sampled medium. Representativeness is defined as the degree to which data represent a characteristic of a population or set of samples and is a measurement of both analytical and field sampling precision. The representativeness of the analytical data is a function of the procedures used in procuring and processing the samples. The representativeness can be

documented by the relative percent difference between separately procured, but otherwise identical samples or sample aliquots.

The representativeness of the data from the sampling sites depends on both the sampling procedures and the analytical procedures. The laboratory may provide guidance to the client regarding proper sampling and handling methods in order to assure the integrity of the samples.

5.4.4 Comparability

The comparability objective is to provide analytical data for which the accuracy, precision, representativeness and reporting limit statistics are similar to these quality indicators generated by other laboratories for similar samples, and data generated by the laboratory over time.

The comparability objective is documented by inter-laboratory studies carried out by regulatory agencies or carried out for specific projects or contracts, by comparison of periodically generated statements of accuracy, precision and reporting limits with those of other laboratories.

5.4.5 Completeness

The completeness objective for data is 90% (or as specified by a particular project), expressed as the ratio of the valid data to the total data over the course of the project. Data will be considered valid if they are adequate for their intended use. Data usability will be defined in a QAPP, project scope or regulatory requirement. Data validation is the process for reviewing data to determine its usability and completeness. If the completeness objective is not met, actions will be taken internally and with the data user to improve performance. This may take the form of an audit to evaluate the methodology and procedures as possible sources for the difficulty or may result in a recommendation to use a different method.

5.4.6 Selectivity

Selectivity is defined as: The capability of a test method or instrument to respond to a target substance or constituent in the presence of non-target substances. Target analytes are separated from non-target constituents and subsequently identified/detected through one or more of the following, depending on the analytical method: extractions (separation), digestions (separation), interelement corrections (separation), use of matrix modifiers (separation), specific retention times (separation and identification), confirmations with different columns or detectors (separation and identification), specific wavelengths (identification), specific mass spectra (identification), specific electrodes (separation and identification), etc..

5.4.7 Sensitivity

Sensitivity refers to the amount of analyte necessary to produce a detector response that can be reliably detected (Method Detection Limit) or quantified (Reporting Limit).

5.5 CRITERIA FOR QUALITY INDICATORS

The laboratory maintains a Quality Control Limit Summary that contains tables that summarize the precision and accuracy acceptability limits for performed analyses. This summary includes

an effective date, is updated each time new limits are generated and are managed by the laboratory's QA department. Unless otherwise noted, limits within these tables are laboratory generated. Some acceptability limits are derived from US EPA methods when they are required. Where US EPA method limits are not required, the laboratory has developed limits from evaluation of data from similar matrices. Criteria for development of control limits is contained in Section 24.

5.6 STATISTICAL QUALITY CONTROL

Statistically-derived precision and accuracy limits are required by selected methods (such as SW-846) and programs [such as the Ohio Voluntary Action Plan (VAP)]. The laboratory routinely utilizes statistically-derived limits to evaluate method performance and determine when corrective action is appropriate. The analysts are instructed to use the current limits in the laboratory (dated and approved by the Supervisor and QA Manager) and entered into the Laboratory Information Management System (LIMS). The Quality Assurance department maintains an archive of all limits used within the laboratory. All control limits are stored within a LIMS Method limit group. These are set up under the control of the QA department. Any time a limit is updted, a historical record with activiation and expiration date is generated for the limit type. Archived limits can be exported to excel at any time by utilizing the "Historical" button in the Method limit group. If a method defines the QC limits, the method limits are used.

If a method requires the generation of historical limits, the lab develops such limits from recent data in the QC database of the LIMS following the guidelines described in Section 24. All calculations and limits are documented and dated when approved and effective. On occasion, a client requests contract-specified limits for a specific project.

Surrogate recoveries are determined for a specific time period as defined above. The resulting ranges are entered in LIMS.

Current QC limits are entered and maintained in the LIMS analyte database. As sample results and the related QC are entered into LIMS, the sample QC values are compared with the limits in LIMS to determine if they are within the acceptable range. The analyst then evaluates if the sample needs to be rerun or re-extracted/rerun or if a comment should be added to the report explaining the reason for the QC outlier.

5.6.1 QC Charts

Control charts are used to establish method performance of a given analysis and to monitor trends of QC results graphically over time. Once a data base of the laboratory results for a method/matrix/QC analyte combination is established, the acceptability of a given analysis of that QC parameter (and of the analytical batch to which it belongs) can be evaluated in light of the laboratory's normal performance. This is intended to help identify problems before they might affect data. Often, patterns of response that are not at all evident in sets of numbers are very distinct when the same values are viewed as a chronological graph.

Establishment of Limits

The purpose of using statistical control limits is to define, for each analyte in a given method/matrix/QC type combination, a range of expected values. This range encompasses the random variation that occurs normally in the laboratory and allows one to evaluate control samples

in that context, rather than according to an arbitrary or external set of values. Limits for accuracy and precision are defined below:

Accuracy
As recoveries of a QC analyte in a given matrix are tabulated over time, a mean value for recovery is established, as is the standard deviation (s) of those recoveries. If the analysis is in statistical control (e.g., if the set of QC recoveries over time show random variation about the mean) approximately 99.7% of all recoveries for that QC will fall within three standard deviations (3s) of the mean. Thus, assuming that the mean itself is an acceptable level of recovery, the values corresponding to 3s above and 3s below the mean are defined as the Control Limits. Any single recovery outside these values is assumed to have resulted from some circumstance other than normal variation and shall be investigated.

Roughly 95% of points should fall within 2s of the mean. The values +2s and -2s are the Warning Limits. Any normal result has approximately a 1/20 chance of being between 2s and 3s from the mean, so a result in this region doesn't necessarily warrant corrective action, but attention should be paid to such points.

Precision
Precision is used to indicate matrix variability so that appropriate decisions can be made by the client when repeated analyses vary significantly. The coefficient of variation, expressed as a percentage (e.g., the %RSD) for the data set used to calculate accuracy control limits defines the control limit for precision. Duplicate analyses of the QC samples, such as duplicates or MS/MSD, should have an RPD less than or equal to this established precision control limit to be considered free of matrix interferences.

5.7 QUALITY SYSTEM METRICS

In addition to the QC parameters discussed above, the entire Quality System is evaluated on a monthly basis through the use of specific metrics (refer to Section 16). These metrics are used to drive continuous improvement in the laboratory's Quality System.

SECTION 6

DOCUMENT CONTROL *(NELAC 5.4.3)*

6.1 OVERVIEW

The QA Department is responsible for the control of documents used in the laboratory to ensure that approved, up-to-date documents are in circulation and out-of-date (obsolete) documents are archived or destroyed. The following documents, at a minimum, must be controlled:

- Laboratory Quality Assurance Manual
- Laboratory Standard Operating Procedures (SOP)
- Laboratory Policies
- Work Instructions and Forms
- Corporate Policies and Procedures distributed outside the intranet

Corporate Quality posts Corporate Manuals, SOPs, Policies, Work Instructions, White Papers and Training Materials on the company intranet site. These Corporate documents are only considered controlled when they are read on the intranet site. Printed copies are considered uncontrolled unless the laboratory physically distributes them as controlled documents. A detailed description of the procedure for issuing, authorizing, controlling, distributing, and archiving Corporate documents is found in Corporate SOP No. CW-Q-S-001, Corporate Document Control and Archiving. The laboratory's internal document control procedure is defined in SOP No. CT-QAS-3.

The laboratory QA Department also maintains access to various references and document sources integral to the operation of the laboratory. This includes reference methods and regulations. Instrument manuals (hard or electronic copies) are also maintained by the laboratory.

The laboratory maintains control of records for raw analytical data and supporting records such as audit reports and responses, logbooks, standard logs, training files, MDL studies, Proficiency Testing (PT) studies, certifications and related correspondence, and corrective action reports. Raw analytical data consists of bound logbooks, instrument printouts, any other notes, magnetic media, electronic data and final reports.

6.2 DOCUMENT APPROVAL AND ISSUE

The pertinent elements of a document control system for each document include a unique document title and number, the number of pages of the item, the effective date, revision number and the laboratory's name. The QA personnel are responsible for the maintenance of this system.

Controlled documents are authorized by the QA Department. In order to develop a new document, a manager submits an electronic draft to the QA Department for suggestions and approval before use. Upon approval, QA personnel add the identifying version information to the document and retains the official document on file. The official document is provided to all applicable operational units (may include electronic access). Controlled documents are

identified as such and records of their distribution are kept by the QA Department. Document control may be achieved by either electronic or hardcopy distribution.

The QA Department maintains a list of the official versions of controlled documents.

Quality System Policies and Procedures will be reviewed at a minimum of every two years and revised as appropriate. Changes to documents occur when a procedural change warrants.

6.3 PROCEDURES FOR DOCUMENT CONTROL POLICY

For changes to the QA Manual, refer to SOP on Document Control, SOP No. CT-QAS-3. Uncontrolled copies must not be used within the laboratory. Previous revisions and back-up data are stored by the QA department. Electronic copies are stored on the Public server in the QA folder for the applicable revision.

For changes to SOPs, refer to SOP No. CT-QAS-008, Standard Operating Procedure for Generating SOPs. The SOP identified above also defines the process of changes to SOPs.

Forms, worksheets, work instructions and information are organized by department in the QA office. These are tracked by excel spreadsheet. Electronic versions are kept on the laboratory server; hard copies are kept in QA files. The procedure for the care of these documents is in SOP CT-QAS-3, SOP for Document Control.

6.4 OBSOLETE DOCUMENTS

All invalid or obsolete documents are removed, or otherwise prevented from unintended use. The laboratory has specific procedures as described above to accomplish this. In general, obsolete documents are collected from employees according to distribution lists and are marked obsolete on the cover or destroyed. At least one copy of the obsolete document is archived according to the SOP on Document Control SOP No. CT-QAS-3.

SECTION 7

SERVICE TO THE CLIENT *(NELAC 5.4.7)*

7.1 OVERVIEW

The laboratory has established procedures for the review of work requests and contracts, oral or written. The procedures include evaluation of the laboratory's capability and resources to meet the contract's requirements within the requested time period. All requirements, including the methods to be used, must be adequately defined, documented and understood. For many environmental sampling and analysis programs, testing design is site or program specific and does not necessarily "fit" into a standard laboratory service or product. It is the laboratory's intent to provide both standard and customized environmental laboratory services to our clients.

A thorough review of technical and QC requirements contained in contracts is performed to ensure project success. The appropriateness of requested methods, and the lab's capability to perform them must be established. Projects, proposals and contracts are reviewed for adequately defined requirements and the laboratory's capability to meet those requirements. Alternate test methods that are capable of meeting the clients' requirements may be proposed by the lab. A review of the lab's capability to analyze non-routine analytes is also part of this review process.

All projects, proposals and contracts are reviewed for the client's requirements in terms of compound lists, test methodology requested, sensitivity (detection and reporting levels), accuracy, and precision requirements (% Recovery and RPD). The reviewer ensures that the laboratory's test methods are suitable to achieve these regulatory and client requirements and that the laboratory holds the appropriate certifications and approvals to perform the work. The laboratory and any potential subcontract laboratories must be certified, as required, for all proposed tests.

The laboratory must determine if it has the necessary physical, personnel and information resources to meet the contract, and if the personnel have the expertise needed to perform the testing requested. Each proposal is checked for its impact on the capacity of the laboratory's equipment and personnel. As part of the review, the proposed turnaround time will be checked for feasibility.

Electronic or hard copy deliverable requirements are evaluated against the lab's capacity for production of the documentation.

If the laboratory cannot provide all services but intends to subcontract such services, whether to another TestAmerica facility or to an outside firm, this will be documented and discussed with the client prior to contract approval. (Refer to Section 8 for Subcontracting Procedures.)

The laboratory informs the client of the results of the review if it indicates any potential conflict, deficiency, lack of accreditation, or inability of the lab to complete the work satisfactorily. Any discrepancy between the client's requirements and the laboratory's capability to meet those requirements is resolved in writing before acceptance of the contract. It is necessary that the contract be acceptable to both the laboratory and the client. Amendments initiated by the client and/or TestAmerica, are documented in writing.

All contracts, QAPPs, Sampling and Analysis Plans (SAPs), contract amendments, and documented communications become part of the project record.

The same contract review process used for the initial review is repeated when there are amendments to the original contract by the client, and the participating personnel are informed of the changes.

7.2 REVIEW SEQUENCE AND KEY PERSONNEL

Appropriate personnel will review the work request at each stage of evaluation.

For routine projects and other simple tasks, a review by the Project Manager (PM) is considered adequate. The PM confirms that the laboratory has any required certifications, that it can meet the clients' data quality and reporting requirements and that the lab has the capacity to meet the clients turn around needs. It is recommended that, where there is a sales person assigned to the account, an attempt should be made to contact that sales person to inform them of the incoming samples.

For new, complex or large projects, the proposed contract is given to the National Account Director, who will decide which lab will receive the work based on the scope of work and other requirements, including certification, testing methodology, and available capacity to perform the work. The contract review process is outlined in TestAmerica's Corporate SOP No. CA-L-P-002, Contract Compliance Policy.

This review encompasses all facets of the operation. The scope of work is distributed to the appropriate personnel, as needed based on scope of contract, to evaluate all of the requirements shown above (not necessarily in the order below) :

- Legal & Contracts Director
- General Manager
- The Laboratory Client Service Manager
- The Laboratory Operations Manager
- Laboratory and/or Corporate Technical Directors
- Laboratory and/or Corporate Information Technology Managers/Directors
- Regional and/or National Account representatives
- Laboratory and/or Corporate Quality
- Laboratory and/or Corporate Environmental Health and Safety Managers/Directors
- The Laboratory Director/Manager reviews the formal laboratory quote and makes final acceptance for their facility.

The National Account Director, Legal Contracts Director, or local account representative then submits the final proposal to the client.

In the event that one of the above personnel is not available to review the contract, his or her back-up will fulfill the review requirements.

The Legal & Contracts Director maintains copies of all signed contracts. The PM assigned to the project maintains a copy for the lab.

7.3 DOCUMENTATION

Appropriate records are maintained for every contract or work request. All stages of the contract review process are documented and include records of any significant changes. All relevant information is stored on a designated corporate server in the contracts\Connecticut directory.

The contract will be distributed to and maintained by the appropriate sales/marketing personnel and the Regional Account Manager. A copy of the contract and formal quote will be filed with the laboratory PM and the Lab Director/Manager.

Records are maintained of pertinent discussions with a client relating to the client's requirements or the results of the work during the period of execution of the contract. The PM keeps a phone log in a note book of pertinent conversations with the client. If need be, a follow up email is sent.

7.3.1 Project-Specific Quality Planning

Communication of contract specific technical and QC criteria is an essential activity in ensuring the success of site specific testing programs. To achieve this goal, the laboratory assigns a PM to each client. It is the PM's responsibility to ensure that project-specific technical and QC requirements are effectively evaluated and communicated to the laboratory personnel before and during the project. QA department involvement may be needed to assist in the evaluation of custom QC requirements.

PM's are the primary client contact and they ensure resources are available to meet project requirements. Although PM's do not have direct reports or staff in production, they coordinate opportunities and work with laboratory management and supervisory staff to ensure available resources are sufficient to perform work for the client's project. Project management is positioned between the client and laboratory resources.

Prior to work on a new project, the dissemination of project information and/or project opening meetings may occur to discuss schedules and unique aspects of the project. Items to be discussed may include the project technical profile, turnaround times, holding times, methods, analyte lists, reporting limits, deliverables, sample hazards, or other special requirements. The PM introduces new projects to the laboratory staff through project kick-off meetings or to the supervisory staff during production meetings. These meetings provide direction to the laboratory staff in order to maximize production and client satisfaction, while maintaining quality. In addition, project notes may be associated with each sample batch as a reminder upon sample receipt and analytical processing.

During the project, any change that may occur within an active project is agreed upon between the client/regulatory agency and the PM/laboratory. These changes (e.g., use of a non-standard method or modification of a method) and approvals must be documented prior to implementation. Documentation pertains to any document, e.g., letter, e-mail, variance, contract addendum, which has been signed by both parties.

Such changes are also communicated to the laboratory during operation or supervisor meetings. Such changes are updated to the project notes and are introduced to the managers at these meetings. The laboratory staff is then introduced to the modified requirements via the PM or the individual laboratory Department Manager. After the modification is implemented into the laboratory process, documentation of the modification is made in the case narrative of the data report(s).

The laboratory strongly encourages client visits to the laboratory and for formal/informal information sharing session with employees in order to effectively communicate ongoing client needs as well as project specific details for customized testing programs.

7.4 SPECIAL SERVICES

The laboratory cooperates with clients and their representatives to monitor the laboratory's performance in relation to work performed for the client. It is the laboratory's goal to meet all client requirements in addition to statutory and regulatory requirements. The laboratory has procedures to ensure confidentiality to clients (Section 15 and 25).

Note: ISO 17025/NELAC 2003 states that a laboratory "shall afford clients or their representatives cooperation to clarify the client's request". This topic is discussed in Section 7.

The laboratory's standard procedures for reporting data are described in Section 25. Special services are also available and provided upon request. These services include:

- Reasonable access for our clients or their representatives to the relevant areas of the laboratory for the witnessing of tests performed for the client.
- Assist client-specified third party data validators as specified in the client's contract.
- Supplemental information pertaining to the analysis of their samples. Note: An additional charge may apply for additional data/information that was not requested prior to the time of sample analysis or previously agreed upon.

7.5 CLIENT COMMUNICATION

Project managers are the primary communication link to the clients. They shall inform their clients of any delays in project completion as well as any non-conformances in either sample receipt or sample analysis. Project management will maintain ongoing client communication throughout the entire client project.

Technical Directors are available to discuss any technical questions or concerns that the client may have.

7.6 REPORTING

The laboratory works with our clients to produce any special communication reports required by the contract.

7.7 CLIENT SURVEYS

The laboratory assesses both positive and negative client feedback. The results are used to improve overall laboratory quality and client service.

TestAmerica's Sales and Marketing teams periodically develops lab and client specific surveys to assess client satisfaction.

SECTION 8

SUBCONTRACTING OF TESTS *(NELAC 5.4.5)*

8.1 OVERVIEW

For the purpose of this quality manual, the phrase subcontract laboratory refers to a laboratory external to the TestAmerica laboratories. The phrase "work sharing" refers to internal transfers of samples between the TestAmerica laboratories. The term outsourcing refers to the act of subcontracting tests.

When contracting with our clients, the laboratory makes commitments regarding the services to be performed and the data quality for the results to be generated. When the need arises to outsource testing for our clients because project scope, changes in laboratory capabilities, capacity or unforeseen circumstances, we must be assured that the subcontractors or work sharing laboratories understand the requirements and will meet the same commitments we have made to the client. Refer to TestAmerica's Corporate SOP's on Subcontracting Procedures (CA-L-S-002) and the Work Sharing Process (CA-C-S-001).

When outsourcing analytical services, the laboratory will assure, to the extent necessary, that the subcontract or work sharing laboratory maintains a program consistent with the requirements of this document, the requirements specified in NELAC/ISO 17025 and/or the client's Quality Assurance Project Plan (QAPP). All QC guidelines specific to the client's analytical program are transmitted to the subcontractor and agreed upon before sending the samples to the subcontract facility. Additionally, work requiring accreditation will be placed with an appropriately accredited laboratory. The laboratory performing the subcontracted work will be identified in the final report, as will non-NELAC accredited work where required.

Project Managers (PMs), Customer Service Managers (CSM), or Regional Account Executives (RAE) for the Export Lab are responsible for obtaining client approval prior to outsourcing any samples. The laboratory will advise the client of a subcontract or work sharing arrangement in writing and when possible approval from the client shall be retained in the project folder.

Note: In addition to the client, some regulating agencies, such as the US Army Corps of Engineers and the USDA, require notification prior to placing such work.

8.2 QUALIFYING AND MONITORING SUBCONTRACTORS

Whenever a PM, Regional Account Executive (RAE), or Customer Service Manager (CSM) becomes aware of a client requirement or laboratory need where samples must be outsourced to another laboratory, the other laboratory(s) shall be selected based on the following:

- The first priority is to attempt to place the work in a qualified TestAmerica laboratory;
- Firms specified by the client for the task (Documentation that a subcontractor was designated by the client must be maintained with the project file. This documentation can be as simple as placing a copy of an e-mail from the client in the project folder);
- Firms listed as pre-qualified and currently under a subcontract with TestAmerica: A listing of all approved subcontracting laboratories and supporting documentation is available on the

TestAmerica intranet site. Verify necessary accreditation, where applicable, (e.g., on the subcontractors NELAC, A2LA accreditation or State Certification).

- Firms identified in accordance with the company's Small Business Subcontracting program as small, women-owned, veteran-owned and/or minority-owned businesses;
- NELAC or A2LA accredited laboratories.
- In addition, the firm must hold the appropriate certification to perform the work required.

All TestAmerica laboratories are pre-qualified for work sharing provided they hold the appropriate accreditations, can adhere to the project/program requirements, and the client approved sending samples to that laboratory. The client must provide acknowledgement that the samples can be sent to that facility (an e-mail is sufficient documentation or if acknowledgement is verbal, the date, time, and name of person providing acknowledgement must be documented). The originating laboratory is responsible for communicating all technical, quality, and deliverable requirements as well as other contract needs. (Corporate SOP No. CA-C-S-001, Work Sharing Process).

When the potential sub-contract laboratory has not been previously approved, Account Executives or PMs may nominate a laboratory as a subcontractor based on need. The decision to nominate a laboratory must be approved by the Laboratory Director/Manager. The Laboratory Director/Manager requests that the QA Manager or Operations Manager begin the process of approving the subcontract laboratory as outlined in Corporate SOP No. CA-L-S-002, Subcontracting Procedures. The client must provide acknowledgement that the samples can be sent to that facility (an e-mail is sufficient documentation or if acknowledgement is verbal, the date, time, and name of person providing acknowledgement must be documented).

8.2.1 Once the appropriate accreditation and legal information is received by the laboratory, it is evaluated for acceptability (where applicable) and forwarded to Corporate Contracts for formal contracting with the laboratory. They will add the lab to the approved list on the intranet site along with the associate documentation and notify the finance group for JD Edwards.

8.2.2 The client will assume responsibility for the quality of the data generated from the use of a subcontractor they have requested the lab to use. The qualified subcontractors on the intranet site are known to meet minimal standards. TestAmerica does not certify laboratories. The subcontractor is on our approved list and can only be recommended to the extent that we would use them.

8.2.3 The status and performance of qualified subcontractors will be monitored periodically by the Corporate Contracts and/or Quality Departments. Any problems identified will be brought to the attention of TestAmerica's Corporate Finance or Corporate Quality personnel.

- Complaints shall be investigated. Documentation of the complaint, investigation and corrective action will be maintained in the subcontractor's file on the intranet site. Complaints are posted using the Vendor Performance Report.
- Information shall be updated on the intranet when new information is received from the subcontracted laboratories.

- Subcontractors in good standing will be retained on the intranet listing. The QA Manager will notify all TestAmerica laboratories, Corporate Quality and Corporate Contracts if any laboratory requires removal from the intranet site. This notification will be posted on the intranet site and e-mailed to all Lab Directors/Managers, QA Managers and Sales Personnel.

8.3 OVERSIGHT AND REPORTING

The PM must request that the selected subcontractor be presented with a subcontract, if one is not already executed between the laboratory and the subcontractor. The subcontract must include terms which flow down the requirements of our clients, either in the subcontract itself or through the mechanism of work orders relating to individual projects. A standard subcontract and the Lab Subcontractor Vendor Package (posted on the intranet) can be used to accomplish this, and the Legal & Contracts Director can tailor the document or assist with negotiations, if needed. The PM (or RAE or CSM) responsible for the project must advise and obtain client consent to the subcontract as appropriate, and provide the scope of work to ensure that the proper requirements are made a part of the subcontract and are made known to the subcontractor.

Prior to sending samples to the subcontracted laboratory, the PM confirms their certification status to determine if it's current and scope-inclusive. The information is documented on a Subcontracted Sample Form (Figure 8-1) and the form is retained in the project folder. For TestAmerica laboratories, certifications can be viewed on the company's TotalAccess Database.

The Sample Control department is responsible for ensuring compliance with QA requirements and applicable shipping regulations when shipping samples to a subcontracted laboratory.

All subcontracted samples must be accompanied by a Chain of Custody (COC). A copy of the original COC sent by the client must be included with all samples subbed within TestAmerica.

Through communication with the subcontracted laboratory, the PM monitors the status of the subcontracted analyses, facilitates successful execution of the work, and ensures the timeliness and completeness of the analytical report.

Non-NELAC accredited work must be identified in the subcontractor's report as appropriate. If NELAC accreditation is not required, the report does not need to include this information.

Reports submitted from subcontractor laboratories are not altered and are included in their original form in the final project report. This clearly identifies the data as being produced by a subcontractor facility. If subcontract laboratory data is incorporated into the laboratories EDD (i.e., imported), the report must explicitly indicate which lab produced the data for which methods and samples.

Note: The results submitted by a TestAmerica work sharing laboratory may be transferred electronically and the results reported by the TestAmerica work sharing lab are identified on the final report. The report must explicitly indicate which lab produced the data for which methods and samples. The final report must include a copy of the completed COC for all work sharing reports.

8.4 CONTINGENCY PLANNING

The Laboratory Director may waive the full qualification of a subcontractor process temporarily to meet emergency needs. In the event this provision is utilized, the QA Manager will be required to verify certifications. The comprehensive approval process must then be initiated within 30 calendar days of subcontracting.

Figure 8-1.
Example - Subcontracting Laboratory Approval Form (Initial / Renewal)

SUBCONTRACTING LABORATORY APPROVAL

Reference: Section 8 – Quality Assurance Manual

Date: _____
Laboratory: _____
Address: _____
_____
Contact and e-mail address: _____
Phone: Direct _____ Fax _____

Requested Item[3]	Date Received	Reviewed/ Accepted	Date
1. Copy of State Certification[1]			
2. Insurance Certificate			
3. USDA Soil Permit			
4. Description of Ethics Program[3]			
5. QA Manual[3]			
6. Most Recent (and relevant) 2 Sets of WP/WS Reports with Corrective Action Response[1,3]			
7. State Audit with Corrective Action Response (or NELAC or A2LA Audit)[3]			
8. Sample Report[3]			
9. SOQ or Summary list of Technical Staff and Qualifications [3]			
10. SOPs for Methods to Be Loadshifted[2,3]			
11. For DoD Work: Statement that Lab quality system complies with QSM.			
12. For DoD Work: Approved by specific DoD Component laboratory approval process.			

1 - Required when emergency procedures are implemented.
2 - Some labs may not submit copies due to internal policies. In these cases, a copy of the first page and signature page of the SOP is acceptable. This requirement may also be fulfilled by supplying a table of SOPs with effective dates.
3 – If the laboratory has NELAC accreditation, Item #s 4 through 10 are not required.

On Site Audit Planned: YES NO If yes, Date Completed: _____ By Whom: _____

Comments: _____

Lab Acceptable for Subcontracting Work: YES NO Limitations: _____

QA Manager: _____ Date: _____
(Printed Name)

☐ Forwarded to Contract Coordinator, by: _____ Date: _____

SECTION 9

PURCHASING SERVICES AND SUPPLIES *(NELAC 5.4.6)*

9.1 OVERVIEW

Evaluation and selection of suppliers and vendors is performed, in part, on the basis of the quality of their products, their ability to meet the demand for their products on a continuous and short term basis, the overall quality of their services, their past history, and competitive pricing. This is achieved through evaluation of objective evidence of quality furnished by the supplier, which can include certificates of analysis, recommendations, and proof of historical compliance with similar programs for other clients. To ensure that quality critical consumables and equipment conform to specified requirements, all purchases from specific vendors are approved by a member of the supervisory or management staff. Capital expenditures are made in accordance with TestAmerica's Corporate Controlled Purchases Procedure, SOP No. CW-F-S-007.

Contracts will be signed in accordance with TestAmerica's Corporate Authorization Matrix Policy, Policy No. CW-F-P-002. Request for Proposals (RFP's) will be issued where more information is required from the potential vendors than just price. Process details are available in TestAmerica's Corporate Procurement and Contracts Policy (Policy No. CW-F-P-004). RFP's allow TestAmerica to determine if a vendor is capable of meeting requirements such as supplying all of the TestAmerica facilities, meeting required quality standards and adhering to necessary ethical and environmental standards. The RFP process also allows potential vendors to outline any additional capabilities they may offer.

9.2 GLASSWARE

Glassware used for volumetric measurements must be Class A or verified for accuracy according to laboratory procedure. Pyrex (or equivalent) glass should be used where possible. For safety purposes, thick-wall glassware should be used where available.

9.3 REAGENTS, STANDARDS & SUPPLIES

Purchasing guidelines for equipment and reagents must meet the requirements of the specific method and testing procedures for which they are being purchased. Solvents and acids are pre-tested in accordance with TestAmerica's Corporate SOP on Solvent & Acid Lot Testing & Approval, SOP No. CA-Q-S-001.

9.3.1 Purchasing

Chemical reagents, solvents, glassware, and general supplies are ordered as needed to maintain sufficient quantities on hand. Materials used in the analytical process must be of a known quality. The wide variety of materials and reagents available makes it advisable to specify recommendations for the name, brand, and grade of materials to be used in any determination. This information is contained in the method SOP.

The laboratory utilizes the JD Edwards One World software accessed thru the corporate intranet for materials requisitions. User names and passwords are distributed to authorized personnel. Orders are placed bi-weekly by the users and are approved by the Laboratory Director. Only corporate approved suppliers are allowed to be used.

Orders are reviewed by Corporate and placed to the suppliers.

The analyst may also check the item out of the on-site consignment system that contains items approved for laboratory use.

9.3.2 Receiving

It is the responsibility of the purchasing manager to receive the shipment. It is the responsibility of the analyst who ordered the materials to date the material when received. Once the ordered reagents or materials are received, the analyst compares the information on the label or packaging to the original order to ensure that the purchase meets the quality level specified. Material Safety Data Sheets (MSDSs) are available online through the Company's intranet website. Anyone may review these for relevant information on the safe handling and emergency precautions of on-site chemicals.

9.3.3 Specifications

All methods in use in the laboratory specify the grade of reagent that must be used in the procedure. If the quality of the reagent is not specified, it may be assumed that it is not significant in that procedure and, therefore, any grade reagent may be used. It is the responsibility of the analyst to check the procedure carefully for the suitability of grade of reagent.

Chemicals must not be used past the manufacturer's expiration date and must not be used past the expiration time noted in a method SOP. If expiration dates are not provided, the laboratory may contact the manufacturer to determine an expiration date.

The laboratory assumes a five year expiration date on inorganic dry chemicals unless noted otherwise by the manufacturer or by the reference source method. Chemicals should not be used past the manufacturer's or SOPs expiration date unless 'verified' (refer to item 3 listed below).

- An expiration date can not be extended if the dry chemical is discolored or appears otherwise physically degraded, the dry chemical must be discarded.

- Expiration dates can be extended if the dry chemical is found to be satisfactory based on acceptable performance of quality control samples (Continuing Calibration Verification (CCV), Blanks, Laboratory Control Sample (LCS), etc.).

- If the dry chemical is used for the preparation of standards, the expiration dates can be extended 6 months if the dry chemical is compared to an unexpired independent source in performing the method and the performance of the dry chemical is found to be satisfactory.

The comparison must show that the dry chemical meets CCV limits. The comparison studies are maintained with the QA Manager.

Wherever possible, standards must be traceable to national or international standards of measurement or to national or international reference materials. Records to that effect are available to the user.

Compressed gases in use are checked for pressure and secure positioning daily. The minimum total pressure must be 500 psig or the tank must be replaced. The quality of the gases must meet method or manufacturer specification or be of a grade that does not cause any analytical interference.

Water used in the preparation of standards or reagents must have a specific conductivity of less than 1- mmho/cm (or specific resistivity of greater than 1.0 megaohm-cm) at 25°C. The specific conductivity is checked and recorded daily. If the water's specific conductivity is greater than the specified limit, the Facility Manager and appropriate Department Managers/Supervisors must be notified immediately in order to notify all departments, decide on cessation (based on intended use) of activities, and make arrangements for correction.

The laboratory may purchase reagent grade (or other similar quality) water for use in the laboratory. This water must be certified "clean" by the supplier for all target analytes or otherwise verified by the laboratory prior to use. This verification is documented.

Standard lots are verified before first time use if the laboratory switches manufacturers or has historically had a problem with the type of standard.

Purchased VOA vials must be certified clean and the certificates must be maintained. If uncertified VOA vials are purchased, all lots must be verified clean prior to use. This verification must be maintained.

Records of manufacturer's certification and traceability statements are maintained in files or binders in each laboratory section. These records include date of receipt, lot number (when applicable), and expiration date (when applicable). Incorporation of the item into the record indicates that the analyst has compared the new certificate with the previous one for the same purpose and that no difference is noted, unless approved and so documented by the Technical Director or QA Manager.

9.3.4 Storage

Reagent and chemical storage is important from the aspects of both integrity and safety. Light-sensitive reagents may be stored in brown-glass containers. Storage conditions are per the Corporate Environmental Health & Safety Manual (Corp. Doc. No. CW-E-M-001) and method SOPs or manufacturer instructions.

9.4 PURCHASE OF EQUIPMENT/INSTRUMENTS/SOFTWARE

When a new piece of equipment is needed, either for additional capacity or for replacing inoperable equipment, the analyst or supervisor makes a supply request to the Laboratory Director. If they agree with the request, the procedures outlined in TestAmerica's Corporate

Policy No. CA-T-P-001, Qualified Products List, are followed. A decision is made as to which piece of equipment can best satisfy the requirements. The appropriate written requests are completed and purchasing places the order.

Upon receipt of a new or used piece of equipment, an identification name is assigned and added to the equipment list. IT must also be notified so that they can synchronize the instrument for back-ups. Its capability is assessed to determine if it is adequate or not for the specific application. For instruments, a calibration curve is generated, followed by MDLs, Demonstration of Capabilities (DOCs), and other relevant criteria (refer to Section 19). For software, its operation must be deemed reliable and evidence of instrument verification must be retained by the IT Department or QA Department. Software certificates supplied by the vendors are filed with the LIMS Administrator. The manufacturer's operation manual is retained at the bench.

9.5 SERVICES

Service to analytical instruments (except analytical balances) is performed on an as needed basis. Routine preventative maintenance is discussed in Section 20. The need for service is determined by analysts and/or Department Managers. The service providers that perform the services are approved by the Department Managers and Laboratory Director.

9.6 SUPPLIERS

TestAmerica selects vendors through a competitive proposal / bid process, strategic business alliances or negotiated vendor partnerships (contracts). This process is defined in the Corporate Finance documents on Vendor Selection (SOP No. CW-F-S-018) and Procurement & Contracts Policy (Policy No. CW-F-P-004). The level of control used in the selection process is dependent on the anticipated spending amount and the potential impact on TestAmerica business. Vendors that provide test and measuring equipment, solvents, standards, certified containers, instrument related service contracts or subcontract laboratory services shall be subject to more rigorous controls than vendors that provide off-the-shelf items of defined quality that meet the end use requirements. The JD Edwards purchasing system includes all suppliers/vendors that have been approved for use.

Evaluation of suppliers is accomplished by ensuring the supplier ships the product or material ordered and that the material is of the appropriate quality. This is documented by signing off on packing slips or other supply receipt documents. The purchasing documents contain the data that adequately describe the services and supplies ordered.

Any issues of vendor performance are to be reported immediately by the laboratory staff to the Corporate Purchasing Group by completing a Vendor Performance Report.

The Corporate Purchasing Group will work through the appropriate channels to gather the information required to clearly identify the problem and will contact the vendor to report the problem and to make any necessary arrangements for exchange, return authorization, credit, etc.

As deemed appropriate, the Vendor Performance Reports will be summarized and reviewed to determine corrective action necessary, or service improvements required by vendors

The laboratory has access to a listing of all approved suppliers of critical consumables, supplies and services. This information is provided through the JD Edwards purchasing system.

9.6.1 New Vendor Procedure

TestAmerica employees who wish to request the addition of a new vendor must complete a J.D. Edwards Vendor Add Request Form.

New vendors are evaluated based upon criteria appropriate to the products or services provided as well as their ability to provide those products and services at a competitive cost. Vendors are also evaluated to determine if there are ethical reasons or potential conflicts of interest with TestAmerica employees that would make it prohibitive to do business with them as well as their financial stability. The QA Department and/or the Laboratory Director are consulted with vendor and product selection that have an impact on quality.

SECTION 10

COMPLAINTS *(NELAC 5.4.8)*

10.1 OVERVIEW

The laboratory considers an effective client complaint handling processes to be of significant business and strategic value. Listening to and documenting client concerns captures 'client knowledge' that enables our operations to continually improve processes and client satisfaction. An effective client complaint handling process also provides assurance to the data user that the laboratory will stand behind its data, service obligations and products.

A client complaint is any expression of dissatisfaction with any aspect of our business services (e.g., communications, responsiveness, data, reports, invoicing and other functions) expressed by any party, whether received verbally or in written form. Client inquiries, complaints or noted discrepancies are documented, communicated to management, and addressed promptly and thoroughly.

The laboratory has procedures for addressing both external and internal complaints with the goal of providing satisfactory resolution to complaints in a timely and professional manner.

The nature of the complaint is identified, documented and investigated, and an appropriate action is determined and taken. In cases where a client complaint indicates that an established policy or procedure was not followed, the QA Department must evaluate whether a special audit must be conducted to assist in resolving the issue. A written confirmation or letter to the client, outlining the issue and response taken is recommended as part of the overall action taken.

The process of complaint resolution and documentation utilizes the procedures outlined in Section 12 (Corrective Actions) and is documented following SOP CT-MKS-7. Complaints are documented and tracked utilizing the lims Non-Conformance module. An NCM is generated within the lims system and the complaint is fully documented and connected with the job for which it originated from. At the end of each month, all complaints are compiled using a the Management reports in LIMS and all are listed in the monthly QA report.

10.2 EXTERNAL COMPLAINTS

An employee that receives a complaint initiates the complaint resolution process by first documenting the complaint according to (SOP# CT-MKS-7).

Complaints fall into two categories: correctable and non-correctable. An example of a correctable complaint would be one where a report re-issue would resolve the complaint. An example of a non-correctable complaint would be one where a client complains that their data was repeatedly late. Non-correctable complaints should be reviewed for preventive action measures to reduce the likelyhood of future occurrence and mitigation of client impact.

The general steps in the complaint handling process are:

- Receiving and Documenting Complaints
- Complaint Investigation and Service Recovery

- Process Improvement

The laboratory shall inform the initiator of the complaint of the results of the investigation and the corrective action taken, if any.

10.3 INTERNAL COMPLAINTS

Internal complaints include, but are not limited to: errors and non-conformances, training issues, internal audit findings, and deviations from methods. Corrective actions may be initiated by any staff member who observes a nonconformance and shall follow the procedures outlined in Section 12. In addition, Corporate Management, Sales and Marketing and IT may initiate a complaint by contacting the laboratory or through the corrective action system described in Section 12.

10.4 MANAGEMENT REVIEW

The number and nature of client complaints is reported by the QA Manager to the laboratory and QA Director in the QA Monthly report. Monitoring and addressing the overall level and nature of client complaints and the effectiveness of the solutions is part of the Annual Management Review (Section 16).

SECTION 11

CONTROL OF NON-CONFORMING WORK *(NELAC 5.4.9)*

11.1 OVERVIEW

When data discrepancies are discovered or deviations and departures from laboratory SOPs, policies and/or client requests have occurred, corrective action is taken immediately. First, the laboratory evaluates the significance of the nonconforming work. Then, a corrective action plan is initiated based on the outcome of the evaluation. If it is determined that the nonconforming work is an isolated incident, the plan could be as simple as adding a qualifier to the final results and/or making a notation in the case narrative. If it is determined that the nonconforming work is a systematic or improper practices issue, the corrective action plan could include a more in depth investigation and a possible suspension of an analytical method. In all cases, the actions taken are documented using the laboratory's corrective action system (refer to Section 12).

Due to the frequently unique nature of environmental samples, sometimes departures from documented policies and procedures are needed.

When an analyst encounters such a situation, the problem is presented to the supervisor for resolution. The supervisor may elect to discuss it with the Technical Director or have a representative contact the client to decide on a logical course of action. Once an approach is agreed upon, the analyst documents it using the laboratories corrective action system described in Section 12. This information can then be supplied to the client in the form of a footnote or a case narrative with the report.

Project Management may encounter situations where a client may request that a special procedure be applied to a sample that is not standard lab practice. Based on a technical evaluation, the lab may accept or opt to reject the request based on technical or ethical merit. An example might be the need to report a compound that the lab does not normally report. The lab would not have validated the method for this compound following the procedures in Section 19. The client may request that the compound be reported based only on the calibration. Such a request would need to be approved by the Laboratory Director and QA Manager, documented and included in the project folder. Deviations **must** also be noted on the final report with a statement that the compound is not reported in compliance with NELAC (or the analytical method) requirements and the reason. Data being reported to a non-NELAC state would need to note the change made to how the method is normally run.

11.2 RESPONSIBILITIES AND AUTHORITIES

TestAmerica's Corporate SOP entitled *Internal Investigation of Potential Data Discrepancies and Determination for Data Recall* (SOP No. CA-L-S-001), outlines the general procedures for the reporting and investigation of data discrepancies and alleged incidents of misconduct or violations of TestAmerica's data integrity policies as well as the policies and procedures related to the determination of the potential need to recall data.

Under certain circumstances, the Laboratory Director or QA Manager may authorize departures from documented procedures or policies. The departures may be a result of procedural changes due to the nature of the sample; a one-time procedure for a client; QC failures with insufficient

sample to reanalyze, etc.. In most cases, the client will be informed of the departure prior to the reporting of the data. Any departures must be well documented using the laboratory's corrective action procedures. This information may also be documented in logbooks and/or data review checklists as appropriate. Any impacted data must be referenced in a case narrative and/or flagged with an appropriate data qualifier.

Any misrepresentation or possible misrepresentation of analytical data discovered by any laboratory staff member must be reported to facility Senior Management within 24-hours. The Senior Management staff is comprised_of the Laboratory Director, the QA Manager, and the Department Managers. The reporting of issues involving alleged violations of the company's Data Integrity or Manual Integration procedures must be conveyed to an Ethics and Compliance Officer (ECO), Director of Quality & Client Advocacy and the laboratory's Quality Director within 24 hours of discovery.

Whether an inaccurate result was reported due to calculation or quantitation errors, data entry errors, improper practices, or failure to follow SOPs, the data must be evaluated to determine the possible effect.

The Laboratory Director/Manager, QA Manager, ECOs, Corporate Quality, the COO, General Managers and the Quality Directors have the authority and responsibility to halt work, withhold final reports, or suspend an analysis for due cause as well as authorize the resumption of work.

11.3 EVALUATION OF SIGNIFICANCE AND ACTIONS TAKEN

For each nonconforming issue reported, an evaluation of its significance and the level of management involvement needed is made. This includes reviewing its impact on the final data, whether or not it is an isolated or systematic issue, and how it relates to any special client requirements.

TestAmerica's Corporate Data Investigation & Recall Procedure (SOP No. CA-L-S-001) distinguishes between situations when it would be appropriate for laboratory management to make the decision on the need for client notification (written or verbal) and data recall (report revision) and when the decision must be made with the assistance of the ECO's and Corporate Management. Laboratory level decisions are documented and approved using the laboratory's standard nonconformance/corrective action reporting in lieu of the data recall determination form contained in TestAmerica's Corporate SOP No. CA-L-S-001.

11.4 PREVENTION OF NONCONFORMING WORK

If it is determined that the nonconforming work could recur, further corrective actions must be made following the laboratory's corrective action system. On a monthly basis, the QA Department evaluates non-conformances to determine if any nonconforming work has been repeated multiple times. If so, the laboratory's corrective action process may be followed.

11.5 METHOD SUSPENSION/RESTRICTION (STOP WORK PROCEDURES)

In some cases, it may be necessary to suspend/restrict the use of a method or target compound which constitutes significant risk and/or liability to the laboratory. Suspension/restriction procedures can be initiated by any of the persons noted in Section 11.2, Paragraph 5.

Prior to suspension/restriction, confidentiality will be respected, and the problem with the required corrective and preventive action will be stated in writing and presented to the Laboratory Director.

The Laboratory Director shall arrange for the appropriate personnel to meet with the QA Manager as needed. This meeting shall be held to confirm that there is a problem, that suspension/restriction of the method is required and will be concluded with a discussion of the steps necessary to bring the method/target or test fully back on line. In some cases, that may not be necessary if all appropriate personnel have already agreed there is a problem and there is agreement on the steps needed to bring the method, target or test fully back on line.

The QA Manager will also initiate a corrective action report as described in Section 12 if one has not already been started. A copy of any meeting notes and agreed upon steps should be faxed or e-mailed by the laboratory to the appropriate General Manager and member of Corporate QA. This fax/e-mail acts as notification of the incident.

After suspension/restriction, the lab will hold all reports to clients pending review. No faxing, mailing or distributing through electronic means may occur. The report must not be posted for viewing on the internet. It is the responsibility of the Laboratory Director to hold all reporting and to notify all relevant laboratory personnel regarding the suspension/restriction (e.g., Project Management, Log-in, etc…). Clients will NOT generally be notified at this time. Analysis may proceed in some instances depending on the non-conformance issue.

Within 72 hours, the QA Manager will determine if compliance is now met and reports can be released, OR determine the plan of action to bring work into compliance, and release work. A team, with all principals involved (Laboratory Director, Technical Director, QA Manager, Supervisor) can devise a start-up plan to cover all steps from client notification through compliance and release of reports. Project Management, and the Directors of Client Services and Sales and Marketing must be notified if clients must be notified or if the suspension/restriction affects the laboratory's ability to accept work. The QA Manager must approve start-up or elimination of any restrictions after all corrective action is complete. This approval is given by final signature on the completed corrective action report.

SECTION 12

CORRECTIVE ACTION *(NELAC 5.4.10)*

12.1 OVERVIEW

A major component of TestAmerica's Quality Assurance (QA) Program is the problem investigation and feedback mechanism designed to keep the laboratory staff informed on quality related issues and to provide insight to problem resolution. When nonconforming work or departures from policies and procedures in the quality system or technical operations are identified, the corrective action procedure provides a systematic approach to assess the issues, restore the laboratory's system integrity, and prevent reoccurrence. Corrective actions are documented using Non-Conformance Memo's (NCM) and Corrective Action Reports (CAR) (refer to Figure 12-1 and 12-2).

12.2 GENERAL

Problems within the quality system or within analytical operations may be discovered in a variety of ways, such as QC sample failures, internal or external audits, proficiency testing (PT) performance, client complaints, staff observation, etc..

The purpose of a corrective action system is to:

- Identify non-conformance events and assign responsibility(s) for investigating.
- Resolve non-conformance events and assign responsibility for any required corrective action.
- Identify Systematic Problems before they become serious.
- Identify and track client complaints and provide resolution.

12.2.1 Non-Conformance Memo (NCM) - is used to document the following types of corrective actions:

- Deviations from an established procedure or SOP
- QC outside of limits (non-matrix related)
- Isolated reporting / calculation errors
- Client complaints

12.2.2 Corrective Action Report (CAR) - is used to document the following types of corrective actions:

- Questionable trends that are found in the monthly review of NCMs.
- Issues found while reviewing NCMs that warrant further investigation.
- Internal and external audit findings.
- Failed or unacceptable PT results.
- Corrective actions that cross multiple departments in the laboratory.
- Systematic reporting / calculation errors

- Health and Safety violations
-

12.3 CLOSED LOOP CORRECTIVE ACTION PROCESS

Any employee in the company can initiate a corrective action. There are four main components to a closed-loop corrective action process once an issue has been identified: Cause Analysis, Selection and Implementation of Corrective Actions (both short and long term), Monitoring of the Corrective Actions, and Follow-up.

12.3.1 Cause Analysis

- Upon discovery of a non-conformance event, the event must be defined and documented. An NCM or CAR must be initiated, someone is assigned to investigate the issue and the event is investigated for cause. Table 12-1 provides some general guidelines on determining responsibility for assessment.
- The cause analysis step is the key to the process as a long term corrective action cannot be determined until the cause is determined.
- If the cause is not readily obvious, the Supervisor, Laboratory Director/Manager, or QA Manager (or QA designee) is consulted.

12.3.2 Selection and Implementation of Corrective Actions

- Where corrective action is needed, the laboratory shall identify potential corrective actions. The action(s) most likely to eliminate the problem and prevent recurrence are selected and implemented. Responsibility for implementation is assigned.
- Corrective actions shall be to a degree appropriate to the magnitude of the problem identified through the cause analysis.
- Whatever corrective action is determined to be appropriate, the laboratory shall document and implement the changes. The NCM or CAR is used for this documentation.

12.3.3 Monitoring of the Corrective Actions

- The Department Manager/Supervisor and QA Manager are responsible to ensure that the corrective action taken was effective.
- Ineffective actions are documented and re-evaluated until acceptable resolution is achieved. Department Managers are accountable to the Laboratory Director to ensure final acceptable resolution is achieved and documented appropriately.
- Each NCM is generated through the LIMS system. NCM are tracked and a monthly summary of all corrective actions can be generated and exported to excel for review to aid in esuring that the corrective actions have taken effect.
- The QA Manager reviews monthly NCMs and CARs for trends. Highlights are included in the QA monthly report (refer to Section 16). If a significant trend develops that adversely affects quality, an audit of the area is performed and corrective action implemented.
- Any out-of-control situations that are not addressed acceptably at the laboratory level may be reported to the Corporate Quality Director by the QA Manager, indicating the nature of the out-of-control situation and problems encountered in solving the situation.

12.3.4 Follow-up Audits

- Follow-up audits may be initiated by the QA Manager and shall be performed as soon as possible when the identification of a nonconformance casts doubt on the laboratory's compliance with its own policies and procedures, or on its compliance with state or federal requirements.
- These audits often follow the implementation of the corrective actions to verify effectiveness. An additional audit would only be necessary when a critical issue or risk to business is discovered.

(Also refer to Section 15.2.4, Special Audits.)

12.4 TECHNICAL CORRECTIVE ACTIONS

In addition to providing acceptance criteria and specific protocols for technical corrective actions in the method SOPs, the laboratory has general procedures to be followed to determine when departures from the documented policies and procedures and quality control have occurred (refer to Section 11). The documentation of these procedures is through the use of an NCM or CAR.

Table 12-1 includes examples of general technical corrective actions. For specific criteria and corrective actions, refer to the analytical methods or specific method SOPs. The laboratory may also maintains Work Instructions on these items that are available upon request.

Table 12-1 provides some general guidelines for identifying the individual(s) responsible for assessing each QC type and initiating corrective action. The table also provides general guidance on how a data set should be treated if associated QC measurements are unacceptable. Specific procedures are included in Method SOPs, Work Instructions, QAM Sections 19 and 20. All corrective actions are reviewed monthly, at a minimum, by the QA Manager and highlights are included in the QA monthly report.

To the extent possible, samples shall be reported only if all quality control measures are acceptable. If the deficiency does not impair the usability of the results, data will be reported with an appropriate data qualifier and/or the deficiency will be noted in the case narrative. Where sample results may be impaired, the Project Manager is notified by an NCM and appropriate corrective action (e.g., reanalysis) is taken and documented.

12.5 BASIC CORRECTIONS

When mistakes occur in records, each mistake shall be crossed-out, [not obliterated (e.g. no white-out)], and the correct value entered alongside. All such corrections shall be initialed (or signed) and dated by the person making the correction. In the case of records stored electronically, the original "uncorrected" file must be maintained intact and a second "corrected" file is created.

This same process applies to adding additional information to a record. All additions made later than the initial must also be initialed (or signed) and dated.

When corrections are due to reasons other than obvious transcription errors, the reason for the corrections (or additions) shall also be documented.

Figure 12-1.
Example - Corrective Action Report

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Corrective Action Report

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Open Date:_____ **Initiated By:**_____

Basis:

- ☐ Audit
- ☐ PT Failure
- ☐ SOP Departure
- ☐ Complaint
- ☐ QC Failure
- ☐ Prevention

Description: _____

Method: _____

Root Cause / Purpose:

Investigated By: **Date:**

Potential Corrective / Preventive Actions:

Recommended By: **Date:**

Corrective Actions Performed:

Performed By: **Date:**

Disposition of Data:

- ☐ Reanalyzed
- ☐ Rejected
- ☐ Qualified
- ☐ Recalled

Follow-Up Activities:

- ☐ Continue with another Corrective Action
- ☐ Change SOP

Assessed By: **Date:**

QA Manager:	**Date:**	**Closed Date:**

Document number QAF04700.CT

Figure 12-2
Example – Non-Conformance Memo

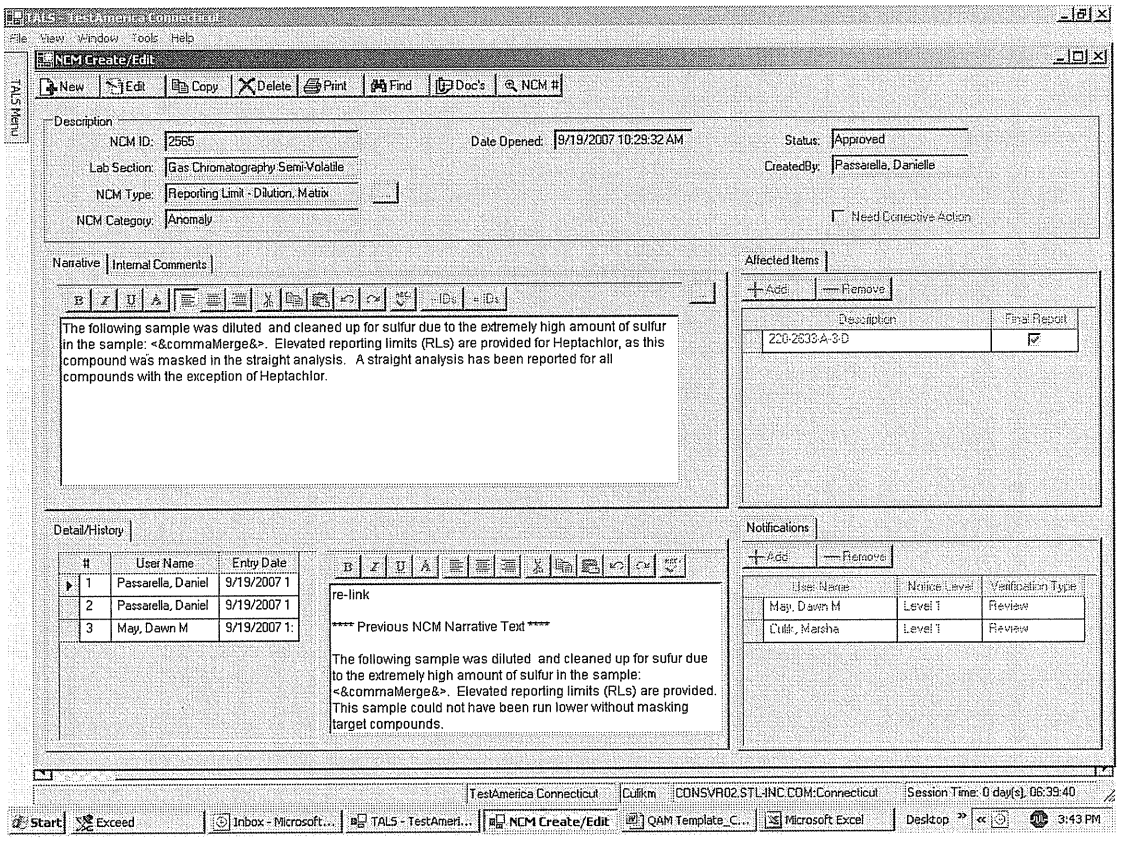


Table 12-1.

Example – General Corrective Action Procedures

QC Activity ***(Individual Responsible for Initiation/Assessment)***	**Acceptance Criteria**	**Recommended Corrective Action**
Initial Instrument Blank *(Analyst)*	- Instrument response < ½ RL.	- Prepare another blank. - If same response, determine cause of contamination: reagents, environment, instrument equipment failure, etc..
Initial Calibration Standards *(Analyst, Supervisor)*	- Correlation coefficient > 0.99 or standard concentration value. - % Recovery/%RSD within acceptance range. - See details in Method SOP.	- Reanalyze standards. - If still unacceptable, remake standards and/or recalibrate instrument.
Independent Calibration Verification (Second Source) *(Analyst, Supervisor)*	- % Recovery within control limits.	- Remake and reanalyze standard. - If still unacceptable, then remake calibration standards or use new primary standards and recalibrate instrument.
Continuing Calibration Standards *(Analyst, Data Reviewer)*	% Recovery/ % Difference within control limits.	- Reanalyze standard. - If still unacceptable, then recalibrate and rerun affected samples.
Matrix Spike / Matrix Spike Duplicate (MS/MSD) *(Analyst, Data Reviewer)*	- % Recovery within limits documented in SOPs/LIMS	- If the acceptance criteria for duplicates or matrix spikes are not met because of matrix interferences, the acceptance of the analytical batch is determined by the validity of the LCS. - If the LCS is within acceptable limits the batch is acceptable. - The results of the duplicates, matrix spikes and the LCS are reported with the data set.
Laboratory Control Sample (LCS) *(Analyst, Data Reviewer)*	- % Recovery within limits specified in SOPs/LIMS.	- Batch must be re-prepared and re-analyzed. **Note:** If there is insufficient sample or the holding time cannot be met, contact client and report with flags.
Surrogates *(Analyst, Data Reviewer)*	- % Recovery within limits of method /Standard Operating Procedures	- Individual sample must be repeated/reextracted. Place comment in LIMS.

QC Activity ***(Individual Responsible for Initiation/Assessment)***	**Acceptance Criteria**	**Recommended Corrective Action**
Method Blank (MB_ *(Analyst, Data Reviewer)*	< Reporting Limit [1]	- Reanalyze blank. - If still positive, determine source of contamination. If necessary, reprocess (i.e. digest or extract) entire sample batch. Report blank results.
Proficiency Testing (PT) Samples *(QA Manager, Department Manager/Supervisor)*	- Criteria supplied by PT Supplier.	- Any failures or warnings must be investigated for cause. Failures may result in the need to repeat a PT sample to show the problem is corrected.
Reporting / Calculation Errors (Depends on issue – possible individuals include: Analysts, Data Reviewers, Project Managers, Department Manager/ Supervisor, QA Manager, Corporate QA, Corporate Management)	- SOP CA-L-S-001, Internal Investigation of Potential Data Discrepancies and Determination for Data Recall.	- Corrective action is determined by type of error. Follow the procedures in SOP CA-L-S-001.
Client Complaints *(Project Managers, Lab Director/Manager, Sales and Marketing)*	-	- Corrective action is determined by the type of complaint. For example, a complaint regarding an incorrect address on a report will result in the report being corrected and then follow-up must be performed on the reasons the address was incorrect (e.g., database needs to be updated).
QA Monthly Report (Refer to Section 17 for an example) (QA Manager, Lab Director/Manager, Department Supervisors/Managers)	- QAM, SOPs.	- Corrective action is determined by the type of issue. For example, CARs for the month are reviewed and possible trends are investigated.

Note:

1. Except as noted below for certain compounds, the method blank should be below the detection limit. Certain programs may require less than ½ the detection limit. Concentrations up to five times the reporting limit will be allowed for the ubiquitous laboratory and reagent contaminants: methylene chloride, acetone, 2-butanone and phthalates. This allowance presumes that the detection limit is significantly below any regulatory limit to which the data are to be compared and that blank subtraction will not occur.

SECTION 13

PREVENTIVE ACTION *(NELAC 5.4.11)*

13.1 OVERVIEW

The laboratory's preventive action programs improve, or eliminate potential causes of nonconforming product and/or nonconformance to the quality system. This preventive action process is a proactive continuous process improvement activity that can be initiated through feedback from clients, employees, business providers, and affiliates. The QA Department has the overall responsibility to ensure that the preventive action process is in place, and that relevant information on actions is submitted for management review.

Dedicating resources to an effective preventive action system emphasizes the laboratory's commitment to its Quality Program. It is beneficial to identify and address negative trends before they develop into complaints, problems and corrective actions. Additionally, customer service and satisfaction can be improved through continuous improvements to laboratory systems.

Opportunities for improvement may be discovered during management reviews, the QA Metrics Report, internal or external audits, proficiency testing performance, client complaints, staff observation, etc..

The monthly QA Metrics Report shows performance indicators in all areas of the quality system. These areas include revised reports, corrective actions, audit findings, internal auditing and data authenticity audits, client complaints, PT samples, holding time violations, SOPs, ethics training, etc. These metrics are used to help evaluate quality system performance on an ongoing basis and provide a tool for identifying areas for improvement.

The laboratory's corrective action process is integral to implementation of preventive actions. A critical piece of the corrective action process is the implementation of actions to prevent further occurrence of a non-compliance event. Historical review of corrective action provides a valuable mechanism for identifying preventive action opportunities.

13.1.1 The following elements are part of a preventive action system:

- Identification of an opportunity for preventive action.
- Process for the preventive action.
- Define the measurements of the effectiveness of the process once undertaken.
- Execution of the preventive action.
- Evaluation of the plan using the defined measurements.
- Verification of the effectiveness of the preventive action.
- Close-Out by documenting any permanent changes to the Quality System as a result of the Preventive Action. Documentation of Preventive Action is incorporated into the monthly QA reports, corrective action process and management review.

13.1.2 Any Preventive Actions undertaken or attempted shall be taken into account during the Annual Management Review (Section 16). A highly detailed recap is not required; a simple

recount of success and failure within the preventive action program will provide management a measure for evaluation.

13.2 MANAGEMENT OF CHANGE

The Management of Change process is designed to manage significant events and changes that occur within the laboratory. Through these various tracking indicators, the potential risks inherent with a new event or change are identified and evaluated. The risks are minimized or eliminated through pre-planning and the development of preventive measures. The types of indicators monitored under this collective system include:

- SOP Tracking
  - Current Revisions w/ Effective Dates
  - Required Biennial Revisions w/ Due Date
- Proficiency Testing (PT) Sample Tracking
  - Pass / Fail – most current 2 out of 3 studies.
- Instrument / Equipment List
  - Current / Location
- Accreditations
  - New / Expiring
- Method Capabilities
  - Current Listing by program (e.g., Potable Water, Soils, etc.)
- Key Personnel
  - Technical Managers, Department Supervisors, etc..

These items are maintained on TestAmerica's Intranet (Proposal Library) or on our internal database (TotalAccess) which uploads to our company internet site.

SECTION 14

CONTROL OF RECORDS *(NELAC 5.4.12)*

The laboratory maintains a record system appropriate to its needs and that complies with applicable standards or regulations as required. The system produces unequivocal, accurate records that document all laboratory activities. The laboratory retains all original observations, calculations and derived data, calibration records and a copy of the analytical report for a minimum of five years after it has been issued.

14.1 OVERVIEW

The laboratory has established procedures for identification, collection, indexing, access, filing, storage, maintenance and disposal of quality and technical records. A record index is listed in Table 14-1. Quality records are maintained by the QA department in a database, which is backed up as part of the regular laboratory backup or archived in banker boxes. Records are of two types; either electronic or hard copy paper formats depending on whether the record is computer or hand generated (some records may be in both formats). Technical records are maintained by department supervisors.

Table 14-1. Record Index[1]

	Record Types [1]:	Retention Time:
Technical Records	- Raw Data - Logbooks[2] - Standards - Certificates - Analytical Records - Lab Reports	5 Years from analytical report issue*
Official Documents	- Quality Assurance Manual (QAM) - Work Instructions - Policies - SOPs - Manuals	5 Years from document retirement date*
QA Records	- Internal & External Audits/Respones - Certifications - Corrective/Preventive Actions - Management Reviews - Method & Software Validation / Verification Data - Data Investigation	5 Years from archival* **Data Investigation:** 5 years or the life of the affected raw data storage whichever is greater (beyond 5 years if ongoing project or pending investigation)
Project Records	- Sample Receipt & COC Documentation - Contracts and Amendments - Correspondence - QAPP -SAP - Telephone Logbooks - Lab Reports	5 Years from analytical report issue*

	Record Types [1]:	Retention Time:
Administrative Records	Finance and Accounting	10 years
	EH&S Manual, Permits, Disposal Records	7 years
	Employee Handbook	Indefinitely
	Personnel files, Employee Signature & Initials, Administrative Training Records (e.g., Ethics)	7 Years (HR Personnel Files must be maintained indefinitely)
	Administrative Policies Technical Training Records	7 years

[1] Record Types encompass hardcopy and electronic records.
[2] Examples of Logbook types: Maintenance, Instrument Run, Preparation (standard and samples), Standard and Reagent Receipt, Archiving, Balance Calibration, Temperature (hardcopy or electronic records).
* Exceptions listed in Table 14-2.

14.1.1 All records are stored and retained in such a way that they are secure and readily retrievable at the laboratory facility or an offsite location that provides a suitable environment to prevent damage or deterioration and to prevent loss. All records shall be protected against fire, theft, loss, environmental deterioration, and vermin. In the case of electronic records, electronic or magnetic sources, storage media are protected from deterioration caused by magnetic fields and/or electronic deterioration.

Access to the data is limited to laboratory and company employees. Records archived off-site are stored in a secure location. Whether on-site or off-site storage is used, logs are maintained in each storage box to note removal and return of records. Retention of records are maintained on-site at the laboratory for at least 1 year after their generation and moved offsite for the remainder of the required storage time. Records are maintained for a minimum of five years unless otherwise specified by a client or regulatory requirement.

For raw data and project records, record retention shall be calculated from the date the project report is issued. For other records, such as Controlled Documents, QA, or Administrative Records, the retention time is calculated from the date the record is formally retired. Records related to the programs listed in Table 14-2 have lengthier retention requirements and are subject to the requirements in Section 14.1.3.

14.1.2 Programs with Longer Retention Requirements

Some regulatory programs have longer record retention requirements than the standard record retention time. These are detailed in Table 14-2 with their retention requirements. In these cases, the longer retention requirement is enacted. If special instructions exist such that client data cannot be destroyed prior to notification of the client, the container or box containing that data is marked as to who to contact for authorization prior to destroying the data.

Table 14-2. Example: Special Record Retention Requirements

Program	[1]Retention Requirement
Drinking Water – All States	10 years (project records)
Commonwealth of MA – All environmental data 310 CMR 42.14	10 years
NY Potable Water NYCRR Part 55-2	10 years

[1]Note: Extended retention requirements must be noted with the archive documents or addressed in facility-specific records retention procedures.

14.1.3 The laboratory has procedures to protect and back-up records stored electronically and to prevent unauthorized access to or amendment of these records. All analytical data is maintained as hard copy or in a secure readable electronic format. For analytical reports that are maintained as copies in PDF format, refer to Section 19.12.1 for more information. More Information on data archive can be found in the SOP for Data Backup Procedure, CT-SYS-31.

14.1.4 The record keeping system allows for historical reconstruction of all laboratory activities that produced the analytical data, as well as rapid recovery of historical data (Records stored off site should be accessible within 2 days of a request for such records). The history of the sample from when the laboratory took possession of the samples must be readily understood through the documentation. This shall include inter-laboratory transfers of samples and/or extracts.

- The records include the identity of personnel involved in sampling, sample receipt, preparation, or testing. All analytical work contains the initials (at least) of the personnel involved. The laboratory's copy of the COC is stored with the invoice and the work order sheet generated by the LIMS. The chain of custody would indicate the name of the sampler. If any sampling notes are provided with a work order, they are kept with this package.

- All information relating to the laboratory facilities equipment, analytical test methods, and related laboratory activities, such as sample receipt, sample preparation, or data verification are documented.

- The record keeping system facilitates the retrieval of all working files and archived records for inspection and verification purposes (e.g., set format for naming electronic files, set format for what is included with a given analytical data set. Instrument data is stored sequentially by instrument. A given day's analyses are maintained in the order of the analysis. Run logs are maintained for each instrument or method; a copy of each day's run long or instrument sequence is stored with the data to aid in re-constructing an analytical sequence. Where an analysis is performed without an instrument, bound logbooks or bench sheets are used to record and file data. Standard and reagent information is recorded in logbooks or entered into the LIMS for each method as required.

- Changes to hardcopy records shall follow the procedures outlined in Section 12 and 19. Changes to electronic records in LIMS or instrument data are recorded in audit trails.

- The reason for a signature or initials on a document is clearly indicated in the records such as "sampled by," "prepared by," "reviewed by", or "analyzed by".

- All generated data except those that are generated by automated data collection systems, are recorded directly, promptly and legibly in permanent dark ink.

- Hard copy data may be scanned into PDF format for record storage as long as the scanning process can be verified in order to ensure that no data is lost and the data files and storage media must be tested to verify the laboratory's ability to retrieve the information prior to the destruction of the hard copy that was scanned. The procedure for this verification can be found in SOP CT-RPS-7, Lims final Reporting.

- Also refer to Section 19.13.1 'Computer and Electronic Data Related Requirements'.

14.2 TECHNICAL AND ANALYTICAL RECORDS

14.2.1 The laboratory retains records of original observations, derived data and sufficient information to establish an audit trail, calibration records, staff records and a copy of each analytical report issued, for a minimum of five years unless otherwise specified by a client or regulatory requirement. The records for each analysis shall contain sufficient information to enable the analysis to be repeated under conditions as close as possible to the original. The records shall include the identity of laboratory personnel responsible for the performance of each analysis and reviewing results.

14.2.2 Observations, data and calculations are recorded real-time and are identifiable to the specific task.

14.2.3 Changes to hardcopy records shall follow the procedures outlined in Section 12 and 19. Changes to electronic records in LIMS or instrument data are recorded in audit trails.

The essential information to be associated with analysis, such as strip charts, tabular printouts, computer data files, analytical notebooks, and run logs, include:

- laboratory sample ID code;
- Date of analysis; Time of Analysis is also required if the holding time is seventy-two (72) hours or less, or when time critical steps are included in the analysis (e.g., drying times, incubations, etc.); instrumental analyses have the date and time of analysis recorded as part of their general operations. Where a time critical step exists in an analysis, location for such a time is included as part of the documentation in a specific logbook or on a benchsheet.
- Instrumentation identification and instrument operating conditions/parameters. Operating conditions/parameters are typically stored in method parameters associated with each data file, where available.
- analysis type;
- all manual calculations and manual integrations;
- analyst's or operator's initials/signature;
- sample preparation including cleanup, separation protocols, incubation periods or

subculture, ID codes, volumes, weights, instrument printouts, meter readings, calculations, reagents;

- test results;
- standard and reagent origin, receipt, preparation, and use;
- calibration criteria, frequency and acceptance criteria;
- data and statistical calculations, review, confirmation, interpretation, assessment and reporting conventions;
- quality control protocols and assessment;
- electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries; and
- Method performance criteria including expected quality control requirements. These are indicated both in the LIMS and on specific analytical report formats.

14.3 LABORATORY SUPPORT ACTIVITIES

In addition to documenting all the above-mentioned activities, the following are retained QA records and project records (previous discussions in this section relate where and how these data are stored):

- all original raw data, whether hard copy or electronic, for calibrations, samples and quality control measures, including analysts' work sheets and data output records (chromatograms, strip charts, and other instrument response readout records);
- a written description or reference to the specific test method used which includes a description of the specific computational steps used to translate parametric observations into a reportable analytical value;
- copies of final reports;
- archived SOPs;
- correspondence relating to laboratory activities for a specific project;
- all corrective action reports, audits and audit responses;
- proficiency test results and raw data; and
- results of data review, verification, and crosschecking procedures

14.3.1 Sample Handling Records

Records of all procedures to which a sample is subjected while in the possession of the laboratory are maintained. These include but are not limited to records pertaining to:

- sample preservation including appropriateness of sample container and compliance with holding time requirement;
- sample identification, receipt, acceptance or rejection and login;
- sample storage and tracking including shipping receipts, sample transmittal / COC forms; and

- procedures for the receipt and retention of samples, including all provisions necessary to protect the integrity of samples.

14.4 ADMINISTRATIVE RECORDS

The laboratory also maintains the administrative records in either electronic or hard copy form. Refer to Table 14-1.

14.5 RECORDS MANAGEMENT, STORAGE AND DISPOSAL

14.5.1 All records (including those pertaining to test equipment), certificates and reports are safely stored, held secure and in confidence to the client. Certification related records are available upon request.

14.5.2 All information necessary for the historical reconstruction of data is maintained by the laboratory. Records that are stored only on electronic media must be supported by the hardware and software necessary for their retrieval.

14.5.3 Records that are stored or generated by computers or personal computers have hard copy, write-protected backup copies, or an electronic audit trail controlling access.

14.5.4 The laboratory has a record management system (a.k.a. as document control) for control of laboratory notebooks, instrument logbooks, standards logbooks, and records for data reduction, validation, storage and reporting. Laboratory notebooks are issued on a per analysis basis, and are numbered sequentially. All data are recorded sequentially within a series of sequential notebooks. Bench sheets are filed sequentially. Standards are maintained in the LIMS – no logbooks are used to record that data. Records are considered archived when noted as such in the records management system (a.k.a. as document control).

14.5.5 Transfer of Ownership

In the event that the laboratory transfers ownership or goes out of business, the laboratory shall ensure that the records are maintained or transferred according to client's instructions. Upon ownership transfer, record retention requirements shall be addressed in the ownership transfer agreement and the responsibility for maintaining archives is clearly established. In addition, in cases of bankruptcy, appropriate regulatory and state legal requirements concerning laboratory records must be followed. In the event of the closure of the laboratory, all records will revert to the control of the corporate headquarters. Should the entire company cease to exist, as much notice as possible will be given to clients and the accrediting bodies who have worked with the laboratory during the previous 5 years of such action.

14.5.6 Records Disposal

14.5.6.1 Records are removed from the archive and destroyed after 5 years unless otherwise specified by a client or regulatory requirement. On a project specific or program basis, clients may need to be notified prior to record destruction. Records are destroyed in a manner that ensures their confidentiality such as shredding, mutilation or incineration. (Refer to Tables 14-1 and 14-2).

14.5.6.2 Electronic copies of records must be destroyed by erasure or physically damaging off-line storage media so no records can be read.

14.5.6.3 If a third party records management company is hired to dispose of records, a "Certificate of Destruction" is required.

SECTION 15

AUDITS *(NELAC 5.4.13)*

15.1 INTERNAL AUDITS

Internal audits are performed to verify that laboratory operations comply with the requirements of the lab's quality system and with the external quality programs under which the laboratory operates. Audits are planned and organized by the QA staff. Personnel conducting the audits should be independent of the area being evaluated. Auditors will have sufficient authority, access to work areas, and organizational freedom necessary to observe all activities affecting quality and to report the assessments to laboratory management and when requested to corporate management.

Audits are conducted and documented as described in the TestAmerica Corporate SOP on performing Internal Audits, SOP No. CA-Q-S-004. The types and frequency of routine internal audits are shown in Table 16-1. Special or ad hoc assessments may be conducted as needed under the direction of the QA staff.

Table 15-1. Types of Internal Audits and Frequency

Description	Performed by	Frequency
Quality Systems	QA Department or Designee	All areas of the laboratory annually
QA Technical Audits - Evaluate raw data versus final reports - Analyst integrity - Data authenticity	QA Department or Designee	All methods within a 2-year period, with at least 15% of methods every quarter
SOP Method Compliance	Technical Director	- All SOPs within a 2-year period - All new analysts or new analyst/methods within 3 months of IDOC
Special	QA Department or Designee	Surveillance or spot checks performed as needed
Performance Testing	Analysts with QA oversight	Two successful per year for each NELAC field of testing or as dictated by regulatory requirements

15.1.1 Annual Quality Systems Audit

An annual quality systems audit is required to ensure compliance to analytical methods and SOPs, the laboratory's Data Integrity and Ethics Policies, NELAC quality systems, client and state requirements, and the effectiveness of the internal controls of the analytical process, including but not limited to data review, quality controls, preventive action and corrective action. The completeness of earlier corrective actions is assessed. The audit is divided into modules for each operating or support area of the lab, and each module is comprehensive for a given

area. The area audits may be done on a rotating schedule throughout the year to ensure adequate coverage of all areas. This schedule may change as situations in the laboratory warrant.

15.1.2 QA Technical Audits

QA technical audits are based on client projects, associated sample delivery groups, and the methods performed. Reported results are compared to raw data to verify the authenticity of results. The validity of calibrations and QC results are compared to data qualifiers, footnotes, and case narratives. Documentation is assessed by examining run logs and records of manual integrations. Manual calculations are checked. Where possible, MintMiner is used to identify unusual manipulations of the data deserving closer scrutiny. QA technical audits will include all methods within a two-year period.

15.1.3 SOP Method Compliance

Compliance of all SOPs with the source methods and compliance of the operational groups with the SOPs will be assessed by the Technical Director at least every two years. The work of each newly hired analyst is assessed within 3 months of working independently, (e.g., completion of method IDOC). In addition, as analysts add methods to their capabilities, (new IDOC) reviews of the analyst work products will be performed within 3 months of completing the documented training.

15.1.4 Special Audits

Special audits are conducted on an as needed basis, generally as a follow up to specific issues such as client complaints, corrective actions, PT results, data audits, system audits, validation comments, regulatory audits or suspected ethical improprieties. Special audits are focused on a specific issue, and report format, distribution, and timeframes are designed to address the nature of the issue.

15.1.5 Performance Testing

The laboratory participates semi-annually in performance audits conducted through the analysis of PT samples provided by a third party. The laboratory generally participates in the following types of PT studies: Drinking Water, Nonpotable Water, and Soil.

It is TestAmerica's policy that PT samples be treated as typical samples in the production process. Furthermore, where PT samples present special or unique problems, in the regular production process they may need to be treated differently, as would any special or unique request submitted by any client. The QA Manager must be consulted and in agreement with any decisions made to treat a PT sample differently due to some special circumstance.

Written responses to unacceptable PT results are required. In some cases it may be necessary for blind QC samples to be submitted to the laboratory to show a return to control.

15.2 EXTERNAL AUDITS

External audits are performed when certifying agencies or clients conduct on-site inspections or submit performance testing samples for analysis. It is TestAmerica's policy to cooperate fully with regulatory authorities and clients. The laboratory makes every effort to provide the auditors with access to personnel, documentation, and assistance. Laboratory supervisors are responsible for providing corrective actions to the QA Manager who coordinates the response for any deficiencies discovered during an external audit. Audit responses are due in the time allotted by the client or agency performing the audit. A copy of the audit report and the labs corrective action plan will be forwarded to Corporate Quality.

The laboratory cooperates with clients and their representatives to monitor the laboratory's performance in relation to work performed for the client. The client may only view data and systems related directly to the client's work. All efforts are made to keep other client information confidential.

15.2.1 Confidential Business Information (CBI) Considerations

During on-site audits, auditors may come into possession of information claimed as business confidential. A business confidentiality claim is defined as "a claim or allegation that business information is entitled to confidential treatment for reasons of business confidentiality or a request for a determination that such information is entitled to such treatment." When information is claimed as business confidential, the laboratory must place on (or attach to) the information at the time it is submitted to the auditor, a cover sheet, stamped or typed legend or other suitable form of notice, employing language such as "trade secret", "proprietary" or "company confidential". Confidential portions of documents otherwise non-confidential must be clearly identified. CBI may be purged of references to client identity by the responsible laboratory official at the time of removal from the laboratory. However, sample identifiers may not be obscured from the information. Additional information regarding CBI can be found in within the 2003 NELAC standards.

15.3 AUDIT FINDINGS

Audit findings are documented using the corrective action process and database. The laboratory's corrective action responses for both types of audits may include action plans that could not be completed within a predefined timeframe. In these instances, a completion date must set and agreed to by operations management and the QA Manager.

Developing and implementing corrective actions to findings is the responsibility of the Department Manager where the finding originated. Findings that are not corrected by specified due dates are reported monthly to management in the QA monthly report. . A copy of the audit report and the labs corrective action plan will be forwarded to Corporate Quality.

If any audit finding casts doubt on the effectiveness of the operations or on the correctness or validity of the laboratory's test results, the laboratory shall take timely corrective action, and shall notify clients in writing if the investigations show that the laboratory results have been affected. Once corrective action is implemented, a follow-up audit is scheduled to ensure that the problem has been corrected.

Clients must be notified promptly in writing, of any event such as the identification of defective measuring or test equipment that casts doubt on the validity of results given in any test report or amendment to a test report. The investigation must begin within 24-hours of discovery of the problem and all efforts are made to notify the client within two weeks after the completion of the investigation.

SECTION 16

MANAGEMENT REVIEWS *(NELAC 5.4.14)*

16.1 QUALITY ASSURANCE REPORT

A comprehensive QA Report shall be prepared each month by the laboratory's QA Department and forwarded to the Laboratory Director, Technical Directors, Operation Manager, their Quality Director as well as the General Manager. All aspects of the QA system are reviewed to evaluate the suitability of policies and procedures. During the course of the year, the Laboratory Director, General Manager or Corporate QA may request that additional information be added to the report.

On a monthly basis, Corporate QA compiles information from all the monthly laboratory reports. The Corporate Quality Directors prepare a report that includes a compilation of all metrics and notable information and concerns regarding the QA programs within the laboratories. The report also includes a listing of new regulations that may potentially impact the laboratories. This report is presented to the Senior Management Team and General Managers.

16.2 ANNUAL MANAGEMENT REVIEW

The senior lab management team (Laboratory Director, Technical Directors, QA Manager) conducts a review annually of its quality systems and LIMS to ensure its continuing suitability and effectiveness in meeting client and regulatory requirements and to introduce any necessary changes or improvements. It will also provide a platform for defining quality goals & objectives. Corporate Operations and Corporate QA personnel is be included in this meeting at the discretion of the Laboratory Director. The LIMS review consists of examining any audits, complaints or concerns that have been raised through the year that are related to the LIMS. The laboratory will summarize any critical findings that can not be solved by the lab and report them to Corporate IT.

This management review (Corporate Work Instruction No. CA-Q-WI-020) uses information generated during the preceding year to assess the "big picture" by ensuring that routine actions taken and reviewed on a monthly basis are not components of larger systematic concerns. The monthly review should keep the quality systems current and effective, therefore, the annual review is a formal senior management process to review specific existing documentation. Significant issues from the following documentation are compiled or summarized by the QA Manager prior to the review meeting:

- Matters arising from the previous annual review.
- Prior Monthly QA Reports issues.
- Laboratory QA Metrics.
- Review of report reissue requests.
- Review of client feedback and complaints.
- Issues arising from any prior management or staff meetings.
- Minutes from prior senior lab management meetings. Issues that may be raised from these meetings include:

  - Adequacy of staff, equipment and facility resources.
  - Adequacy of policies and procedures.
  - Future plans for resources and testing capability and capacity.

- The annual internal double blind PT program sample performance (if performed),
- Compliance to the Ethics Policy and Data Integrity Plan. Including any evidence/incidents of inappropriate actions or vulnerabilities related to data Integrity.

A report is generated by the QA Manager and management. The report is distributed to the appropriate General Manager and the Quality Director. The report includes, but is not limited to:

- The date of the review and the names and titles of participants.
- A reference to the existing data quality related documents and topics that were reviewed.
- Quality system or operational changes or improvements that will be made as a result of the review [e.g., an implementation schedule including assigned responsibilities for the changes (Action Table)].

Changes to the quality systems requiring update to the laboratory QA Manual shall be included in the next revision of the QA Manual.

16.3 POTENTIAL INTEGRITY RELATED MANAGERIAL REVIEWS

Potential integrity issues (data or business related) must be handled and reviewed in a confidential manner until such time as a follow-up evaluation, full investigation, or other appropriate actions have been completed and issues clarified. TestAmerica's Corporate Data Investigation/Recall SOP shall be followed (SOP No. CA-L-S-001). All investigations that result in finding of inappropriate activity are documented and include any disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients.

TestAmerica's COO, VP of Client & Technical Services, General Managers and Quality Directors receive a monthly report from the Director of Quality & Client Advocacy summarizing any current data integrity or data recall investigations. The General Manager's are also made aware of progress on these issues for their specific labs.

SECTION 17

PERSONNEL *(NELAC 5.5.2)*

17.1 OVERVIEW

The laboratory's management believes that its highly qualified and professional staff is the single most important aspect in assuring a high level of data quality and service. The staff consists of professionals and support personnel as outlined in the organization chart in Figure 4-1.

All personnel must demonstrate competence in the areas where they have responsibility. Any staff that is undergoing training shall have appropriate supervision until they have demonstrated their ability to perform their job function on their own. Staff shall be qualified for their tasks based on appropriate education, training, experience and/or demonstrated skills as required.

The laboratory employs sufficient personnel with the necessary education, training, technical knowledge and experience for their assigned responsibilities.

All personnel are responsible for complying with all QA/QC requirements that pertain to the laboratory and their area of responsibility. Each staff member must have a combination of experience and education to adequately demonstrate a specific knowledge of their particular area of responsibility. Technical staff must also have a general knowledge of lab operations, test methods, QA/QC procedures and records management.

Laboratory management is responsible for formulating goals for lab staff with respect to education, training and skills and ensuring that the laboratory has a policy and procedures for identifying training needs and providing training of personnel. The training shall be relevant to the present and anticipated responsibilities of the lab staff.

The laboratory only uses personnel that are employed by or under contract to, the laboratory. Contracted personnel, when used, must meet competency standards of the laboratory and work in accordance to the laboratory's quality system.

17.2 EDUCATION AND EXPERIENCE REQUIREMENTS FOR TECHNICAL PERSONNEL

The laboratory makes every effort to hire analytical staffs that possess a college degree (AA, BA, BS) in an applied science with some chemistry in the curriculum. Exceptions can be made based upon the individual's experience and ability to learn. Selection of qualified candidates for laboratory employment begins with documentation of minimum education, training, and experience prerequisites needed to perform the prescribed task. Minimum education and training requirements for TestAmerica employees are outlined in job descriptions and are generally summarized for analytical staff in the table below.

The laboratory maintains job descriptions for all personnel who manage, perform or verify work affecting the quality of the environmental testing the laboratory performs. Job Descriptions are located on the TestAmerica intranet site's Human Resources web-page (Also see Section 4 for position descriptions/responsibilities).

Experience and specialized training are occasionally accepted in lieu of a college degree (basic lab skills such as using a balance, aseptic or quantitation techniques, etc., are also considered).

As a general rule for analytical staff:

Specialty	Education	Experience
Extractions, Digestions, some electrode methods (pH, DO, Redox, etc.), or Titrimetric and Gravimetric Analyses	H.S. Diploma	On the job training (OJT)
CVAA, Single component or short list Chromatography (e.g., Fuels, BTEX-GC, IC	A college degree in an applied science or 2 years of college and at least 1 year of college chemistry	Or 2 years prior analytical experience is required
ICP, ICPMS, Long List or complex chromatography (e.g., Pesticides, PCB, Herbicides, HPLC, etc.), GCMS	A college degree in an applied science or 2 years of college chemistry	or 5 years of prior analytical experience
Spectra Interpretation	A college degree in an applied science or 2 years of college chemistry	And 2 years relevant experience Or 5 years of prior analytical experience
Technical Directors/Department Managers – **General**	Bachelors Degree in an applied science or engineering with 24 semester hours in chemistry An advanced (MS, PhD.) degree may substitute for one year of experience	And 2 years experience in environmental analysis of representative analytes for which they will oversee
Technical Director – **Wet Chem** only (no advanced instrumentation)	Associates degree in an applied science or engineering or 2 years of college with 16 semester hours in chemistry	And 2 years relevant experience

When an analyst does not meet these requirements, they can perform a task under the direct supervision of a qualified analyst, peer reviewer or Department Manager, and are considered an analyst in training. The person supervising an analyst in training is accountable for the quality of the analytical data and must review and approve data and associated corrective actions.

17.3 TRAINING

The laboratory is committed to furthering the professional and technical development of employees at all levels.

Orientation to the laboratory's policies and procedures, in-house method training, and employee attendance at outside training courses and conferences all contribute toward employee proficiency. Below are examples of various areas of required employee training:

Required Training	Time Frame	Employee Type
Environmental Health & Safety	Prior to lab work	All
Ethics – New Hires	1 week of hire	All
Ethics – Comprehensive	90 days of hire	All
Data Integrity	30 days of hire	Technical and PMs
Quality Assurance	90 days of hire	All
Ethics – Comprehensive Refresher	Annually	All
Initial Demonstration of Capability (DOC)	Prior to unsupervised method performance	Technical

The laboratory maintains records of relevant authorization/competence, education, professional qualifications, training, skills and experience of technical personnel (including contracted personnel) as well as the date that approval/authorization was given. These records are kept on file at the laboratory. Also refer to "Demonstration of Capability" in Section 19.

The training of technical staff is kept up to date by:

- Each employee must have documentation in their training file that they have read, understood and agreed to follow the most recent version of the laboratory QA Manual and SOPs in their area of responsibility. This documentation is updated as SOPs are updated.
- Documentation from any training courses or workshops on specific equipment, analytical techniques or other relevant topics are maintained in their training file.
- Documentation of proficiency (refer to Section 19).
- An Ethics Agreement signed by each staff member (renewed each year) and evidence of annual ethics training.
- A Confidentiality Agreement signed by each staff member signed at the time of employment.
- Human Resources maintains documentation and attestation forms on employment status & records; benefit programs; timekeeping/payroll; and employee conduct (e.g., ethics). This information is maintained in the employee's secured personnel file.

Further details of the laboratory's training program are described in the Employee Training SOP (CT-QAS-16).

17.4 DATA INTEGRITY AND ETHICS TRAINING PROGRAM

Establishing and maintaining a high ethical standard is an important element of a Quality System. Ethics and data integrity training is integral to the success of TestAmerica and is provided for each employee at TestAmerica. It is a formal part of the initial employee orientation within 1 week of hire, comprehensive training within 90 days, and an annual refresher for all employees. Senior management at each facility performs the ethics training for their staff.

In order to ensure that all personnel understand the importance TestAmerica places on maintaining high ethical standards at all times; TestAmerica has established a Corporate Ethics Policy (Policy No. CA-L-P-001) and an Ethics Statement. All initial and annual training is documented by signature on the signed Ethics Statement demonstrating that the employee has participated in the training and understands their obligations related to ethical behavior and data integrity.

Violations of this Ethics Policy will not be tolerated. Employees who violate this policy will be subject to disciplinary actions up to and including termination. Criminal violations may also be referred to the Government for prosecution. In addition, such actions could jeopardize TestAmerica's ability to do work on Government contracts, and for that reason, TestAmerica has a Zero Tolerance approach to such violations.

Employees are trained as to the legal and environmental repercussions that result from data misrepresentation. Key topics covered in the presentation include:

- Organizational mission and its relationship to the critical need for honesty and full disclosure in all analytical reporting.
- Ethics Policy
- How and when to report ethical/data integrity issues. Confidential reporting.
- Record keeping.
- Discussion regarding data integrity procedures.
- Specific examples of breaches of ethical behavior (e.g. peak shaving, altering data or computer clocks, improper macros, etc., accepting/offering kickbacks, illegal accounting practices, unfair competition/collusion)
- Internal monitoring. Investigations and data recalls.
- Consequences for infractions including potential for immediate termination, debarment, or criminal prosecution.
- Importance of proper written narration / data qualification by the analyst and project manager with respect to those cases where the data may still be usable but are in one sense or another partially deficient.

Additionally, a data integrity hotline (1-800-736-9407) is maintained by TestAmerica and administered by the Corporate Quality Department.

SECTION 18

ACCOMMODATIONS AND ENVIRONMENTAL CONDITIONS *(NELAC 5.5.3)*

18.1 OVERVIEW

The laboratory is a 14,000 ft^2 secure laboratory facility with controlled access and designed to accommodate an efficient workflow and to provide a safe and comfortable work environment for employees. All visitors sign in and are escorted by laboratory personnel. Access is controlled by various measures.

The laboratory is equipped with structural safety features. Each employee is familiar with the location, use, and capabilities of general and specialized safety features associated with their workplace. The laboratory provides and requires the use of protective equipment including safety glasses, protective clothing, gloves, etc., OSHA and other regulatory agency guidelines regarding required amounts of bench and fume hood space, lighting, ventilation (temperature and humidity controlled), access, and safety equipment are met or exceeded.

Traffic flow through sample preparation and analysis areas is minimized to reduce the likelihood of contamination. Adequate floor space and bench top area is provided to allow unencumbered sample preparation and analysis space. Sufficient space is also provided for storage of reagents and media, glassware, and portable equipment. Ample space is also provided for refrigerated sample storage before analysis and archival storage of samples after analysis. Laboratory HVAC and deionized water systems are designed to minimize potential trace contaminants.

The laboratory is separated into specific areas for sample receiving, sample preparation, volatile organic sample analysis, non-volatile organic sample analysis, inorganic sample analysis, and administrative functions.

18.2 ENVIRONMENT

Laboratory accommodation, test areas, energy sources, lighting are adequate to facilitate proper performance of tests. The facility is equipped with heating, ventilation, and air conditioning (HVAC) systems appropriate to the needs of environmental testing performed at this laboratory.

The environment in which these activities are undertaken does not invalidate the results or adversely affect the required accuracy of any measurements.

The laboratory provides for the effective monitoring, control and recording of environmental conditions that may effect the results of environmental tests as required by the relevant specifications, methods, and procedures. Such environmental conditions include humidity, voltage, temperature, and vibration levels in the laboratory.

When any of the method or regulatory required environmental conditions change to a point where they may adversely affect test results, analytical testing will be discontinued until the environmental conditions are returned to the required levels.

Environmental conditions of the facility housing the computer network and LIMS are regulated to protect against raw data loss.

18.3 WORK AREAS

There is effective separation between neighboring areas when the activities therein are incompatible with each other. Examples include:

- Volatile organic chemical handling areas, including sample preparation and waste disposal, and volatile organic chemical analysis areas. The volatile analysis laboratory containing GC/MS instrumentation has a separate air handling system which is maintained at a positive pressure at all times. The organic sample preparation laboratory has a separate HVAC system that creates negative pressure in the area. This design results in a contaminant-free environment for trace level volatile analysis.

Access to and use of all areas affecting the quality of analytical testing is defined and controlled by secure access to the laboratory building as described below in the Building Security section.

Adequate measures are taken to ensure good housekeeping in the laboratory and to ensure that any contamination does not adversely affect data quality. These measures include regular cleaning to control dirt and dust within the laboratory.

Work areas are available to ensure an unencumbered work area. Work areas include:

- Access and entryways to the laboratory.
- Sample receipt areas.
- Sample storage areas.
- Chemical and waste storage areas.
- Data handling and storage areas.
- Sample processing areas.
- Sample analysis areas.

18.4 FLOOR PLAN

A floor plan can be found in Appendix 1.

18.5 BUILDING SECURITY

Building keys are distributed to employees as necessary.

Visitors to the laboratory sign in and out in a visitor's logbook. A visitor is defined as any person who visits the laboratory who is not an employee of the laboratory. In addition to signing into the laboratory, the Environmental, Health and Safety Manual contains requirements for visitors and vendors. There are specific safety forms that must be reviewed and signed.

Visitors (with the exception of company employees) are escorted by laboratory personnel at all times, or the location of the visitor is noted in the visitor's logbook.

SECTION 19

TEST METHODS AND METHOD VALIDATION *(NELAC 5.5.4)*

19.1 OVERVIEW

The laboratory uses methods that are appropriate to meet our clients' requirements and that are within the scope of the laboratory's capabilities. These include sampling, handling, transport, storage and preparation of samples, and, where appropriate, an estimation of the measurement of uncertainty as well as statistical techniques for analysis of environmental data.

Instructions are available in the laboratory for the operation of equipment as well as for the handling and preparation of samples. All instructions, Standard Operating Procedures (SOPs), reference methods and manuals relevant to the working of the laboratory are readily available to all staff. Deviations from published methods are documented (with justification) in the laboratory's approved SOPs. SOPs are submitted to clients for review at their request. Significant deviations from published methods require client approval and regulatory approval where applicable.

19.2 STANDARD OPERATING PROCEDURES (SOPS)

The laboratory maintains SOPs that accurately reflect all phases of the laboratory such as assessing data integrity, corrective actions, handling customer complaints as well as all analytical methods and sampling procedures. The method SOPs are derived from the most recently promulgated/approved, published methods and are specifically adapted to the laboratory facility. Modifications or clarifications to published methods are clearly noted in the SOPs. All SOPs are controlled in the laboratory.

- All SOPs contain a revision number, effective date, and appropriate approval signatures. Controlled copies are available to all staff.
- Procedures for writing an SOP are incorporated by reference to TestAmerica's Corporate SOP entitled 'Writing a Standard Operating Procedure', No. CW-Q-S-002 or the laboratory's SOP entitled 'SOP for Generating SOPS, #CT-QAS-8.
- SOPs are reviewed at a minimum of every 2 years (annually for Drinking Water and DoD SOPs), and where necessary, revised to ensure continuing suitability and compliance with applicable requirements.

19.3 LABORATORY METHODS MANUAL

For each test method, the laboratory shall have available the published referenced method as well as the laboratory developed SOP.

Note: If more stringent standards or requirements are included in a mandated test method or regulation than those specified in this manual, the laboratory shall demonstrate that such requirements are met. If it is not clear which requirements are more stringent, the standard from the method or regulation is to be followed. Any exceptions or deviations from the referenced methods or regulations are noted in the specific analytical SOP.

The laboratory maintains an SOP Index for both technical and non-technical SOPs. Technical SOPs are maintained to describe a specific test method. Non-technical SOPs are maintained to describe functions and processes not related to a specific test method.

19.4 SELECTION OF METHODS

Since numerous methods and analytical techniques are available, continued communication between the client and laboratory is imperative to assure the correct methods are utilized. Once client methodology requirements are established, this and other pertinent information is summarized by the Project Manager. These mechanisms ensure that the proper analytical methods are applied when the samples arrive for log-in. For non-routine analytical services (e.g., special matrices, non-routine compound lists), the method of choice is selected based on client needs and available technology. The methods selected should be capable of measuring the specific parameter of interest, in the concentration range of interest, and with the required precision and accuracy.

19.4.1 Sources of Methods

Routine analytical services are performed using standard EPA-approved methodology. In some cases, modification of standard approved methods may be necessary to provide accurate analyses of particularly complex matrices. When the use of specific methods for sample analysis is mandated through project or regulatory requirements, only those methods shall be used.

When clients do not specify the method to be used or methods are not required, the methods used will be clearly validated and documented in an SOP and available to clients and/or the end user of the data.

The analytical methods used by the laboratory are those currently accepted and approved by the U. S. EPA and the state or territory from which the samples were collected. Reference methods include:

- *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, and Appendix A-C; 40 CFR Part 136, USEPA Office of Water. Revised as of July 1, 1995, Appendix A to Part 136 - Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (EPA 600 Series)*
- *Methods for Chemical Analysis of Water and Wastes, EPA 600 (4-79-020), 1983.*
- *Methods for the Determination of Inorganic Substances in Environmental Samples, EPA-600/R-93/100, August 1993.*
- *Methods for the Determination of Metals in Environmental Samples, EPA/600/4-91/010, June 1991. Supplement I: EPA-600/R-94/111, May 1994.*
- *Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88-039, December 1988, Revised, July 1991, Supplement I, EPA-600-4-90-020, July 1990, Supplement II, EPA-600/R-92-129, August 1992. Supplement III EPA/600/R-95/131 - August 1995 (EPA 500 Series) (EPA 500 Series methods)*
- *Technical Notes on Drinking Water Methods, EPA-600/R94-173, October 1994*
- *NIOSH Manual of Analytical Methods, 4th ed., August 1994.*

- *Statement of Work for Inorganics Analysis, ILM04.1, USEPA Contract Laboratory Program Multi-media, Multi-concentration.*
- *Statement of Work for Organics Analysis, OLM04.2, USEPA Contract Laboratory Program, Multi-media, Multi-concentration.*
- *Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration, OLMO4.1, USEPA Contract Laboratory Program, September 1998.*
- *Standard Methods for the Examination of Water and Wastewater, 18th/19th /20th edition; Eaton, A.D. Clesceri, L.S. Greenberg, A.E. Eds; American Water Works Association, Water Pollution Control Federation, American Public Health Association: Washington, D.C.*
- *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, September 1986, Final Update I, July 1992, Final Update IIA, August 1993, Final Update II, September 1994; Final Update IIB, January 1995; Final Update III, December 1996.*
- *Annual Book of ASTM Standards, American Society for Testing & Materials (ASTM), Philadelphia, PA.*
- *Code of Federal Regulations (CFR) 40, Parts 136, 141, 172, 173, 178, 179 and 261*

The laboratory reviews updated versions to all the aforementioned references for adaptation based upon capabilities, instrumentation, etc., and implements them as appropriate. As such, the laboratory strives to perform only the latest versions of each approved method as regulations allow or require.

Other reference procedures for non-routine analyses may include methods established by specific states (e.g., Underground Storage Tank methods), ASTM or equipment manufacturers. Sample type, source, and the governing regulatory agency requiring the analysis will determine the method utilized.

The laboratory shall inform the client when a method proposed by the client may be inappropriate or out of date. After the client has been informed, and they wish to proceed contrary to the laboratory's recommendation, it will be documented.

19.4.2 Demonstration of Capability

Before the laboratory may institute a new method and begin reporting results, the laboratory shall confirm that it can properly operate the method. In general, this demonstration does not test the performance of the method in real world samples, but in an applicable and available clean matrix sample. If the method is for the testing of analytes that are not conducive to spiking, demonstration of capability may be performed on quality control samples.

19.4.2.1 A demonstration of capability (Demonstration of Capability(DOC), Lab SOP # CT-RPS-7) is performed whenever there is a change in instrument type (e.g., new instrumentation), method or personnel.

19.4.2.2 The initial demonstration of capability must be thoroughly documented and approved by the Technical Director/Department Manager and QA Manager prior to independently analyzing client samples. All associated documentation must be retained in accordance with the laboratories archiving procedures.

19.4.2.3 The laboratory must have an approved SOP, demonstrate satisfactory performance, and conduct an MDL study (when applicable). There may be other requirements as stated within the published method or regulations (i.e., retention time window study).

Note: In some instances, a situation may arise where a client requests that an unusual analyte be reported using a method where this analyte is not normally reported. If the analyte is being reported for regulatory purposes, the method must meet all procedures outlined within this QA Manual (SOP, MDL, and Demonstration of Capability). If the client states that the information is not for regulatory purposes, the result may be reported as long as the following criteria are met:

- The instrument is calibrated for the analyte to be reported using the criteria for the method and ICV/CCV criteria are met (unless an ICV/CCV is not required by the method or criteria are per project DQOs).
- The laboratory's nominal or default reporting limit (RL) is equal to the quantitation limit (QL), must be at or above the lowest non-zero standard in the calibration curve and must be reliably determined. Project RLs are client specified reporting levels which may be higher than the QL. Results reported below the QL must be qualified as estimated values. Also see Section 19.6.1.3, Relationship of Limit of Detection (LOD) to Quantitation Limit (QL).
- The client request is documented and the lab informs the client of its procedure for working with unusual compounds. The final report must be footnoted: *Reporting Limit based on the low standard of the calibration curve.*

19.4.3 Initial Demonstration of Capability (IDOC) Procedures

19.4.3.1 The spiking standard used must be prepared independently from those used in instrument calibration.

19.4.3.2 The analyte(s) shall be diluted in a volume of clean matrix sufficient to prepare four aliquots at the concentration specified by a method or the laboratory SOP.

19.4.3.3 At least four aliquots shall be prepared (including any applicable clean-up procedures) and analyzed according to the test method (either concurrently or over a period of days).

19.4.3.4 Using all of the results, calculate the mean recovery in the appropriate reporting units and the standard deviations for each parameter of interest.

19.4.3.5 When it is not possible to determine the mean and standard deviations, such as for presence, absence and logarithmic values, the laboratory will assess performance against criteria described in the Method SOP.

19.4.3.6 Compare the information obtained above to the corresponding acceptance criteria for precision and accuracy in the test method (if applicable) or in laboratory generated acceptance criteria (LCS or interim criteria) if there is no mandatory criteria established. If any one of the parameters do not meet the acceptance criteria, the performance is unacceptable for that parameter.

19.4.3.7 When one or more of the tested parameters fail at least one of the acceptance criteria, the analyst must proceed according to either option listed below:

- Locate and correct the source of the problem and repeat the test for all parameters of interest beginning with 19.4.3.3 above.
- Beginning with 19.4.3.3 above, repeat the test for all parameters that failed to meet criteria. Repeated failure, however, will confirm a general problem with the measurement system. If this occurs, locate and correct the source of the problem and repeat the test for all compounds of interest beginning with 19.4.3.1 above.

Note: Results of successive LCS analyses can be used to fulfill the DOC requirement.

A certification statement (refer to Figure 19-1 as an example) shall be used to document the completion of each initial demonstration of capability. A copy of the certification is archived in the analyst's training folder.

Methods on line prior to the effective date of this Section shall be updated to the procedures outlined above as new analysts perform their demonstration of capability. A copy of the new record will replace that which was used for documentation in the past. At a minimum, the precision and accuracy of four mid-level laboratory control samples must have been compared to the laboratory's quality control acceptance limits.

19.5 LABORATORY DEVELOPED METHODS AND NON-STANDARD METHODS

Any new method developed by the laboratory must be fully defined in an SOP and validated by qualified personnel with adequate resources to perform the method. Method specifications and the relation to client requirements must be clearly conveyed to the client if the method is a non-standard method (not a published or routinely accepted method). The client must also be in agreement to the use of the non-standard method.

19.6 VALIDATION OF METHODS

Validation is the confirmation by examination and the provision of objective evidence that the particular requirements for a specific intended use are fulfilled.

All non-standard methods, laboratory designed/developed methods, standard methods used outside of their scope, and major modifications to published methods must be validated to confirm they are fit for their intended use. The validation will be as extensive as necessary to meet the needs of the given application. The results are documented with the validation procedure used and contain a statement as to the fitness for use.

19.6.1 Method Validation and Verification Activities for All New Methods

While method validation can take various courses, the following activities can be required as part of method validation. Method validation records are designated QC records and are archived accordingly.

19.6.1.1 Determination of Method Selectivity

Method selectivity is the demonstrated ability to discriminate the analyte(s) of interest from other compounds in the specific matrix or matrices from other analytes or interference. In some cases to achieve the required selectivity for an analyte, a confirmation analysis is required as part of the method.

19.6.1.2 Determination of Method Sensitivity

Sensitivity can be both estimated and demonstrated. Whether a study is required to estimate sensitivity depends on the level of method development required when applying a particular measurement system to a specific set of samples. Where estimations and/or demonstrations of sensitivity are required by regulation or client agreement, such as the procedure in 40 CFR Part 136 Appendix B, under the Clean Water Act, these shall be followed.

19.6.1.3 Relationship of Limit of Detection (LOD) to the Quantitation Limit (QL)

An important characteristic of expression of sensitivity is the difference in the LOD and the QL. The LOD is the minimum level at which the presence of an analyte can be reliably concluded. The QL is the minimum concentration of analyte that can be quantitatively determined with acceptable precision and bias. For most instrumental measurement systems, there is a region where semi-quantitative data is generated around the LOD (both above and below the estimated MDL or LOD) and below the QL. In this region, detection of an analyte may be confirmed but quantification of the analyte is unreliable within the accuracy and precision guidelines of the measurement system. When an analyte is detected below the QL, and the presence of the analyte is confirmed by meeting the qualitative identification criteria for the analyte, the analyte can be reliably reported, but the amount of the analyte can only be estimated. If data is to be reported in this region, it must be done so with a qualification that denotes the semi-quantitative nature of the result.

19.6.1.4 Determination of Interferences

A determination that the method is free from interferences in a blank matrix is performed.

19.6.1.5 Determination of Range

Where appropriate to the method, the quantitation range is determined by comparison of the response of an analyte in a curve to established or targeted criteria. Generally the upper quantitation limit is defined by highest acceptable calibration concentration. The lower quantitation limit or QL cannot be lower than the lowest non-zero calibration level, and can be constrained by required levels of bias and precision.

19.6.1.6 Determination of Accuracy and Precision

Accuracy and precision studies are generally performed using replicate analyses, with a resulting percent recovery and measure of reproducibility (standard deviation, relative standard deviation) calculated and measured against a set of target criteria.

19.6.1.7 Documentation of Method

The method is formally documented in an SOP. If the method is a minor modification of a standard laboratory method that is already documented in an SOP, an SOP Attachment describing the specific differences in the new method is acceptable in place of a separate SOP.

19.6.1.8 Continued Demonstration of Method Performance

Continued demonstration of Method Performance is addressed in the SOP. Continued demonstration of method performance is generally accomplished by batch specific QC samples such as LCS, method blanks or PT samples.

19.7 METHOD DETECTION LIMITS (MDL)/ LIMITS OF DETECTION (LOD)

Method detection limits (MDL) are initially determined in accordance with 40 CFR Part 136, Appendix B or alternatively by other technically acceptable practices that have been accepted by regulators. MDL is also sometimes referred to as Limit of Detection (LOD). The MDL theoretically represents the concentration level for each analyte within a method at which the Analyst is 99% confident that the true value is not zero. The MDL is determined for each analyte initially during the method validation process and updated as required in the analytical methods, whenever there is a significant change in the procedure or equipment, or based on project specific requirements (refer to 19.7.10). Generally, the analyst prepares at least seven replicates of solution spiked at one to five times the estimated method detection limit (most often at the lowest standard in the calibration curve) into the applicable matrix with all the analytes of interest. Each of these aliquots is extracted (including any applicable clean-up procedures) and analyzed in the same manner as the samples. Where possible, the seven replicates should be analyzed over 2-4 days to provide a more realistic MDL. To allow for some flexibility, this low level standard may be analyzed every batch or every week or some other frequency rather than doing the study all at once. In addition, a larger number of data points may be used if the appropriate t-value multiplier is used

Refer to the Corporate SOP No. CA-Q-S-006 or the laboratory's SOP No. CT-QAS-17 for details on the laboratory's MDL process.

19.8 INSTRUMENT DETECTION LIMITS (IDL)

19.8.1 The IDL is sometimes used to assess the reasonableness of the MDLs or in some cases required by the analytical method or program requirements. IDLs are most used in metals analyses but may be useful in demonstration of instrument performance in other areas.

19.8.2 IDLs are calculated to determine an instrument's sensitivity independent of any preparation method. IDLs are calculated either using 7 replicate spike analyses, like MDL but without sample preparation, or by the analysis of 10 instrument blanks and calculating 3 x the absolute value of the standard deviation.

19.8.3 If IDL is > than the MDL, it may be used as the reported MDL.

19.9 VERIFICATION OF DETECTION AND REPORTING LIMITS

19.9.1 Once an MDL is established, it must be verified, on each instrument, by analyzing a quality control sample (prepared as a sample) at approximately 2-3 times the calculated MDL

for single analyte analyses (e.g. most wet chemistry methods, Atomic Absorption, etc.) and 1-4 times the calculated MDL for multiple analyte methods (e.g. GC, GCMS, ICP, etc.). The analytes must be qualitatively identified. This verification does not apply to methods that are not readily spiked (e.g. pH, turbidity, etc.) or where the lab does not report to the MDL. If the MDL does not verify, then the lab will not report to the MDL, or redevelop their MDL or use the level where qualitative identification is established. MDLs must be verified at least annually.

19.9.2 When the laboratory establishes a quantitation limit, it must be initially verified by the analysis of a low level standard or QC sample at 1-2 times the reporting limit and annually thereafter. The annual requirement is waved for methods that have an annually verified MDL. The laboratory will comply with any regulatory requirements.

19.10 RETENTION TIME WINDOWS

Most organic analyses and some inorganic analyses use chromatography techniques for qualitative and quantitative determinations. For every chromatography analysis or as specific in the reference method, each analyte will have a specific time of elution from the column to the detector. This is known as the analyte's retention time. The variance in the expected time of elution is defined as the retention time window. As the key to analyte identification in chromatography, retention time windows must be established on every column for every analyte used for that method. These records are kept with the files associated with an instrument for later quantitation of the analytes. Complete details are available in the laboratory SOPs.

19.11 EVALUATION OF SELECTIVITY

The laboratory evaluates selectivity by following the checks within the applicable analytical methods, which include mass spectral tuning, second column confirmation, ICP interelement interference checks, chromatography retention time windows, sample blanks, spectrochemical, atomic absorption and specific electrode response factors.

19.12 ESTIMATION OF UNCERTAINTY OF MEASUREMENT

19.12.1 Uncertainty is "a parameter associated with the result of a measurement, that characterizes the dispersion of the values that could reasonably be attributed to the measurand" (as defined by the International Vocabulary of Basic and General Terms in Metrology, ISO Geneva, 1993, ISBN 92-67-10175-1). Knowledge of the uncertainty of a measurement provides additional confidence in a result's validity. Its value accounts for all the factors which could possibly affect the result, such as adequacy of analyte definition, sampling, matrix effects and interferences, climatic conditions, variances in weights, volumes, and standards, analytical procedure, and random variation. Some national accreditation organizations require the use of an "expanded uncertainty": the range within which the value of the measurand is believed to lie within at least a 95% confidence level with the coverage factor k=2.

19.12.2 Uncertainty is not error. Error is a single value, the difference between the true result and the measured result. On environmental samples, the true result is never known. The measurement is the sum of the unknown true value and the unknown error. Unknown error is a combination of systematic error, or bias, and random error. Bias varies predictably, constantly, and independently from the number of measurements. Random error is unpredictable,

assumed to be Gaussian in distribution, and reducible by increasing the number of measurements.

19.12.3 The minimum uncertainty associated with results generated by the laboratory can be determined by using the Laboratory Control Sample (LCS) accuracy range for a given analyte. The LCS limits are used to assess the performance of the measurement system since they take into consideration all of the laboratory variables associated with a given test over time (except for variability associated with the sampling and the variability due to matrix effects). The percent recovery of the LCS is compared either to the method-required LCS accuracy limits or to the statistical, historical, in-house LCS accuracy limits.

19.12.4 To calculate the uncertainty for the specific result reported, multiply the result by the decimal of the lower end of the LCS range percent value for the lower end of the uncertainty range, and multiply the result by the decimal of the upper end of the LCS range percent value for the upper end of the uncertainty range. These calculated values represent a 99%-certain range for the reported result. As an example, suppose that the result reported is 1.0 mg/l, and the LCS percent recovery range is 50 to 150%. The uncertainty range would be 0.5 to 1.5 mg/l, which could also be written as 1.0 +/- 0.5 mg/l.

19.12.5 In the case where a well recognized test method specifies limits to the values of major sources of uncertainty of measurement (e.g., 524.2, 525, etc.) and specifies the form of presentation of calculated results, no further discussion of uncertainty is required.

19.13 SAMPLE REANALYSIS GUIDELINES

Because there is a certain level of uncertainty with any analytical measurement, a sample reanalysis may result in either a higher or lower value from an initial sample analysis. There are also variables that may be present (e.g., sample homogeneity, analyte precipitation over time, etc.) that may affect the results of a reanalysis. Based on the above comments, the laboratory will reanalyze samples at a client's request with the following caveats. **Client specific Contractual Terms & Conditions for reanalysis protocols may supercede the following items.**

- Homogenous samples: If a reanalysis agrees with the original result to within the RPD limits for MS/MSD or Duplicate analyses, or within $\pm$ 1 reporting limit for samples $\leq$ 5x the reporting limit, the original analysis will be reported. At the client's request, both results may be reported on the same report but not on two separate reports.

- If the reanalysis does not agree (as defined above) with the original result, then the laboratory will investigate the discrepancy and reanalyze the sample a third time for confirmation if sufficient sample is available.

- Any potential charges related to reanalysis are discussed in the contract terms and conditions or discussed at the time of the request. The client will typically be charged for reanalysis unless it is determined that the lab was in error.

- Due to the potential for increased variability, reanalysis may not be applicable to Non-homogenous, Encore, and Sodium Bisulfate preserved samples. See the Area Supervisor or Laboratory Director/Manager if unsure.

19.14 CONTROL OF DATA

The laboratory has policies and procedures in place to ensure the authenticity, integrity, and accuracy of the analytical data generated by the laboratory.

19.14.1 Computer and Electronic Data Related Requirements

The three basic objectives of our computer security procedures and policies are shown below. More detail is outlined in SOPs for back-up recovery and archive for each of the servers. The laboratory is currently running the TALS Lims system which is a custom in-house developed LIMS system that has been highly customized to meet the needs of the laboratory. It is referred to as LIMS for the remainder of this section. The LIMS utilizes Microsoft SQL Server which is an industry standard relational database platform. It is referred to as Database for the remainder of this section.

19.14.1.1 Maintain the Database Integrity: Assurance that data is reliable and accurate through data verification (review) procedures, password-protecting access, anti-virus protection, data change requirements, as well as an internal LIMS permissions procedure.

- LIMS Database Integrity is achieved through data input validation, internal user controls, and data change requirements.
- Spreadsheets and other software developed in-house must be verified with documentation through hand calculations prior to use.

19.14.1.2 Ensure Information Availability: Protection against loss of information or service is ensured through scheduled back-ups, stable file server network architecture, secure storage of media, line filter, Uninterruptible Power Supply (UPS), and maintaining older versions of software as revisions are implemented.

19.14.1.3 Maintain Confidentiality: Ensure data confidentiality through physical access controls, and encryption of when electronically transmitting data.

19.14.2 Data Reduction

The complexity of the data reduction depends on the analytical method and the number of discrete operations involved (e.g., extractions, dilutions, instrument readings and concentrations). The analyst calculates the final results from the raw data or uses appropriate computer programs to assist in the calculation of final reportable values.

For manual data entry, e.g., Wet Chemistry, the data is reduced by the analyst and then verified by the Department Manager or alternate analyst prior to updating the data in LIMS. The spreadsheets, or any other type of applicable documents, are signed by both the analyst and alternate reviewer to confirm the accuracy of the manual entry(s).

Manual integration of peaks will be documented and reviewed and the raw data will be flagged in accordance with the TestAmerica Corporate SOP No. CA-Q-S-002, *Acceptable Manual Integration Practices.*

Analytical results are reduced to appropriate concentration units specified by the analytical method, taking into account factors such as dilution, sample weight or volume, etc. Blank correction will be applied only when required by the method or per manufacturer's indication; otherwise, it should not be performed. Calculations are independently verified by appropriate laboratory staff. Calculations and data reduction steps for various methods are summarized in the respective analytical SOPs or program requirements.

19.14.2.1 All raw data must be retained in the worklist folder, computer file (if appropriate), and/or runlog. All criteria pertinent to the method must be recorded. The documentation is recorded at the time observations or calculations are made and must be signed or initialed/dated (month/day/year). It must be easily identifiable who performed which tasks if multiple people were involved.

19.14.2.2 In general, concentration results are reported in milligrams per liter (mg/l) or micrograms per liter (µg/l) for liquids and milligrams per kilogram (mg/kg) or micrograms per kilogram (µg/kg) for solids. For values greater than 10,000 mg/l, results can be reported in percent, i.e., 10,000 mg/l = 1**%.** Units are defined in each lab SOP.

19.14.2.3 In reporting, the analyst or the instrument output records the raw data result using values of known certainty plus one uncertain digit. If final calculations are performed external to LIMS, the results should be entered in LIMS with at least three significant figures. In general, results are reported to 2 significant figures on the final report.

19.14.2.4 For those methods that do not have an instrument printout or an instrumental output compatible with the LIMS System, the raw results and dilution factors are entered directly into LIMS by the analyst, and the software calculates the final result for the analytical report. LIMS has a defined significant figure criterion for each analyte.

19.14.2.5 The laboratory strives to import data directly from instruments or calculation spreadsheets to ensure that the reported data are free from transcription and calculation errors. For those analyses with an instrumental output compatible with the LIMS, the raw results and dilution factors are transferred into LIMS electronically after reviewing the quantitation report, and removing unrequested or poor spectrally-matched compounds. The analyst prints a copy of what has been entered to check for errors. This printout and the instrument's printout of calibrations, concentrations, retention times, chromatograms, and mass spectra, if applicable, are retained with the data file. The data file is stored in a monthly folder on the instrument computer; periodically, this file is transferred to the server and, eventually, to a tape file.

19.14.3 Logbook / Worksheet Use Guidelines

Logbooks and worksheets are filled out 'real time' and have enough information on them to trace the events of the applicable analysis/task. (e.g. calibrations, standards, analyst, sample

ID, date, time on short holding time tests, temperatures when applicable, calculations are traceable, etc.)

- Corrections are made following the procedures outlined in Section 12.
- Logbooks are controlled by the QA department. A record is maintained of all logbooks in the lab.
- Unused portions of pages must be "Z"'d out, signed and dated.
- Worksheets are created with the approval of the Department Manager and QA Manager at the facility. The QA Manager controls all worksheets following the procedures in Section 6.

19.14.4 Review / Verification Procedures

Review procedures are out lined in several SOPs *[e.g. Sample Control,, Project Management]* and work instructions, to ensure that reported data are free from calculation and transcription errors, that QC parameters have been reviewed and evaluated before data is reported. The laboratory also has a corporate SOP discussing Manual Integrations to ensure the authenticity of the data CA-Q-S-002 as well as information within the analytical method SOPs discussing the reason code documentation. The general review concepts are discussed below, more specific information can be found in the SOPs.

19.14.4.1 The data review process at the laboratory starts at the Sample Control level. Sample Control personnel review chain-of-custody forms and input the sample information and required analyses into a computer LIMS. The Sample Control Supervisor reviews the transaction of the chain-of-custody forms and the inputted information. The Project Managers perform final review of the chain-of-custody forms and inputted information.

19.14.4.2 The next level of data review occurs with the Analysts. As results are generated, analysts review their work to ensure that the results generated meet QC requirements and relevant EPA methodologies. The Analysts transfer the data into the LIMS and add data qualifiers if applicable. To ensure data compliance, a different analyst performs a second level of review. Second level review is accomplished by checking reported results against raw data and evaluating the results for accuracy. During the second level review, blank runs, QA/QC check results, continuing calibration results, laboratory control samples, sample data, qualifiers and spike information are evaluated. Approximately 15% of all sample data from manual methods and from automated methods, all GC/MS spectra and all manual integrations are reviewed. Manual integrations are also electronically reviewed utilizing auditing software to help ensure compliance to ethics and manual integration policies. Issues that deem further review include the following:

- QC data are outside the specified control limits for accuracy and precision
- Reviewed sample data does not match with reported results
- Unusual detection limit changes are observed
- Samples having unusually high results
- Samples exceeding a known regulatory limit

- Raw data indicating some type of contamination or poor technique
- Inconsistent peak integration
- Transcription errors
- Results outside of calibration range

19.14.4.3 Unacceptable analytical results may require reanalysis of the samples. Any problems are brought to the attention of the Laboratory Director, Project Manager, Quality Assurance Director/Manager, Technical Manager, or Supervisor for further investigation. Corrective action is initiated whenever necessary.

19.14.4.4 The results are then entered or directly transferred into the computer database and a hard copy (or .pdf) is printed for the client.

19.14.4.5 As a final review prior to the release of the report, the Project Manager reviews the results for appropriateness and completeness. This review and approval ensures that client requirements have been met and that the final report has been properly completed. The process includes, but is not limited to, verifying that chemical relationships are evaluated, COC is followed, cover letters/ narratives are present, flags are appropriate, and project specific requirements are met.

19.14.4.6 Any project that requires a data package is subject to a tertiary data review for transcription errors and acceptable quality control requirements. The Project Manager then signs the final report. The accounting personnel also check the report for any clerical or invoicing errors. When complete, the report is sent out to the client.

19.14.4.7 A visual summary of the flow of samples and information through the laboratory, as well as data review and validation, is presented in Figure 19-2.

19.14.5 Manual Integrations

Computerized data systems provide the analyst with the ability to re-integrate raw instrument data in order to optimize the interpretation of the data. Though manual integration of data is an invaluable tool for resolving variations in instrument performance and some sample matrix problems, when used improperly, this technique would make unacceptable data appear to meet quality control acceptance limits. Improper re-integrations lead to legally indefensible data, a poor reputation, or possible laboratory decertification. Because guidelines for re-integration of data are not provided in the methods and most methods were written prior to widespread implementation of computerized data systems, the laboratory trains all analytical staff on proper manual integration techniques using TestAmerica's Corporate SOP (CA-Q-S-002). Proper manual integration documentation procedures are referenced in the applicable analytical method SOP's in the Manual integration section.

19.14.5.1 The analyst must adjust baseline or the area of a peak in some situations, for example when two compounds are not adequately resolved or when a peak shoulder needs to be separated from the peak of interest. The analyst must use professional judgment and common sense to determine when manual integrating is required.

Analysts are encouraged to ask for assistance from a senior analyst or manager when in doubt.

19.14.5.2 Analysts shall not increase or decrease peak areas to for the sole purpose of achieving acceptable QC recoveries that would have otherwise been unacceptable. The intentional recording or reporting of incorrect information (or the intentional omission of correct information) is against company principals and policy and is grounds for immediate termination.

19.14.5.3 Client samples, performance evaluation samples, and quality control samples are all treated equally when determining whether or not a peak area or baseline should be manually adjusted.

19.14.5.4 All manual integrations receive a second level review. Manual integrations must be indicated on an expanded scale "after" chromatograms such that the integration performed can be easily evaluated during data review. Expanded scale "before" chromatograms are also required for all manual integrations on QC parameters (calibrations, calibration verifications, laboratory control samples, internal standards, surrogates, etc.) unless the laboratory has another documented corporate approved procedure in place that can demonstrate an active process for detection and deterrence of improper integration practices.

Figure 19-1.
Example - Demonstration of Capability Documentation

Demonstration of Capability
Certification Statement

Laboratory Name: TestAmerica Connecticut Date:
Laboratory Address: 128 Long Hill Cross Road
Shelton, CT 06484

Method:_____
Matrix: _____

Analyst Name: _____

*Analyst Name: _____

We the undersigned certify that:

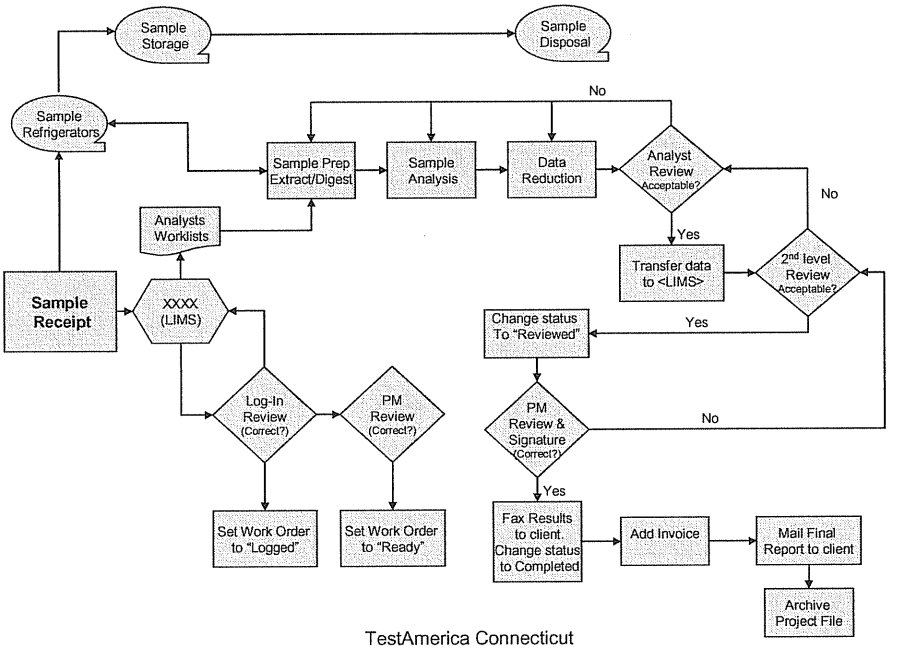
1. The analyst identified above, using the cited test method, which is in use at this facility for the analysis of samples under the National Environmental Laboratory Accreditation Program, have met the Initial Demonstration of Capability.
2. The test method was performed by the analyst identified on this certification.
3. Copies of the test method and SOP are available for all personnel on site.
4. The data associated with the DoC are true, complete and representative.
5. All raw data (including a copy of this certification form) necessary to reconstruct and validate these analyses have been retained at the facility, and that the associated information is available for review by authorized inspectors.

Laboratory Manager/Supervisor	Signature	Date
Quality Assurance Manager	Signature	Date

* second analyst if sample prepped by another person

Figure 19-2

Example: Work Flow



TestAmerica Connecticut
Workflow

SECTION 20

EQUIPMENT (AND CALIBRATIONS) *(NELAC 5.5.5)*

20.1 OVERVIEW

The laboratory purchases the most technically advanced analytical instrumentation for sample analyses. Instrumentation is purchased on the basis of accuracy, dependability, efficiency and sensitivity. Each laboratory is furnished with all items of sampling, preparation, analytical testing and measurement equipment necessary to correctly perform the tests for which the laboratory has capabilities. Each piece of equipment is capable of achieving the required accuracy and complies with specifications relevant to the method being performed. Before being placed into use, the equipment (including sampling equipment) is calibrated and checked to establish that it meets its intended specification. The calibration routines for analytical instruments establish the range of quantitation. Calibration procedures are specified in laboratory SOPs. A list of laboratory instrumentation is presented in Table 20-1.

Equipment is only operated by authorized and trained personnel. Manufacturers instructions for equipment use are readily accessible to all appropriate laboratory personnel.

20.2 PREVENTIVE MAINTENANCE

20.2.1 The laboratory follows a well-defined maintenance program to ensure proper equipment operation and to prevent the failure of laboratory equipment or instrumentation during use. This program of preventive maintenance helps to avoid delays due to instrument failure.

20.2.2 Routine preventive maintenance procedures and frequency, such as cleaning and replacements, should be performed according to the procedures outlined in the manufacturer's manual. Qualified personnel must also perform maintenance when there is evidence of degradation of peak resolution, a shift in the calibration curve, loss of sensitivity, or failure to continually meet one of the quality control criteria.

20.2.3 Table 20-2 lists examples of scheduled routine maintenance. It is the responsibility of each Department Manager to ensure that instrument maintenance logs are kept for all equipment in his/her department. Preventative maintenance procedures may be / are also outlined in analytical SOPs or instrument manuals. (Note: for some equipment, the log used to monitor performance is also the maintenance log. Multiple pieces of equipment may share the same log as long as it is clear as to which instrument is associated with an entry.)

20.2.4 Instrument maintenance logs are controlled and are used to document instrument problems, instrument repair and maintenance activities. Maintenance logs shall be kept for all major pieces of equipment. Instrument maintenance logs may also be used to specify instrument parameters.

20.2.4.1 Documentation must include all major maintenance activities such as contracted preventive maintenance and service and in-house activities such as the replacement of electrical components, lamps, tubing, valves, columns, detectors, cleaning and adjustments.

20.2.4.2 Each entry in the instrument log includes the Analyst's initials, the date, a detailed description of the problem (or maintenance needed/scheduled), a detailed explanation of the solution or maintenance performed, and a verification that the equipment is functioning properly (state what was used to determine a return to control. e.g. CCV run on *'date'* was acceptable, or instrument recalibrated on 'date' with acceptable verification, etc.) must also be documented in the instrument records.

20.2.4.3 When maintenance or repair is performed by an outside agency, service receipts detailing the service performed are filed with the Department Manager.

20.2.5 If an instrument requires repair (subjected to overloading or mishandling, gives suspect results, or otherwise has shown to be defective or outside of specified limits) it shall be taken out of operation and tagged as out-of-service or otherwise isolated until such a time as the repairs have been made and the instrument can be demonstrated as operational by calibration and/or verification or other test to demonstrate acceptable performance. The laboratory shall examine the effect of this defect on previous analyses.

20.2.6 In the event of equipment malfunction that cannot be resolved, service shall be obtained from the instrument vendor manufacturer, or qualified service technician, if such a service can be tendered. If on-site service is unavailable, arrangements shall be made to have the instrument shipped back to the manufacturer for repair. Back up instruments, which have been approved, for the analysis shall perform the analysis normally carried out by the malfunctioning instrument. If the back up is not available and the analysis cannot be carried out within the needed timeframe, the samples shall be subcontracted.

20.2.7 If an instrument is sent out for service or transferred to another facility, it must be recalibrated and verified (including new initial MDL study) prior to return to lab operations.

20.3 SUPPORT EQUIPMENT

This section applies to all devices that may not be the actual test instrument, but are necessary to support laboratory operations. These include but are not limited to: balances, ovens, refrigerators, freezers, incubators, water baths, temperature measuring devices, and volumetric dispensing devices if quantitative results are dependent on their accuracy, as in standard preparation and dispensing or dilution into a specified volume. All raw data records associated with the support equipment are retained to document instrument performance.

20.3.1 Weights and Balances

The accuracy of the balances used in the laboratory is checked every working day, before use. All balances are placed on stable counter tops.

Each balance is checked prior to initial serviceable use with at least two certified ASTM type 1 weights spanning its range of use (weights that have been calibrated to ASTM type 1 weights may also be used for daily verification). ASTM type 1 weights used only for calibration of other weights (and no other purpose) are inspected for corrosion, damage or nicks at least annually and if no damage is observed, they are calibrated at least every 5 years by an outside calibration laboratory. Any weights (including ASTM Type 1) used for daily balance checks or

other purposes are recalibrated/recertified annually to NIST standards (this may be done internally if laboratory maintains "calibration only" ASTM type 1 weights).

All balances are serviced annually by a qualified service representative, who supplies the laboratory with a certificate that identifies traceability of the calibration to the NIST standards.

All of this information is recorded in logs, and the recalibration/recertification certificates are kept on file. Refer to the SOP for Balance Calibration, CT-QAS-9 .

20.3.2 pH, Conductivity, and Turbidity Meters

The pH meters used in the laboratory are accurate to ± 0.1 pH units, and have a scale readability of at least 0.05 pH units. The meters automatically compensate for the temperature, and are calibrated with at least two working range buffer solutions before each use.

Conductivity meters are also calibrated before each use with a known standard to demonstrate the meters do not exceed an error of 1% or one umhos/cm.

Turbidity meters are also calibrated before each use. All of this information is documented in logs.

Consult pH and Conductivity, and Turbidity SOPs for further information.

20.3.3 Thermometers

All thermometers are calibrated on an annual basis with a NIST-traceable thermometer. IR thermometers, digital probes and thermocouples are calibrated quarterly.

The NIST thermometer is recalibrated every five years (unless thermometer has been exposed to temperature extremes or apparent separation of internal liquid) by an approved outside service and the provided certificate of traceability is kept on file. The NIST thermometer(s) have increments of 1 degree (0.5 degree or less increments are required for drinking water microbiological laboratories), and have ranges applicable to method and certification requirements. The NIST traceable thermometer is used for no other purpose than to calibrate other thermometers.

All of this information is documented in logbooks. Monitoring method-specific temperatures, including incubators, heating blocks, water baths, and ovens, is documented in method-specific logbooks. More information on this subject can be found in the SOP for Thermometer Calibration, CT-QAS-11.

20.3.4 Refrigerators/Freezer Units, Waterbaths, Ovens and Incubators

The temperatures of all refrigerator units and freezers used for sample and standard storage are monitored each working day.

Ovens, waterbaths and incubators are monitored on days of use.

All of this equipment has a unique identification number, and is assigned a unique thermometer for monitoring.

Sample storage refrigerator temperatures are kept between > 0ºC and ≤ 6 ºC.

Specific temperature settings/ranges for other refrigerators, ovens waterbaths, and incubators can be found in method specific SOPs.

All of this information is documented in Daily Temperature Logbooks and method-specific logbooks.

20.3.5 Autopipettors, Dilutors, and Syringes

Mechanical volumetric dispensing devices including burettes (except Class A Glassware) are given unique identification numbers and the delivery volumes are verified gravimetrically, at a minimum, on a quarterly basis. Glass micro-syringes are considered the same as Class A glassware.

For those dispensers that are not used for analytical measurements, a label is / can be applied to the device stating that it is not calibrated. Any device not regularly verified can not be used for any quantitative measurements.

Receivers are filled to the meniscus with distilled water. The water is then decanted off to a calibrated weighing vessel. The weight is recorded and is converted to the proper volume. Calibration verfication procedures can be found in specific method SOPs that use this type of glassware.

Micro-syringes are purchased from Hamilton Company. Each syringe is traceable to NIST. The laboratory keeps on file an "Accuracy and Precision Statement of Conformance" from Hamilton attesting established accuracy.

20.4 INSTRUMENT CALIBRATIONS

Calibration of analytical instrumentation is essential to the production of quality data. Strict calibration procedures are followed for each method. These procedures are designed to determine and document the method detection limits, the working range of the analytical instrumentation and any fluctuations that may occur from day to day.

Sufficient raw data records are retained to allow an outside party to reconstruct all facets of the initial calibration. Records contain, but are not limited to, the following: calibration date, method, instrument, analyst(s) initials or signatures, analysis date, analytes, concentration, response,

type of calibration (Avg RF, curve, or other calculations that may be used to reduce instrument responses to concentration.)

Sample results must be quantitated from the initial calibration and may not be quantitated from any continuing instrument calibration verification unless otherwise required by regulation, method or program.

If the initial calibration results are outside of the acceptance criteria, corrective action is performed and any affected samples are reanalyzed if possible. If the reanalysis is not possible, any data associated with an unacceptable initial calibration will be reported with appropriate data qualifiers (refer to Section 12).

Note: Instruments are calibrated initially and as needed after that and at least annually

20.4.1 CALIBRATION STANDARDS

20.4.1.1 Calibration standards are prepared using the procedures indicated in the Reagents and Standards section of the determinative method SOP.

20.4.1.2 Standards for instrument calibration are obtained from a variety of sources. All standards are traceable to national or international standards of measurement, or to national or international standard reference materials.

20.4.1.3 The lowest concentration calibration standard that is analyzed during an initial calibration must be at or below the stated reporting limit for the method based on the final volume of extract (or sample).

20.4.1.4 All initial calibrations are verified with a standard obtained from a second source and traceable to a national standard, when available (or vendor certified different lot if a second source is not available). This verification occurs immediately after the calibration curve has been analyzed, and before the analysis of any samples.

20.4.2 Calibration Verification

The calibration relationship established during the initial calibration must be verified at least daily as specified in the laboratory method SOPs in accordance with the referenced analytical methods and NELAC (2003) standard, Section 5.5.5.10. The process of calibration verification applies to both external standard and internal standard calibration techniques, as well as to linear and non-linear calibration models.

Note: The process of calibration verification referred to is fundamentally different from the approach called "calibration" in some methods. As described in those methods, the calibration factors or response factors calculated during calibration are used to update the calibration factors or response factors used for sample quantitation. This approach, while employed in other EPA programs, amounts to a daily single-point calibration.

All target analytes and surrogates, including those reported as non-detects, must be included in periodic calibration verifications for purposes of retention time confirmation and to demonstrate that calibration verification criteria are being met.

All samples must be bracketed by periodic analyses of standards that meet the QC acceptance criteria (e.g., calibration and retention time). The frequency is found in the determinative methods or SOPs.

Note: If an internal standard calibration is being used (basically GCMS) then bracketing standards are not required, only daily verifications are needed. The results from these verification standards must meet the calibration verification criteria and the retention time criteria (if applicable).

20.4.2.1 Verification of Linear Calibrations

Calibration verification for calibrations involves the calculation of the percent drift or the percent difference of the instrument response between the initial calibration and each subsequent analysis of the verification standard. (These calculations are available in the laboratory method SOPs.) Verification standards are evaluated based on the % Difference from the average CF or RF of the initial calibration or based on % Drift or % Recovery if a linear or quadratic curve is used.

20.4.2.2 Verification of a Non-Linear Calibration

Calibration verification of a non-linear calibration is performed using the percent drift or percent recovery calculations.

Regardless of whether a linear or non-linear calibration model is used, if initial verification criterion is not met, then no sample analyses may take place until the calibration has been verified or a new initial calibration is performed that meets the specifications listed in the method SOPs. If the calibration cannot be verified after the analysis of a single verification standard, then adjust the instrument operating conditions and/or perform instrument maintenance, and analyze another aliquot of the verification standard. If the calibration cannot be verified with the second standard, then a new initial calibration is performed.

20.5 TENTATIVELY IDENTIFIED COMPOUNDS (TICS) – GC/MS ANALYSIS

For samples containing components not associated with the calibration standards, a library search may be made for the purpose of tentative identification. The necessity to perform this type of identification will be determined by the purpose of the analyses being conducted. Data system library search routines should not use normalization routines that would misrepresent the library or unknown spectra when compared to each other.

Note: If the TIC compound is not part of the client target analyte list but is calibrated by the laboratory and is both qualitatively and/or quantitatively identifiable, it should not be reported as a TIC. If the compound is reported on the same form as true TICs, it should be qualified and/or narrated that the reported compound is qualitatively and quantitatively (if verification in control) reported compared to a known standard that is in control (where applicable).

For example, the RCRA permit or waste delisting requirements may require the reporting of non-target analytes. Only after visual comparison of sample spectra with the nearest library searches may the analyst assign a tentative identification.

20.6 GC/MS TUNING

Prior to any GCMS analytical sequence, including calibration, the instrument parameters for the tune and subsequent sample analyses within that sequence must be set.

Prior to tuning/auto-tuning the mass spec, the parameters may be adjusted within the specifications set by the manufacturer or the analytical method. These generally don't need any adjustment but it may be required based on the current instrument performance. If the tune verification does not pass it may be necessary to clean the source or perform additional maintenance. Any maintenance is documented in the maintenance log.

Table 20-1. Example: Instrumentation List

Instrument Type	Manufacturer	Model	Purchase Date	Autosampler	Method Performed
ICP	Thermo Jarrell Ash (61P) S/N 464790	61E Trace	1997	Yes	6010B, 200.7
ICP-MS	Agilent S/N JP51202170	7500 Series ICP-MS	2008	Yes	6020, 200.8
Mercury Analyzer	Perkin Elmer S/N 1398 509550	FIMS100	1999	Yes	7471A, 7470, 245.1
GC/MS Semivolatiles	Agilent (U) S/N US33210086	6890/5973	2004	Yes	8270C, 625, SIM
	Agilent (Z) S/N US52430633	6890/5975	2005	Yes	8270C, 625, SIM
	Agilent (A) S/N US52420834	6890/5975	2006	Yes	8270C, 625, SIM
	Agilent (C) S/N US52430481	6890/5975	2006	Yes	8270C, 625, SIM
GC/MS Volatiles	Agilent (L) S/N 3240A18492	5890/5971	1992	Yes	8260B, 624
	Agilent (O) S/N 3203A41807	5890/5971	1991	Yes	8260B, 624 – waters
	Agilent (N) S/N 3133A37851	5890/5971	1991	Yes	8260B, 624
	Agilent (W) S/N U544621422	6890/5973	2005	Yes	8260B, 624 – soils
	Agilent (Y) S/N U544621422	6890/5973	2005	Yes	8260B, 624
	Agilent (V) S/N U540620567	6890/5973	2004	Yes	8260B, 624
GC Semivolatiles	Agilent (GCX-C/D) S/N CN10832045	7890 - Dual FID	2008	Yes	CTETPH 8015B (DRO)
	Agilent (GC4C/D) S/N 3033A33529	5890II - Dual ECD	1992	Yes	8082
	Agilent (GC7C/D) S/N CN10416081	6890-Dual micro ECD	2004	Yes	8081, 8082, 608
	Agilent (GC8C/D) S/N CN10630046	6890-Dual micro ECD	2006	Yes	8081, 8082, 608
	Agilent (GC9C/D) S/N US00028263	6890-Dual micro ECD	2007	Yes	8081, 8082, 608

Instrument Type	Manufacturer	Model	Purchase Date	Autosampler	Method Performed
	Agilent (GC2C/D) S/N 3033A32099	5890II – FID	1991	Yes	CTETPH 8015B (DRO)
	Agilent (GC3) S/N 3033A32563	5890 - FID	1991	Yes	8015B (DRO)
Ion Chromatograph	Lachat S/N A83000-1476	Quickchem 8000	1999	Yes	300.0, 9056 350.1, 351.2 9012, 335.4, 353.2, 420.2
TOC	Dohrmann S/N 98315003	Phoenix 8000	2004	No	415.2, 9060
	Vario Elementar III S/N 11054049	Vario EL	2005	Yes	415.2, 9060, Lloyd Kahn
TKN Digestion System	Scientific Instruments	AD-4020	1994	No	351.2, 351.3
UV/VIS	Thermo electron	Genesys 10	2006	No	7196A, 365.1 or Equiv.
UV/VIS	Buck Scientific (not in use)	HC 404	2000	No	418.1
PH Meter	Orion Research (not in use)	SA 720	1998	No	9040B, 9045C, 150.1
PH Meter	VWR	8025		No	9040B, 9045C, 150.1
Autotitrator (pH, Alkalinity, Conductance)	Man-Tech (ATZ) S/N MS-0A3-615	PC 1300-475	2003	Yes	9040B, 9045C, 150.1, 2320B, 310.1, 310.2, 2510B, 9050A, 120.1
Dissolved Oxygen Meter	YSI	51A	1994	No	405.1
Turbidimeter	HACH	2100 N	1990	No	180.1
Conductivity	Cole-Parmer	1484-20	1996	No	120.1
Automated Distillation Apparatus	Westco S/N 1028	1075 Easy Dist	2003	No	350.1, 420.2, 9066
COD	HACH	45600	1991	No	410.4
Flash Point Apparatus	ERDCO	RT-00001		No	1020
Midi Distillation Setups	Andrews Galss	110-10-R	1995	No	9012A, 335.1, 335.3
TCLP Spinners	Dayton	3M137B/5K939B	1990	No	1311, 1312
GPC	ABC	Autoprep 1000	1999	Yes	8270, 8081, 8082
Selective Chemistry Analyzer	Thermo electron S/N E1519588	Konelab Aqua 20	2004	Yes	350.1, 351.2, 353.2, 365.2
Solvent Evaporator	Horizon Technology	Speed-Vap III	2004	No	1664A
Colorimeter	Hach	DR/890		No	410.4

Table 20-2. Schedule of Routine Maintenance

Instrument	Procedure	Frequency
Leeman Mercury Analyzer	Check tubing for wear	Daily
	Replace lamps	As required
	Insert clean drying tube filled with Magnesium Perchlorate	Daily
	Fill reductant bottle with 10% Stannous Chloride	Daily
ICP	Check pump tubing	Daily
	Check liquid argon supply	Daily
	Check fluid level in waste container	Daily
	Check torch	Daily
	Check sample spray chamber for debris	Monthly
	Clean and align nebulizer	As required
	Check entrance slit for debris	Monthly
	Replace pump tubing	As required
ICP-MS	Check pump tubing	Daily
	Check liquid argon supply	Daily
	Check fluid level in waste container	Daily
	Check torch	Daily
	Check sample spray chamber for debris	Monthly
	Clean and align nebulizer	As required
	Check entrance slit for debris	Monthly
	Replace pump tubing	As required
	Clean/Replace Sample Cones/Skimmer Cones	As required
UV-Vis Spectrophotometer	Clean ambient flow cell	As required
	Precision check/alignment of flow cell	As required
	Wavelength verification check	Semi-annually
Auto Analyzers	Clean sampler	Daily
	Check all tubing	Daily
	Clean inside of colorimeter	Daily
	Clean pump well and pump rollers	Quarterly
	Clean wash fluid receptacle	Weekly
	Inspect line coils, heating baths and filters	Weekly
	Clean optics and cells	Quarterly
Agilent GC/MS	Clean injection ports	As required
	Pump oil-level check	Monthly
	Pump oil changing	Annually
	Ion source cleaning and filament replacement	As required
	Replace electron multiplier	As required
	Change exhaust trap absorbent	Every 6 months
	Inspect and refill the calibration sample vial with PFTBA	As required
	Vacuum fan grills and filters	Every 6 months
	Change liners and septum	As required
	Column replacement and conditioning	As required
	Column cutting and reinstallation	As required

Instrument	Procedure	Frequency
Gas Chromatograph	Injection port cleaning Septum replacement Check for loose/frayed wires and insulation Change/remove sections of guard column Replace connectors/liners Change/replace column(s)	As required As required As Required As Required As Required As Required
Purge and Trap concentrators/ Archon	Check purge flow Inspect line and valve temperatures Change and condition trap Adjust purge flow Rinse sample lines Bake out trap Replace lines and fittings Check syringe Check reagent water and waste bottles Autocalibrate robotic arm Replace inline filter	Daily Daily As required As required As required After each analysis, extend as needed As required Daily Daily As required As required
Electron Capture Detector (ECD)	Detector wipe test (Ni-63) Detector cleaning	Semi-annually As required
Flame Ionization Detector (FID)	Detector cleaning	As required
Balances	Class "S" traceable weight check Clean pan and check if level Field service	Daily, when used Daily At least Annually
Conductivity Meter	0.01M KCl calibration Conductivity cell cleaning	Daily As required
Turbidimeter	Check light bulb	Daily, when used
Deionized/Distilled Water	Daily conductivity check System cleaning Replace cartridge & large mixed bed resins	Daily As required As required
Drying Ovens	Temperature monitoring Temperature adjustments	Daily As required
Refrigerators/ Freezers	Temperature monitoring Temperature adjustment Defrosting/cleaning	Daily As required As required
pH/Specific Ion Meter	Calibration/check slope Clean electrode	Daily As required
BOD Incubator	Temperature monitoring Coil and incubator cleaning	Daily Monthly
Water baths	Temperature monitoring Water replaced	Daily Monthly or as needed

SECTION 21

MEASUREMENT TRACEABILITY *(NELAC 5.5.6)*

21.1 OVERVIEW

Traceability of measurements shall be assured using a system of documentation, calibration, and analysis of reference standards. Laboratory equipment that are peripheral to analysis and whose calibration is not necessarily documented in a test method analysis or by analysis of a reference standard shall be subject to ongoing certifications of accuracy. At a minimum, these must include procedures for checking specifications of ancillary equipment: balances, thermometers, temperature, Deionized (DI) and Reverse Osmosis (RO) water systems, automatic pipettes and other volumetric measuring devices. (Refer to Section 20.3). With the exception of Class A Glassware (including glass microliter syringes that have a certificate of accuracy), quarterly accuracy checks are performed for all mechanical volumetric devices. Microsyringes are verified at least semi-annually or disposed of after 6 months of use. Wherever possible, subsidiary or peripheral equipment is checked against standard equipment or standards that are traceable to national or international standards. Class A Glassware should be routinely inspected for chips, acid etching or deformity. If the Class A glassware is suspect, the accuracy of the glassware will be assessed prior to use.

21.2 NIST-TRACEABLE WEIGHTS AND THERMOMETERS

Reference standards of measurement shall be used for calibration only and for no other purpose, unless it can be shown that their performance as reference standards would not be invalidated.

For NIST-traceable weights and thermometers, the laboratory requires that all calibrations be conducted by a calibration laboratory accredited by A2LA, NVLAP (National Voluntary Laboratory Accreditation Program), APLAC (Asia-Pacific Laboratory Accreditation Cooperation), or EA (European Cooperation for Accreditation). A certificate and scope of accreditation is kept on file at the laboratory.

An external certified service engineer services laboratory balances on an annual basis. This service is documented on each balance with a signed and dated certification sticker. Balance calibrations are checked each day of use. All mercury thermometers are calibrated annually against a traceable reference thermometer. Temperature readings of ovens, refrigerators, and incubators are checked on each day of use.

21.3 REFERENCE STANDARDS / MATERIALS

Reference standards/materials, where commercially available, are traceable to certified reference materials. Commercially prepared standard materials are purchased from vendors accredited by A2LA, NVLAP, with an accompanying Certificate of Analysis that documents the standard purity. If a standard cannot be purchased from a vendor that supplies a Certificate of Analysis, the purity of the standard is documented by analysis. The receipt of all reference standards must be documented. Reference standards are labeled with a unique Standard Identification Number and expiration date. All documentation received with the reference standard is retained as a QC record and references the Standard Identification Number.

All reference, primary and working standards/materials, whether commercially purchased or laboratory prepared, must be checked regularly to ensure that the variability of the standard or material from the 'true' value does not exceed method requirements. The accuracy of calibration standards is checked by comparison with a standard from a second source. In cases where a second standard manufacturer is not available, a vendor certified different lot is acceptable for use as a second source. The appropriate Quality Control (QC) criteria for specific standards are defined in laboratory SOPs. In most cases, the analysis of an Initial Calibration Verification (ICV) or LCS (where there is no sample preparation) is used as the second source confirmation. These checks are generally performed as an integral part of the analysis method (e.g. calibration checks, laboratory control samples).

All standards and materials must be stored and handled according to method or manufacturer's requirements in order to prevent contamination or deterioration. Refer to the Corporate Environmental Health & Safety Manual or laboratory SOPs. For safety requirements, please refer to method SOPs and the laboratory Environmental Health and Safety Manual.

21.4 DOCUMENTATION AND LABELING OF STANDARDS, REAGENTS, AND REFERENCE MATERIALS

Reagents must be at a minimum the purity required in the test method. The date of reagent receipt and the expiration date are documented. The lots for most of the common solvents and acids are tested for acceptability prior to company wide purchase. (Refer to TestAmerica's Corporate SOP (CA-Q-S-001), Solvent and Acid Lot Testing and Approval.)

All manufacturer or vendor supplied Certificate of Analysis or Purity must be retained, stored appropriately, and readily available for use and inspection. These records are maintained within the departments. Records must be kept of the date of receipt and date of expiration of standards, reagents and reference materials. In addition, records of preparation of laboratory standards, reagents, and reference materials must be retained, stored appropriately, and be readily available for use and inspection. For detailed information on documentation and labeling, please refer to method specific SOPs.

Commercial materials purchased for preparation of calibration solutions, spike solutions, etc.., are usually accompanied with an assay certificate or the purity is noted on the label. If the assay purity is 96% or better, the weight provided by the vendor may be used without correction. If the assay purity is less than 96% a correction will be made to concentrations applied to solutions prepared from the stock commercial material.

21.4.1 All standards, reagents, and reference materials must be labeled in an unambiguous manner. Standards are logged into the laboratory's LIMS system, and are assigned a unique identification number. The following information is typically recorded in the electronic database within the LIMS.

- Standard ID
- Description of Standard
- Department
- Preparer's name

- Final volume and number of vials prepared
- Solvent type and lot number
- Preparation Date
- Expiration Date
- Standard source type (stock or daughter)
- Standard type (spike, surrogate, other)
- Parent standard ID (if applicable)
- Parent Standard Analyte Concentration (if applicable)
- Parent Standard Amount used (if applicable)
- Component Analytes
- Final concentration of each analyte
- Comment box (text field)

Records are maintained electronically for standard and reference material preparation. These records show the traceability to purchased stocks or neat compounds. These records also include method of preparation, date of preparation, expiration date and preparer's name or initials. Preparation procedures are provided in the Method SOPs.

21.4.2 All standards, reagents, and reference materials must be clearly labeled with a minimum of the following information:

- Expiration Date (include prep date for reagents)
- Standard ID (generated by the LIMS system)
- Special Health/Safety warnings if applicable

21.4.3 In addition, the following information may be helpful:

- Date of receipt for commercially purchased items or date of preparation for laboratory prepared items
- Date opened (for multi-use containers, if applicable)
- Description of standard (if different from manufacturer's label or if standard was prepared in the laboratory)
- Concentration (if applicable)
- Initials of analyst preparing standard or opening container

All containers of prepared reagents must include a preparation date, expiration date and an ID number to trace back to preparation.

Procedures for preparation of reagents can be found in the Method SOPs.

Standard ID numbers must be traceable through associated logbooks, worksheets and raw data.

All reagents and standards must be stored in accordance to the following priority: 1) with the manufacturer's recommendations; 2) with requirements in the specific analytical methods as specified in the laboratory SOP.

SECTION 22

SAMPLING *(NELAC 5.5.7)*

22.1 OVERVIEW

The laboratory does not provide sampling services. The laboratory's responsibility in the sample collection process lies in supplying the sampler with the necessary coolers, reagent water, sample containers, preservatives, sample labels, custody seals, COC forms, ice, and packing materials required to properly preserve, pack, and ship samples to the laboratory

22.2 SAMPLING CONTAINERS

The laboratory offers clean sampling containers for use by clients. These containers are obtained from reputable container manufacturers and meet EPA specifications as required. Any certificates of cleanliness that are provided by the supplier are maintained at the laboratory.

22.2.1 Preservatives

Upon request, preservatives are provided to the client in pre-cleaned sampling containers. In some cases containers may be purchased pre-preserved from the container supplier. Whether prepared by the laboratory or bought pre-preserved, the grades of the preservatives are at a minimum:

- Hydrochloric Acid – Reagent ACS (Certified VOA Free) or equivalent
- Methanol – Purge and Trap grade
- Nitric Acid – Instra-Analyzed or equivalent
- Sodium Bisulfate – ACS Grade or equivalent
- Sodium Hydroxide – Instra-Analyzed or equivalent
- Sulfuric Acid – Instra-Analyzed or equivalent
- Sodium Thiosulfate – ACS Grade or equivalent

22.3 DEFINITION OF HOLDING TIME

The date and time of sampling documented on the COC form establishes the day and time zero. As a general rule, when the maximum allowable holding time is expressed in "days" (e.g., 14 days, 28 days), the holding time is based on calendar day measured. Holding times expressed in "hours" (e.g., 6 hours, 24 hours, etc.) are measured from date and time zero. The first day of holding time ends twenty-four hours after sampling. Holding times for analysis include any necessary reanalysis. However there are some programs that determine holding time compliance based on the date and specific time of analysis compared to the time of sampling regardless of how long the holding time is.

22.4 SAMPLING CONTAINERS, PRESERVATION REQUIREMENTS, HOLDING TIMES

The preservation and holding time criteria used by the laboratory are derived from the source documents for the methods and are listed in the lab's SOPs. If method required holding times this info is in the SOPs or preservation requirements are not met, the reports will be qualified using a flag, footnote or case narrative. As soon as possible or "ASAP" is an EPA designation for tests for which rapid analysis is advised, but for which neither EPA nor the laboratory have a basis for a holding time.

22.5 SAMPLE ALIQUOTS / SUBSAMPLING

Taking a representative sub-sample from a container is necessary to ensure that the analytical results are representative of the sample collected in the field. The size of the sample container, the quantity of sample fitted within the container, and the homogeneity of the sample need consideration when sub-sampling for sample preparation. It is the laboratory's responsibility to take a representative subsample or aliquot of the sample provided for analysis.

Analysts should handle each sample as if it is potentially dangerous. At a minimum, safety glasses, gloves, and lab coats must be worn when preparing aliquots for analysis.

Guidelines on taking sample aliquots & subsampling are located in the SOP for Compositing, Homogenization and Subsampling Environmental Samples, # CT-SMS-11.

SECTION 23

HANDLING OF SAMPLES *(NELAC 5.5.8)*

Sample management procedures at the laboratory ensure that sample integrity and custody are maintained and documented from sampling/receipt through disposal.

23.1 CHAIN OF CUSTODY (COC)

The COC form is the written documented history of any sample and is initiated when bottles are sent to the field, or at the time of sampling. This form is completed by the sampling personnel and accompanies the samples to the laboratory where it is received and stored under the laboratory's custody. The purpose of the COC form is to provide a legal written record of the handling of samples from the time of collection until they are received at the laboratory. It also serves as the primary written request for analyses from the client to the laboratory. The COC form acts as a purchase order for analytical services when no other contractual agreement is in effect. An example of a COC form may be found in Figure 23-1.

23.1.1 Field Documentation

The information the sampler needs to provide at the time of sampling on the container label is:

- Sample identification
- Date and time
- Preservative

During the sampling process, the COC form is completed and must be legible (see Figure 23-1). This form includes information such as:

- Client name, address, phone number and fax number (if available)
- Project name and/or number
- The sample identification
- Date, time and location of sampling
- Sample collectors name
- The matrix description
- The container description
- The total number of each type of container
- Preservatives used
- Analysis requested
- Requested turnaround time (TAT)
- Any special instructions
- Purchase Order number or billing information (e.g. quote number) if available
- The date and time that each person received or relinquished the sample(s), including their signed name.

The samples are stored in a cooler with ice, as applicable, and remain solely in the possession of the client's field technician until the samples are delivered to the laboratory. The sample collector must assure that each container is in his/her physical possession or in his/her view at all times, or stored in such a place and manner to preclude tampering. The field technician relinquishes the samples in writing on the COC form to the sample control personnel at the laboratory or to a TestAmerica courier. Samples are only considered to be received by lab when personnel at the laboratory have physical contact with the samples.

Note: Independent couriers are not required to sign the COC form. The COC is usually kept in the sealed sample cooler. Airbills from the courier are stored in the log-infolder. Tracking numbesr are entered into the LIMS in the cooler receipt comments field.

23.1.2 Legal / Evidentiary Chain-of-Custody

If samples are identified for legal/evidentiary purposes on the COC, login will complete the custody seal retain the shipping record with the COC, and initiate an internal COC for laboratory use by analysts and a sample disposal record.

23.2 SAMPLE RECEIPT

Samples are received at the laboratory by designated sample receiving personnel and a unique laboratory project identification number is assigned. Each sample container shall be assigned a unique sample identification number that is cross-referenced to the client identification number such that traceability of test samples is unambiguous and documented. Each sample container is affixed with a durable sample identification label. Sample acceptance, receipt, tracking and storage procedures are summarized in the following sections.

23.2.1 Laboratory Receipt

When samples arrive at the laboratory, sample receiving personnel inspect the coolers and samples. The integrity of each sample must be determined by comparing sample labels or tags with the COC and by visual checks of the container for possible damage. Any non-conformance, irregularity, or compromised sample receipt must be documented in the LIMS sample Receipt check list and brought to the immediate attention of the Project Manager and subsequently the Client. The COC, shipping documents, documentation of any non-conformance, irregularity, or compromised sample receipt, record of client contact, and resulting instructions become part of the project record.

23.2.1.1 Sample Acceptance Policy

The laboratory has a written sample acceptance policy (Figure 23-2) that clearly outlines the circumstances under which samples shall be accepted or rejected. These include:

- a COC filled out completely;
- samples must be properly labeled;
- proper sample containers with adequate volume for the analysis (Sampling Guide) and necessary QC;

- samples must be preserved according to the requirements of the requested analytical method (Sampling Guide);
- sample holding times must be adhered to (Sampling Guide);
- all samples submitted for water/solid Volatile Organic analyses must have a Trip Blank submitted at the same time;
- Apparent tampering of cooler and/or samples
- Temperature specifications not met
- the project manager will be notified if any sample is received in damaged condition.

Data from samples which do not meet these criteria are flagged and the nature of the variation from policy is defined. A copy of the sample acceptance policy is provided to each client prior to shipment of samples.

23.2.1.2 After inspecting the samples, the sample receiving personnel sign and date the COC form, make any necessary notes of the samples' conditions and store them in appropriate refrigerators or storage locations.

23.2.1.3 Any deviations from these checks that question the suitability of the sample for analysis, or incomplete documentation as to the tests required will be resolved by consultation with the client. If the sample acceptance policy criteria are not met, the laboratory shall either:

- Retain all correspondence and/or records of communications with the client regarding the disposition of rejected samples, or

- Fully document any decision to proceed with sample analysis that does not meet sample acceptance criteria.

Once sample acceptance is verified, the samples are logged into the LIMS according to the SOP for Sample Processing at Sample arrival, SOP No. CT-SMS-4.

23.3 SAMPLE STORAGE

In order to avoid deterioration, contamination or damage to a sample during storage and handling, from the time of receipt until all analyses are complete, samples are stored in refrigerators suitable for the sample matrix. In addition, samples to be analyzed for volatile organic parameters are stored in separate refrigerators designated for volatile organic parameters only. Samples are never to be stored with reagents, standards or materials that may create contamination.

To ensure the integrity of the samples during storage, refrigerator blanks are maintained in the volatile sample refrigerators and analyzed every two weeks.

Analysts and technicians retrieve the sample container allocated to their analysis from the designated refrigerator and place them on carts, analyze the sample, and return the remaining sample or empty container to the refrigerator from which it originally came. All unused portions of samples, including empty sample containers(for soils), are returned to the secure sample control area. Empty water containeres are disposed of by the department using the sample.

All samples are kept in the refrigerators for 30 days after invoice prior to disposal. Special arrangements may be made to store samples for longer periods of time. This extended holding period allows additional metal analyses to be performed on the archived sample and assists clients in dealing with legal matters or regulatory issues.

Access to the laboratory is controlled such that sample storage need not be locked at all times unless a project specifically demands it. Samples are accessible to laboratory personnel only. Visitors to the laboratory are prohibited from entering the refrigerator and laboratory areas unless accompanied by an employee of TestAmerica.

23.4 HAZARDOUS SAMPLES AND FOREIGN SOILS

To minimize exposure to personnel and to avoid potential accidents, hazardous and foreign soil samples are stored in an isolated area designated for hazardous waste only. Samples should be received into the lab as outlined in the SOPs for sample receiving.

If samples are received with additional paperwork indicating samples are from foreign sources then the samples must be handled and disposed of accordingly. Foreign source samples must be identified as needing special handling upon disposal by placing a green sticker on the top of the jar lid. Mixed waste radiological samples are identified with an orange sticker.

Foreign soil samples are autoclaved then sent out for incineration by a USDA-approved waste hauler.

23.5 SAMPLE SHIPPING

In the event that the laboratory needs to ship samples, the samples are placed in a cooler with enough ice to ensure the samples remain just above freezing and at or below 6.0°C during transit. The samples are carefully surrounded by packing material to avoid breakage (yet maintain appropriate temperature). A trip blank is enclosed for those samples requiring water/solid volatile organic analyses. The chain-of-custody form is signed by the sample control technician and attached to the shipping paperwork. Samples are generally shipped overnight express or hand-delivered by a TestAmerica courier to maintain sample integrity. All personnel involved with shipping and receiving samples must be trained to maintain the proper chain-of-custody documentation and to keep the samples intact and on ice. The Environmental, Health and Safety Manual contains additional shipping requirements.

23.6 SAMPLE DISPOSAL

Samples should be retained for a minimum of 30 days after the project report is sent, however, provisions may be made for earlier disposal of samples once the holding time is exceeded. Some samples are required to be held for longer periods based on regulatory or client requirements (e.g., 60 days after project report is sent). The laboratory must follow the longer sample retention requirements where required by regulation or client agreement. Several possibilities for sample disposal exist: the sample may be consumed completely during analysis, the sample may be returned to the customer or location of sampling for disposal, or the sample may be disposed of in accordance with the laboratory's waste disposal procedures (SOP for Sample Disposal: #CT-SMS-14. All procedures in the laboratory Environmental, Health and Safety Manual are followed during disposal. Samples are normally maintained in the laboratory

no longer than three months from receipt unless otherwise requested. Unused portions of samples found or suspected to be hazardous according to state or federal guidelines may be returned to the client upon completion of the analytical work.

If a sample is part of a known litigation, the affected legal authority, sample data user, and/or submitter of the sample must participate in the decision about the sample's disposal. All documentation and correspondence concerning the disposal decision process must be kept on file. Pertinent information includes the date of disposal, nature of disposal (such as sample depletion, hazardous waste facility disposal, return to client), names of individuals who conducted the arrangements and physically completed the task. The laboratory will remove or deface sample labels prior to disposal unless this is accomplished through the disposal method (e.g., samples are incinerated). A Waste Disposal Record should be completed.

Figure 23-1.

Example: Chain of Custody (COC)

(THIS LINE GENERATED)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Chain of Custody Record

TestAmerica Connecticut
128 Long Hill Cross Road
Shelton, CT 06484
Phone (203) 929-8140 Fax (203) 929-8142

Client Information
Client Contact: Mr. David Heuer
Company: ARCADIS U.S., Inc.
Address: 101 Fieldcrest Ave Suite 5E
City: Edison
State, Zip: NJ, 08817
Phone:
Email: david.heuer@arcadis-us.com
Project Name: Trust Maybrook
Site: New Jersey

Sampler:
Phone:
Lab PM: Dubauskas, Johanna
E-Mail: johanna.dubauskas@testamericainc.com
Carrier Tracking No(s):
COC No: 220-744.1
Page: Page 1 of 1
STL Job #:

Due Date Requested:
TAT Requested (days):
PO #: NJ000399.0008.00002
WO #:
Project #: 22000351
SSOW#:

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - Nitric
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note:
			Preservation Code:					

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Figure 23-2

Example: Sample Acceptance Policy

All incoming work will be evaluated against the criteria listed below. Where applicable, data from any samples that do not meet the criteria listed below will be noted on the laboratory report defining the nature and substance of the variation. In addition the client will be notified either by telephone, fax or e-mail ASAP after the receipt of the samples.

1) Samples must arrive with labels intact with a Chain of Custody filled out completely. The following information must be recorded.
   - *Client name, address, phone number and fax number (if available)*
   - *Project name and/or number*
   - *The sample identification*
   - *Date, time and location of sampling*
   - *The collectors name*
   - *The matrix description*
   - *The container description*
   - *The total number of each type of container*
   - *Preservatives used*
   - *Analysis requested*
   - *Requested turnaround time (TAT)*
   - *Any special instructions*
   - *Purchase Order number or billing information (e.g. quote number) if available*
   - *The date and time that each person received or relinquished the sample(s), including their signed name.*
   - ***The date and time of receipt must be recorded between the last person to relinquish the samples and the person who receives the samples in the lab, and they must be exactly the same.***
   - **Information must be legible**

2) Samples must be properly labeled.
   - Use durable labels (labels provided by TestAmerica are preferred)
   - Include a unique identification number
   - Include sampling date and time & sampler ID
   - Include preservative used.
   - Use indelible ink
   - **Information must be legible**

3) Proper sample containers with adequate volume for the analysis and necessary QC are required for each analysis requested. See Lab Sampling Guide.

4) Samples must be preserved according to the requirements of the requested analytical method (See Sampling Guide.
5) Most analytical methods require chilling samples to 4° C (other than water samples for metals analysis). For these methods, the criteria are met if the samples are chilled to below 6° C. **Note:** Samples that are hand delivered to the laboratory immediately after collection may not have had time

to cool sufficiently. In this case the samples will be considered acceptable as long as there is evidence that the chilling process has begun (arrival on ice).

- Chemical preservation (pH) will be verified upon receipt with the exception of volatiles and the project manager will be notified immediately if there is a discrepancy. Improperly preserved samples will be adjusted and recorded through a preservative sheet and NCM.

6) Sample Holding Times
   - TestAmerica will make every effort to analyze samples within the regulatory holding time. Samples must be received in the laboratory with enough time to perform the sample analysis. Except for short holding time samples (< 48hr HT) sample must be received with at least 48 hrs (working days) remaining on the holding time for us to ensure analysis.

   - Analyses that are designated as "field" analyses (Odor, pH, Dissolved Oxygen, Disinfectant Residual; a.k.a. Residual Chlorine, and Redox Potential) should be analyzed ASAP by the field sampler prior to delivering to the lab (within 15 minutes). However, if the analyses are to be performed in the laboratory, TestAmerica will make every effort to analyze the samples within 24 hours from receipt of the samples in the testing laboratory. Samples for "field" analyses received after 4:00 pm on Friday or on the weekend will be analyzed no later than the next business day after receipt (Monday unless a holiday). Samples will remain refrigerated and sealed until the time of analysis. Samples analyzed in the laboratory will be qualified on the final report with an 'H' to indicate holding time exceedance.

7) The project manager will be notified if any sample is received in damaged condition. TestAmerica will request that a sample be resubmitted for analysis.

8) Recommendations for packing samples for shipment.

   - Pack samples in Ice rather than "Blue" ice packs.

   - Soil samples should be placed in bubble wrap or bubble bags to help prevent breakage upon shipment. TestAmerica will supply these bags with the bottle order.

   - Water samples would be best if wrapped with bubble-wrap or bubble bags to help prevent breakage upn shipment. TestAmerica will supply these bags with the bottle order.

   - Fill extra cooler space with bubble wrap.

Figure 23-3.

Example: Cooler Receipt Form

TestAmerica - Connecticut
Internal Chain-of-Custody

Trip Blank:

QC: Air: Date Received:

FB: Sample #s:

Soil: Water: Locations:

Laboratory Sample #	Relinquished by	Accepted by	Date	Time	Reason	Relinquished by	Accepted by	Date	Time

TestAmerica Form# SMF00508.CT

SECTION 24

ASSURING THE QUALITY OF TEST RESULTS *(NELAC 5.5.9)*

24.1 OVERVIEW

In order to assure our clients of the validity of their data, the laboratory continuously evaluates the quality of the analytical process. The analytical process is controlled not only by instrument calibration as discussed in Section 20, but also by routine process quality control measurements (e.g. Blanks, Laboratory Control Samples (LCS), Matrix Spikes (MS), duplicates (DUP), surrogates, Internal Standards (IS)). These quality control checks are performed as required by the method or regulations to assess precision and accuracy. In addition to the routine process quality control samples, Proficiency Testing (PT) Samples (concentrations unknown to laboratory) are analyzed to help ensure laboratory performance.

24.2 CONTROLS

Sample preparation or pre-treatment is commonly required before analysis. Typical preparation steps include homogenization, grinding, solvent extraction, sonication, acid digestion, distillation, reflux, evaporation, drying and ashing. During these pre-treatment steps, samples are arranged into discreet manageable groups referred to as preparation (prep) batches. Prep batches provide a means to control variability in sample treatment. Control samples are added to each prep batch to monitor method performance and are processed through the entire analytical procedure with investigative/field samples.

24.3 NEGATIVE CONTROLS

Table 24-1. Example – Negative Controls

Control Type	Details
Method Blank (MB)	are used to assess preparation and analysis for possible contamination during the preparation and processing steps.
	The specific frequency of use for method blanks during the analytical sequence is defined in the specific standard operating procedure for each analysis. Generally it is 1 for each batch of samples; not to exceed 20 environmental samples.
	The method blank is prepared from a clean matrix similar to that of the associated samples that is free from target analytes (e.g., Reagent water, Ottawa sand, glass beads, etc.) and is processed along with and under the same conditions as the associated samples. The method blank goes through all of the steps of the process (including as necessary: filtration, clean-ups, etc.).
Calibration Blanks	are prepared and analyzed along with calibration standards where applicable. They are prepared using the same reagents that are used to prepare the standards. In some analyses the calibration blank may be included in the calibration curve.
Instrument Blanks	are blank reagents or reagent water that may be processed during an analytical sequence in order to assess contamination in the analytical system. In general, instrument blanks are used to differentiate between contamination caused by the analytical system and that caused by the sample handling or sample prep process. Instrument blanks may also be inserted throughout the analytical sequence to minimize the effect of carryover from samples with high analyte content.

Table 24-1. Example – Negative Controls

Control Type	Details
Trip Blank [1]	are required to be submitted by the client with each shipment of samples requiring aqueous and solid volatiles analyses. Additionally, trip blanks may be prepared and analyzed for volatile analysis of air samples, when required by the client. A trip blank may be purchased (certified clean) or is prepared by the laboratory by filling a clean container with pure deionized water that has been purged to remove any volatile compounds. Appropriate preservatives are also added to the container. The trip blank is sent with the bottle order and is intended to reflect the environment that the containers are subjected to throughout shipping and handling and help identify possible sources if contamination is found. The field sampler returns the trip blank in the cooler with the field samples.
Field Blanks [1]	are sometimes used for specific projects by the field samplers. A field blank prepared in the field by filling a clean container with pure reagent water and appropriate preservative, if any, for the specific sampling activity being undertaken. (EPA OSWER)
Equipment Blanks [1]	are also sometimes created in the field for specific projects. An equipment blank is a sample of analyte-free media which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures. (NELAC)
Holding Blanks	also referred to as refrigerator or freezer blanks, are used to monitor the sample storage units for volatile organic compounds during the storage of VOA samples in the laboratory

[1] When known, these field QC samples should not be selected for matrix QC as it does not provide information on the behavior of the target compounds in the field samples. Usually, the client sample ID will provide information to identify the field blanks with labels such as "FB", "EB", or "TB."

Evaluation criteria and corrective action for these controls are defined in the specific standard operating procedure for each analysis.

24.4 POSITIVE CONTROLS

Control samples (e.g., QC indicators) are analyzed with each batch of samples to evaluate data based upon (1) Method Performance (Laboratory Control Sample (LCS) or Blank Spike (BS)), which entails both the preparation and measurement steps; and (2) Matrix Effects (Matrix Spike (MS) or Sample Duplicate (MD, DUP), which evaluates field sampling accuracy, precision, representativeness, interferences, and the effect of the matrix on the method performed. Each regulatory program and each method within those programs specify the control samples that are prepared and/or analyzed with a specific batch

Note that frequency of control samples vary with specific regulatory, methodology and project specific criteria. Complete details on method control samples are as listed in each analytical SOP.

24.4.1 Method Performance Control - Laboratory Control Sample (LCS)

24.4.1.1 The LCS measures the accuracy of the method in a blank matrix and assesses method performance independent of potential field sample matrix affects in a laboratory batch.

24.4.1.2 The LCS is prepared from a clean matrix similar to that of the associated samples that is free from target analytes (for example: Reagent water, Ottawa sand, glass beads, etc.) and is processed along with and under the same conditions as the associated samples. The LCS is spiked with verified known amounts of analytes or is

made of a material containing known and verified amounts of analytes, taken through all preparation and analysis steps along with the field samples. Where there is no preparation taken for an analysis (such as in aqueous volatiles), or when all samples and standards undergo the same preparation and analysis process (such as Phosphorus), a calibration verification standard is reported as the LCS. In some instances where there is no practical clean solid matrix available, aqueous LCS's may be processed for solid matrices; final results may be calculated as mg/kg or ug/kg, assuming 100% solids and a weight equivalent to the aliquot used for the corresponding field samples, to facilitate comparison with the field samples.

24.4.1.3 Certified pre-made reference material purchased from a NIST/A2LA accredited vendor may also be used for the LCS when the material represents the sample matrix or the analyte is not easily spiked (e.g. solid matrix LCS for metals, TDS, etc.).

24.4.1.4 The specific frequency of use for LCS during the analytical sequence is defined in the specific standard operating procedure for each analysis. It is generally 1 for each batch of samples; not to exceed 20 environmental samples.

24.4.1.5 If the mandated or requested test method, or project requirements, do not specify the spiking components, the laboratory shall spike all reportable components to be reported in the Laboratory Control Sample (and Matrix Spike) where applicable (e.g. no spike of pH). However, in cases where the components interfere with accurate assessment (such as simultaneously spiking chlordane, toxaphene and PCBs in Method 608), the test method has an extremely long list of components or components are incompatible, at a minimum, a representative number of the listed components (see below) shall be used to control the test method. The selected components of each spiking mix shall represent all chemistries, elution patterns and masses, permit specified analytes and other client requested components. However, the laboratory shall ensure that all reported components are used in the spike mixture within a two-year time period.

24.4.1.5.1 For methods that have 1-10 target analytes, spike all components.

24.4.1.5.2 For methods that include 11-20 target analytes, spike at least 10 or 80%, whichever is greater.

24.4.1.5.3 For methods with more than 20 target analytes, spike at least 16 components.

24.4.1.5.4 Exception: Due to analyte incompatibility in pesticides, Toxaphene and Chlordane are only spiked at client request based on specific project needs.

24.4.1.5.5 Exception: Due to analyte incompatibility between the various PCB aroclors, aroclors 1016 and 1260 are used for spiking as they cover the range of all of the aroclors. Specific aroclors may be used by request on a project specific basis.

24.5 SAMPLE MATRIX CONTROLS

Table 24-2. Sample Matrix Control

Control Type	Details	
Matrix Spikes (MS)	Use	used to assess the effect sample matrix of the spiked sample has on the precision and accuracy of the results generated by the method used;
	Typical Frequency [1]	At a minimum, with each matrix-specific batch of samples processed, an MS is carried through the complete analytical procedure. Unless specified by the client, samples used for spiking are randomly selected and rotated between different client projects.If the mandated or requested test method does not specify the spiking components, the laboratory shall spike all reportable components to be reported in the Laboratory Control Sample and Matrix Spike. Refer to the method SOP for complete details
	Description	essentially a sample fortified with a known amount of the test analyte(s).
Surrogate	Use	Measures method performance to sample matrix (organics only).
	Typical Frequency [1]	Are added to all samples, standards, and blanks, for all organic chromatography methods except when the matrix precludes its use or when a surrogate is not available. The recovery of the surrogates is compared to the acceptance limits for the specific method. Poor surrogate recovery may indicate a problem with sample composition and shall be reported, with data qualifiers, to the client whose sample produced poor recovery.
	Description	Are similar to matrix spikes except the analytes are compounds with properties that mimic the analyte of interest and are unlikely to be found in environment samples.
Duplicates[2]	Use	For a measure of analytical precision, with each matrix-specific batch of samples processed, a matrix duplicate (MD or DUP) sample, matrix spike duplicate (MSD), or LCS duplicate (LCSD) is carried through the complete analytical procedure.
	Typical Frequency [1]	Duplicate samples are usually analyzed with methods that do not require matrix spike analysis.
	Description	Performed by analyzing two aliquots of the same field sample independently or an additional LCS.
Internal Standards	Use	Are spiked into all environmental and quality control samples (including the initial calibration standards) to monitor the qualitative aspect of organic and some inorganic analytical measurements.
	Typical Frequency [1]	All organic and ICP methods as required by the analytical method.
	Description	Used to correct for matrix effects and to help troubleshoot variability in analytical response and are assessed after data acquisition. Possible sources of poor internal standard response are sample matrix, poor analytical technique or instrument performance.

[1] See the specific analytical SOP for type and frequency of sample matrix control samples.

[2] LCSD's are normally not performed except when regulatory agencies or client specifications require them. The recoveries for the spiked duplicate samples must meet the same laboratory established recovery limits as the accuracy QC samples. If an LCSD is analyzed both the LCS and LCSD must meet the same recovery criteria and be included in the final report. The precision measurement is reported as "Relative Percent Difference" (RPD). Poor precision between duplicates (except LCS/LCSD) may indicate non-homogeneous matrix or sampling.

24.6 ACCEPTANCE CRITERIA (CONTROL LIMITS)

24.6.1 As mandated by the test method and regulation, each individual analyte in the LCS, MS, or Surrogate Spike is evaluated against the control limits published in the test method. Where there are no established acceptance criteria, the laboratory calculates in-house control limits with the use of control charts or, in some cases, utilizes client project specific control limits. When this occurs, the regulatory or project limits will supersede the laboratory's in-house limits.

Note: For methods, analytes and matrices with very limited data (e.g., unusual matrices not analyzed often), interim limits are established using available data or by analogy to similar methods or matrices.

24.6.2 Once control limits have been established, they are verified, reviewed, and updated if necessary on an annual basis unless the method requires more frequent updating. Control limits are established per method (as opposed to per instrument) regardless of the number of instruments utilized.

24.6.3 Laboratory generated % Recovery acceptance (control) limits are generally established by taking ± 3 Standard Deviations (99% confidence level) from the average recovery of a minimum of 20-30 data points (more points are preferred).

24.6.3.1 Regardless of the calculated limit, the limit should be no tighter than the Calibration Verification (ICV/CCV). (Unless the analytical method specifies a tighter limit).

24.6.3.2 In-house limits cannot be any wider than those mandated in a regulated analytical method. Client or contract required control limits are evaluated against the laboratory's statistically derived control limits to determine if the data quality objectives (DQOs) can be achieved. If laboratory control limits are not consistent with DQOs, then alternatives must be considered, such as method improvements or use of an alternate analytical method.

24.6.3.3 The lowest acceptable recovery limit will be 10% (the analyte must be detectable and identifiable). Exception: The lowest acceptable recovery limit for Benzidine will be 5% and the analyte must be detectable and identifiable.

24.6.3.4 The maximum acceptable recovery limit will be 150%.

24.6.3.5 The maximum acceptable RPD limit will be 35% for waters and 40% for soils. The minimum RPD limit is 10%.

24.6.3.6 If either the high or low end of the control limit changes by ≤ 5% from previous, the control chart is visually inspected and, using professional judgment, they may be left unchanged if there is no affect on laboratory ability to meet the existing limits.

24.6.4 The lab must be able to generate a current listing of their control limits and track when the updates are performed. In addition, the laboratory must be able to recreate historical control limits. Refer to the SOP for Control Charts, QAS02601.ct.

24.6.4.1 One example: The QA department generates a Quality Control Limit Summary that contains tables that summarize the precision and accuracy acceptability limits for analyses performed at TestAmerica Connecticut. This summary includes an effective date, is updated each time new limits are generated and is located with the QA manager. Unless otherwise noted, limits within these tables are laboratory generated. The analysts are instructed to use the current limits in the laboratory (dated and approved by the Technical Director and QA Manager) and entered into

the Laboratory Information Management System (LIMS). The Quality Assurance department maintains an archive of all limits used within the laboratory.

24.6.5 A LCS that is within the acceptance criteria establishes that the analytical system is in control and is used to validate the process. Samples that are analyzed with an LCS with recoveries outside of the acceptance limits may be determined as out of control and should be reanalyzed if possible. If reanalysis is not possible, then the results for all affected analytes for samples within the same batch must be qualified when reported. The internal corrective action process (see Section 12) is also initiated if an LCS exceeds the acceptance limits. Sample results may be qualified and reported without reanalysis if:

24.6.5.1 The analyte results are below the reporting limit and the LCS is above the upper control limit.

24.6.5.2 If the analytical results are above the relevant regulatory limit and the LCS is below the lower control limit.

24.6.6 If the MS/MSDs do not meet acceptance limits, the MS/MSD and the associated spiked sample is reported with a qualifier for those analytes that do not meet limits. If obvious preparation errors are suspected, or if requested by the client, unacceptable MS/MSDs are reprocessed and reanalyzed to prove matrix interference. A more detailed discussion of acceptance criteria and corrective action can be found in the lab's method SOPs and in Section 12.

24.6.7 If a surrogate standard falls outside the acceptance limits, if there is not obvious chromatographic matrix interference, reanalyze the sample to confirm a possible matrix effect. If the recoveries confirm or there was obvious chromatographic interference, results are reported from the original analysis and a qualifier is added. If the reanalysis meets surrogate recovery criteria, the second run is reported (or both are reported if requested by the client). Under certain circumstances, where all of the samples are from the same location and share similar chromatography, the reanalysis may be performed on a single sample rather than all of the samples and if the surrogate meets the recovery criteria in the reanalysis, all of the affected samples would require reanalysis.

24.7 ADDITIONAL PROCEDURES TO ASSURE QUALITY CONTROL

24.7.1 The laboratory has written and approved method SOPs to assure the accuracy of the test method including calibration (see Section 20), use of certified reference materials (see Section 21) and use of PT samples (see Section 15).

24.7.2 A discussion regarding MDLs, Limit of Detection (LOD) and Limit of Quantitation (LOQ) can be found in Section 19.

24.7.3 Use of formulae to reduce data is discussed in the method SOPs and in Section 20.

24.7.4 Selection of appropriate reagents and standards is included in Section 9 and 21.

24.7.5 A discussion on selectivity of the test is included in Section 5.

24.7.6 Constant and consistent test conditions are discussed in Section 18.

24.7.7 The laboratories sample acceptance policy is included in Section 23.

SECTION 25

REPORTING RESULTS *(NELAC 5.5.10)*

25.1 OVERVIEW

The results of each test are reported accurately, clearly, unambiguously, and objectively in accordance with State and Federal regulations as well as client requirements. Analytical results are issued in a format that is intended to satisfy customer and laboratory accreditation requirements as well as provide the end user with the information needed to properly evaluate the results. Where there is conflict between client requests and laboratory ethics or regulatory requirements, the laboratory's ethical and legal requirements are paramount, and the laboratory will work with the client during project set up to develop an acceptable solution. Refer to Section 7.

A variety of report formats are available to meet specific needs.

In cases where a client asks for simplified reports, there must be a written request from the client. There still must be enough information that would show any analyses that were out of conformance (QC out of limits) and there should be a reference to a full report that is made available to the client.

Review of reported data is included in Section 19.

25.2 TEST REPORTS

Analytical results are reported in a format that is satisfactory to the client and meets all requirements of applicable accrediting authorities and agencies. A variety of report formats are available to meet specific needs. The report is printed, reviewed, and signed by the appropriate signatory. At a minimum, the standard laboratory report shall contain the following information:

25.2.1 A report title (e.g. Analytical Report For Samples) with a "sample results" column header.

25.2.2 Each report cover page printed on company letterhead, which includes the laboratory name, address and telephone number.

25.2.3 A unique identification of the report (e.g. Job number) and on each page an identification in order to ensure the page is recognized as part of the report and a clear identification of the end.

Note: Page numbers of report are represented as page # of ##. Where the first number is the page number and the second is the total number of pages.

25.2.4 A copy of the chain of custody (COC).

- Any COCs involved with Subcontracting are included.

- Any additional addenda to the report must be treated in a similar fashion so it is a recognizable part of the report and cannot accidentally get separated from the report (eg. Sampling information).

25.2.5 The name and address of client and a project name/number, if applicable.

25.2.6 Client project manager or other contact

25.2.7 Description and unambiguous identification of the tested sample(s) including the client identification code.

25.2.8 Date of receipt of sample, date and time of collection, and date(s) of test preparation and performance, and time of preparation or analysis if the required holding time for either activity is less than or equal to 72 hours.

25.2.9 Date reported or date of revision, if applicable.

25.2.10 Method of analysis including method code (EPA, Standard Methods, etc).

25.2.11 Practical quantitation limits or reporting limit.

25.2.12 Method detection limits (if requested)

25.2.13 Definition of Data qualifiers and reporting acronyms (e.g. ND).

25.2.14 Sample results.

25.2.15 QC data consisting of method blank, surrogate, LCS, and MS/MSD recoveries and control limits.

25.2.16 Condition of samples at receipt including temperature. This may be accomplished in a narrative or by attaching sample login sheets (Refer to Sec. 25.2.4 – Item 3 regarding additional addenda).

25.2.17 A statement to the effect that the results relate only to the items tested and the sample as received by the laboratory.

25.2.18 A statement that the report shall not be reproduced except in full, without prior express written approval by the laboratory coordinator.

25.2.19 A signature and title of the person(s) accepting responsibility for the content of the report and date of issue. Signatories are appointed by the Lab Director.

25.2.20 When NELAC accreditation is required, the lab shall certify that the test results meet all requirements of NELAC or provide reasons and/or justification if they do not.

25.2.21 The laboratory includes a cover letter.

25.2.22 Where applicable, a narrative to the report that explains the issue(s) and corrective action(s) taken in the event that a specific accreditation or certification requirement was not met.

25.2.23 When soil samples are analyzed, a specific identification as to whether soils are reported on a "wet weight" or "dry weight" basis.

25.2.24 Appropriate laboratory certification number for the state of origin of the sample, if applicable.

25.2.25 If only part of the report is provided to the client (client requests some results before all of it is complete), it must be clearly indicated on the report (e.g., partial report). A complete report must be sent once all of the work has been completed.

25.2.26 Any non-TestAmerica subcontracted analysis results are provided as a separate report on the official letterhead of the subcontractor. All TestAmerica subcontracting is clearly identified on the report as to which laboratory performed a specific analysis.

Note: Refer to the Corporate SOP on Electronic Reporting and Signature Policy (No. CA-I-P-002) for details on internally applying electronic signatures of approval.

25.2.27 REPORTING LEVEL OR REPORT TYPE

The laboratory offers four levels of quality control reporting. Each level, in addition to its own specific requirements, contains all the information provided in the preceding level. The packages provide the following information in addition to the information described above:

- Level I is a report with the features described in Section 25.2 above.
- Level II is a Level I report plus summary information, including results for the method blank reported to the laboratory MDL, percent recovery for laboratory control samples and matrix spike samples, and the RPD values for all MSD and sample duplicate analyses.
- Level III contains all the information supplied in Level II, but presented on the CLP-like summary forms, and relevant calibration information. A Level II report is not included, unless specifically requested. No raw data is provided.
- Level IV is the same as Level III with the addition of all raw supporting data.

In addition to the various levels of QC packaging, the laboratory also provides reports in diskette deliverable form. Initial reports may be provided to clients by facsimile. All faxed reports are followed by hardcopy. Procedures used to ensure client confidentiality are outlined in Section 25.7.

25.2.28 Electronic Data Deliverables (EDDs)

EDDs are routinely offered as part of TestAmerica's services. TestAmerica Connecticut offers a variety of EDD formats including Environmental Restoration Information Management System (ERPIMS), NJ Haz Site, Standard Excel, Dbase, GISKEY, and EQuis.

EDD specifications are submitted to the IT department by the Data Reporting Department for review and undergo the contract review process. Once the facility has committed to providing data in a specific electronic format, the coding of the format may need to be performed. This coding is documented and validated. The validation of the code is retained by the IT staff coding the EDD.

EDDs shall be subject to a review to ensure their accuracy and completeness. If EDD generation is automated, review may be reduced to periodic screening if the laboratory can demonstrate that it can routinely generate that EDD without errors. Any revisions to the EDD format must be reviewed until it is demonstrated that it can routinely be generated without errors. If the EDD can be reproduced accurately and if all subsequent EDDs can be produced error-free, each EDD does not necessarily require a review.

25.3 SUPPLEMENTAL INFORMATION FOR TEST

The lab identifies any unacceptable QC analyses or any other unusual circumstances or observations such as environmental conditions and any non-standard conditions that may have affected the quality of a result. This is typically in the form of a footnote or a qualifier and/or a narrative explaining the discrepancy in the front of the report.

25.3.1 Numeric results with values outside of the calibration range, either high or low are qualified as 'estimated'.

25.3.2 Where quality system requirements are not met, a statement of compliance/non-compliance with requirements and/or specifications is required, including identification of test results derived from any sample that did not meet NELAC sample acceptance requirements such as improper container, holding time, or temperature.

25.3.3 Where applicable, a statement on the estimated uncertainty of measurements; information on uncertainty is needed when a client's instructions so require.

25.3.4 Opinions and Interpretations - The test report contains objective information, and generally does not contain subjective information such as opinions and interpretations. If such information is required by the client, the Laboratory Director will determine if a response can be prepared. If so, the Laboratory Director will designate the appropriate member of the management team to prepare a response. The response will be fully documented, and reviewed by the Laboratory Director, before release to the client. There may be additional fees charged to the client at this time, as this is a non-routine function of the laboratory.

Note: Review of data deliverable packages for submittal to regulatory authorities requires responses to non-conforming data concerning potential impact on data quality. This necessitates a limited scope of interpretation, and this work is performed by the QA Department. This is the only form of "interpretation" of data that is routinely performed by the laboratory.

When opinions or interpretations are included in the report, the laboratory provides an explanation as to the basis upon which the opinions and interpretations have been made. Opinions and interpretations are clearly noted as such and where applicable, a comment should be added suggesting that the client verify the opinion or interpretation with their regulator.

25.4 ENVIRONMENTAL TESTING OBTAINED FROM SUBCONTRACTORS

If the laboratory is not able to provide the client the requested analysis, the samples would be subcontracted following the procedures outlined in the Corporate SOP on Subcontracting (SOP # CA-L-S-002).

Data reported from analyses performed by a subcontractor laboratory are clearly identified as such on the analytical report provided to the client. Results from a subcontract laboratory outside of TestAmerica are reported to the client on the subcontract laboratory's original report stationary and the report includes any accompanying documentation.

25.5 CLIENT CONFIDENTIALITY

In situations involving the transmission of environmental test results by telephone, facsimile or other electronic means, client confidentiality must be maintained.

TestAmerica will not intentionally divulge to any person (other than the Client or any other person designated by the Client in writing) any information regarding the services provided by TestAmerica or any information disclosed to TestAmerica by the Client. Furthermore, information known to be potentially endangering to national security or an entity's proprietary rights will not be released.

Note: This shall not apply to the extent that the information is required to be disclosed by TestAmerica under the compulsion of legal process. TestAmerica will, to the extent feasible, provide reasonable notice to the client before disclosing the information.

Note: Authorized representatives of an accrediting authority are permitted to make copies of any analyses or records relevant to the accreditation process, and copies may be removed from the laboratory for purposes of assessment.

25.5.1 Report deliverable formats are discussed with each new client. If a client requests that reports be faxed or e-mailed, the reports are faxed with a cover sheet or e-mailed with the following note that includes a confidentiality statement similar to the following:

This material is intended only for the use of the individual(s) or entity to whom it is addressed, and may contain information that is privileged and confidential. If you are not the intended recipient, or the employee or agent responsible for delivering this material to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone at the 1-203-929-8140 (or for e-mails: please notify us immediately by e-mail or by phone (1-203-929-8140) and delete this material from any computer).

25.6 FORMAT OF REPORTS

The format of reports is designed to accommodate each type of environmental test carried out and to minimize the possibility of misunderstanding or misuse.

25.7 AMENDMENTS TO TEST REPORTS

Corrections, additions, or deletions to reports are only made when justification arises through supplemental documentation. Justification is documented using the laboratory's corrective action system (refer to Section 12).

The revised report is retained on the LIMS server, as is the original report. The revised report is stored under the Job Deliverables and identified with a revision number.

When the report is re-issued, a notation of "Revision #" is placed on the cover/signature page of the report *or at the top of the narrative page* with a brief explanation of reason for the re-issue and a reference back to the last final report generated. *For Example*: *Report was revised on 11/3/08 to include toluene in sample NQA1504 per client's request. This final report replaces the final report generated on 10/27/08 at 10:47am.*

25.8 POLICIES ON CLIENT REQUESTS FOR AMENDMENTS

25.8.1 Policy on Data Omissions or Reporting Limit Increases

Fundamentally, our policy is simply to not omit previously reported results (including data qualifiers) or to not raise reporting limits and report sample results as ND. This policy has few exceptions. Exceptions are:

- Laboratory error.
- Sample identification is indeterminate (confusion between COC and sample labels).
- An incorrect analysis (not analyte) was requested (e.g., COC lists 8315 but client wanted 8310). A written request for the change is required.
- Incorrect limits reported based on regulatory requirements.
- The requested change has absolutely *no possible* impact on the interpretation of the analytical results and there is *no possibility* of the change being interpreted as misrepresentation by anyone inside or outside of our company.

25.8.2 Multiple Reports

TestAmerica does not issue multiple reports for the same workorder where there is different information on each report (this does not refer to copies of the same report) unless required to meet regulatory needs and approved by QA.

Appendix 1.

Laboratory Floor Plan

TestAmerica
Shelton, CT

Appendix 2. Glossary/Acronyms

Glossary:

Acceptance Criteria:
Specified limits placed on characteristics of an item, process, or service defined in requirement documents. (ASQC)

Accreditation:
The process by which an agency or organization evaluates and recognizes a laboratory as meeting certain predetermined qualifications or standards, thereby accrediting the laboratory. In the context of the National Environmental Laboratory Accreditation Program (NELAP), this process is a voluntary one. (NELAC)

Accrediting Authority:
The Territorial, State, or Federal Agency having responsibility and accountability for environmental laboratory accreditation and which grants accreditation (NELAC) [1.5.2.3]

Accuracy:
The degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator. (QAMS)

Analyst:
The designated individual who performs the "hands-on" analytical methods and associated techniques and who is the one responsible for applying required laboratory practices and other pertinent quality controls to meet the required level of quality. (NELAC)

Batch:
Environmental samples which are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A preparation batch is composed of one to 20 environmental samples of the same matrix, meeting the above mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. An analytical batch is composed of prepared environmental samples (extracts, digestates or concentrates) and /or those samples not requiring preparation, which are analyzed together as a group using the same calibration curve or factor. An analytical batch can include samples originating from various environmental matrices and can exceed 20 samples. (NELAC Quality Systems Committee)

Blank:
A sample that has not been exposed to the analyzed sample stream in order to monitor contamination during sampling, transport, storage or analysis. The blank is subjected to the usual analytical and measurement process to establish a zero baseline or background value and is sometimes used to adjust or correct routine analytical results. (ASQC)

Blind Sample:
A sample for analysis with a composition known to the submitter. The analyst/laboratory may know the identity of the sample but not its composition. It is used to test the analyst's or laboratory's proficiency in the execution of the measurement process.

Calibration:
To determine, by measurement or comparison with a standard, the correct value of each scale reading on a meter, instrument, or other device. The levels of the applied calibration standard should bracket the range of planned or expected sample measurements. (NELAC)

Calibration Curve:
The graphical relationship between the known values, such as concentrations, of a series of calibration standards and their instrument response. (NELAC)

Calibration Method:
A defined technical procedure for performing a calibration. (NELAC)

Calibration Standard:
A substance or reference material used to calibrate an instrument (QAMS)

Certified Reference Material (CRM):
A reference material one or more of whose property values are certified by a technically valid procedure, accompanied by or traceable to a certificate or other documentation which is issued by a certifying body. (ISO Guide 30–2.2)

Chain of Custody:
An unbroken trail of accountability that ensures the physical security of samples and includes the signatures of all who handle the samples. (NELAC) [5.12.4]

Clean Air Act:
The enabling legislation in 42 U>S>C> 7401 et seq., Public Law 91-604, 84 Stat. 1676 Pub. L. 95-95, 91 Stat., 685 and Pub. L. 95-190, 91 Stat., 1399, as amended, empowering EPA to promulgate air quality standards, monitor and enforce them. (NELAC)

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA/SUPERFUND):
The enabling legislation in 42 U.S.C. 9601-9675 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. 9601 et seq., to eliminate the health and environmental threats posed by hazardous waste sites. (NELAC)

Compromised Samples:
Those samples which are improperly sampled, insufficiently documented (chain of custody and other sample records and/or labels), improperly preserved, collected in improper containers, or exceeding holding times when delivered to a laboratory. Under normal conditions, compromised samples are not analyzed. If emergency situation require analysis, the results must be appropriately qualified. (NELAC)

Confidential Business Information (CBI):
Information that an organization designates as having the potential of providing a competitor with inappropriate insight into its management, operation or products. NELAC and its representatives agree to safeguarding identified CBI and to maintain all information identified as such in full confidentiality.

Confirmation:
Verification of the identity of a component through the use of an approach with a different scientific principle from the original method. These may include, but are not limited to:

Second column confirmation
Alternate wavelength
Derivatization
Mass spectral interpretation
Alternative detectors or
Additional Cleanup procedures
(NELAC)

Conformance:
An affirmative indication or judgement that a product or service has met the requirements of the relevant specifications, contract, or regulation; also the state of meeting the requirements. (ANSI/ASQC E4-1994)

Correction: Actions necessary to correct or repair analysis specific non-conformances. The acceptance criteria for method specific QC and protocols as well as the associated corrective actions. The analyst will most frequently be the one to identify the need for this action as a result of calibration checks and QC sample analysis. No significant action is taken to change behavior, process or procedure.

Corrective Action:
The action taken to eliminate the causes of an existing nonconformity, defect or other undesirable situation in order to prevent recurrence. (ISO 8402)

Data Audit:
A qualitative and quantitative evaluation of the documentation and procedures associated with environmental measurements to verify that the resulting data re of acceptable quality (i.e., that they meet specified acceptance criteria). (NELAC)

Data Reduction:
The process of transforming raw data by arithmetic or statistical calculations, standard curves, concentration factors, etc., and collation into a more useable form. (EPA-QAD)

Deficiency:
An unauthorized deviation from acceptable procedures or practices, or a defect in an item. (ASQC)

Detection Limit:
The lowest concentration or amount of the target analyte that can be identified, measured, and reported with confidence that the analyte concentration is not a false positive value. See Method Detection Limit. (NELAC)

Document Control:
The act of ensuring that documents (and revisions thereto) are proposed, reviewed for accuracy, approved for release by authorized personnel, distributed properly, and controlled to ensure use of the correct version at the location where the prescribed activity if performed. (ASQC)

Duplicate Analyses:
The analyses or measurements of the variable of interest performed identically on two subsamples of the same sample. The results from duplicate analyses are used to evaluate analytical or measurement precision but not the precision of sampling, preservation or storage internal to the laboratory. (EPA-QAD)

Environmental Detection Limit (EDL):
The smallest level at which a radionuclide in an environmental medium can be unambiguously distinguished for a given confidence interval using a particular combination of sampling and measurement procedures, sample size, analytical detection limit, and processing procedure. The EDL shall be specified for the 0.95 or greater confidence interval. The EDL shall be established initially and verified annually for each test method and sample matrix. (NELAC Radioanalysis Subcommittee)

Equipment Blank:
Sample of analyte-free media which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures. (NELAC)

External Standard Calibration:
Calibrations for methods that do not utilize internal standards to compensate for changes in instrument conditions.

Federal Water Pollution Control Act (Clean Water Act, CWA):
The enabling legislation under 33 U.S.C. 1251 et seq., Public Law 92-50086 Stat 816, that empowers EPA to set discharge limitations, write discharge permits, monitor, and bring enforcement action for non-compliance. (NELAC)

Field Blank:
Blank prepared in the field by filing a clean container with pure de-ionized water and appropriate preservative, if any, for the specific sampling activity being undertaken (EPA OSWER)

Field of Testing:
NELAC's approach to accrediting laboratories by program, method and analyte. Laboratories requesting accreditation for a program-method-analyte combination or for an up-dated/improved method are required to submit to only that portion of the accreditation process not previously addressed (see NELAC, section 1.9ff). (NELAC)

Holding Times (Maximum Allowable Holding Times):
The maximum times that samples may be held prior to analyses and still be considered valid or not compromised. (40 CFR Part 136)

Internal Standard:
A known amount of standard added to a test portion of a sample and carried through the entire measurement process as a reference for evaluating and controlling the precision and bias of the applied analytical test method. (NELAC)

Internal Standard Calibration:
Calibrations for methods that utilize internal standards to compensate for changes in instrument conditions.

Instrument Blank:
A clean sample (e.g., distilled water) processed through the instrumental steps of the measurement process; used to determine instrument contamination. (EPA-QAD)

Laboratory Control Sample (however named, such as laboratory fortified blank, spiked blank, or QC check 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, taken through all preparation and analysis steps. Where there is no preparation taken for an analysis (such as in aqueous volatiles), or when all samples and standards undergo the same preparation and analysis process (such as Phosphorus), there is no LCS. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.

An LCS shall be prepared at a minimum of 1 per batch of 20 or less samples per matrix type per sample extraction or preparation method except for analytes for which spiking solutions are not available such as total suspended solids, total dissolved solids, total volatile solids, total solids, pH, color, odor, temperature, dissolved oxygen or turbidity. The results of these samples shall be used to determine batch acceptance.

Note: NELAC standards allow a matrix spike to be used in place of this control as long as the acceptance criteria are as stringent as for the LCS. (NELAC)

Laboratory Duplicate:
Aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently. (NELAC)

Least Squares Regression (1st Order Curve):
The least squares regression is a mathematical calculation of a straight line over two axes. The y axis represents the instrument response (or Response ratio) of a standard or sample and the x axis represents the concentration. The regression calculation will generate a correlation coefficient (r) that is a measure of the "goodness of fit" of the regression line to the data. A value of 1.00 indicates a perfect fit.

In order to be used for quantitative purposes, r must be greater than or equal to 0.99 for organics and 0.995 for inorganics.

Limit of Detection (LOD):
An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory dependent. (Analytical Chemistry, 55, p.2217, December 1983, modified) See also Method Detection Limit.

Matrix:
The component or substrate that contains the analyte of interest. For purposes of batch and QC requirement determinations, the following matrix distinctions shall be used:

Aqueous: Any aqueous sample excluded from the definition of Drinking Water matrix or Saline/Estuarine source. Includes surface water, groundwater, effluents, and TCLP or other extracts.

Drinking Water: any aqueous sample that has been designated as a potable or potential potable water source.

Saline/Estuarine: any aqueous sample from an ocean or estuary, or other salt water source such as the Great Salt Lake.

Non-aqueous Liquid: any organic liquid with <15% settleable solids.

Biological Tissue: any sample of a biological origin such as fish tissue, shellfish, or plant material. Such samples shall be grouped according to origin.

Solids: includes soils, sediments, sludges, and other matrices with >15% settleable solids.

Chemical Waste: a product or by-product of an industrial process that results in a matrix not previously defined.

Air: whole gas or vapor samples including those contained in flexible or rigid wall containers and the extracted concentrated analytes of interest from a gas or vapor that are collected with a sorbant tube, impinger solution, filter, or other device. (NELAC)

Matrix Spike (spiked sample or fortified 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. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency.

Matrix spikes shall be performed at a frequency of one in 20 samples per matrix type per sample extraction or preparation method except for analytes for which spiking solutions are not available such as, total suspended solids, total dissolved solids, total volatile solids, total solids, pH, color, odor, temperature, dissolved oxygen or turbidity. The selected sample(s) shall be rotated among client samples so that various matrix problems may be noted and/or addressed. Poor performance in a matrix spike may indicate a problem with the sample composition and shall be reported to the client whose sample was used for the spike. (QAMS)

Matrix Spike Duplicate (spiked sample or fortified sample duplicate):
A second replicate matrix spike is prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.

Matrix spike duplicates or laboratory duplicates shall be analyzed at a minimum of 1 in 20 samples per matrix type per sample extraction or preparation method. The laboratory shall document their procedure

to select the use of an appropriate type of duplicate. The selected sample(s) shall be rotated among client samples so that various matrix problems may be noted and/or addressed. Poor performance in the duplicates may indicate a problem with the sample composition and shall be reported to the client whose sample was used for the duplicate. (QAMS)

Method Blank:
A sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses. (NELAC)

Method Detection Limit:
The minimum concentration of a substance (an analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. (40 CFR Part 136, Appendix B)

Negative Control:
Measures taken to ensure that a test, its components, or the environment do not cause undesired effects, or produce incorrect test results. (NELAC)

Performance Audit:
The routine comparison of independently obtained qualitative and quantitative measurement system data with routinely obtained data in order to evaluate the proficiency of an analyst or laboratory. (NELAC)

Performance Based Measurement System (PBMS):
A set of processes wherein the data quality needs, mandates or limitations of a program or project are specified and serve as criteria for selecting appropriate test methods to meet those needs in a cost-effective manner. (NELAC)

Positive Control:
Measures taken to ensure that a test and/or its components are working properly and producing correct or expected results from positive test subjects. (NELAC)

Precision:
The degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance or range, in either absolute or relative terms. (NELAC)

Preservation:
Refrigeration and/or reagents added at the time of sample collection (or later) to maintain the chemical and/or biological integrity of the sample. (NELAC)

Proficiency Testing:
A means of evaluating a laboratory's performance under controlled conditions relative to a given set of criteria through analysis of unknown samples provided by an external source. (NELAC) [2.1]

Proficiency Testing Program:
The aggregate of providing rigorously controlled and standardized environmental samples to a laboratory for analysis, reporting of results, statistical evaluation of the results and the collective demographics and results summary of all participating laboratories. (NELAC)

Proficiency Test Sample (PT):
A sample, the composition of which is unknown to the analyst and is provided to test whether the analyst/laboratory can produce analytical results within specified acceptance criteria. (QAMS)

Quality Assurance:
An integrated system of activities involving planning, quality control, quality assessment, reporting and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence. (QAMS)

Quality Assurance [Project] Plan (QAPP):
A formal document describing the detailed quality control procedures by which the quality requirements defined for the data and decisions pertaining to a specific project are to be achieved. (EAP-QAD)

Quality Control:
The overall system of technical activities which purpose is to measure and control the quality of a product or service so that it meets the needs of users. (QAMS)

Quality Control Sample:
An uncontaminated sample matrix spiked with known amounts of analytes from a source independent from the calibration standards. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. (EPA-QAD)

Quality Manual:
A document stating the management policies, objectives, principles, organizational structure and authority, responsibilities, accountability, and implementation of an agency, organization, or laboratory, to ensure the quality of its product and the utility of its product to its users. (NELAC)

Quality System:
A structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC (ANSI/ASQC-E-41994)

Quantitation Limits:
The maximum or minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be quantified with the confidence level required by the data user. (NELAC)

Range:
The difference between the minimum and the maximum of a set of values. (EPA-QAD)

Reagent Blank (method reagent blank):
A sample consisting of reagent(s), without the target analyte or sample matrix, introduced into the analytical procedure at the appropriate point and carried through all subsequent steps to determine the contribution of the reagents and of the involved analytical steps. (QAMS)

Reference Material:
A material or substance one or more properties of which are sufficiently well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials. (ISO Guide 30-2.1)

Reference Standard:
A standard, generally of the highest metrological quality available at a given location, from which measurements made at that location are derived. (VIM-6.0-8)

Replicate Analyses:
The measurements of the variable of interest performed identically on two or more sub-samples of the same sample within a short time interval. (NELAC)

Report Limit (RL):
The laboratory nominal Quantitation Limit (QL) or the level of sensitivity required by the client but not lower than the LOD.

Resource Conservation and Recovery Act (RCRA):
The enabling legislation under 42 USC 321 et seq. (1976), that gives EPA the authority to control hazardous waste from the "cradle-to-grave", including its generation, transportation, treatment, storage, and disposal. (NELAC)

Safe Drinking Water Act (SDWA):
The enabling legislation, 42 USC 300f et seq. (1974), (Public Law 93-523), that requires the EPA to protect the quality of drinking water in the U.S. by setting maximum allowable contaminant levels, monitoring, and enforcing violations. (NELAC)

Sample Duplicate:
Two samples taken from and representative of the same population and carried through all steps of the sampling and analytical procedures in an identical manner. Duplicate samples are used to assess variance of the total method including sampling and analysis. (EPA-QAD)

Second Order Polynomial Curve (Quadratic): The 2nd order curves are a mathematical calculation of a slightly curved line over two axis. The y axis represents the instrument response (or Response ratio) of a standard or sample and the x axis represents the concentration. The 2nd order regression will generate a coefficient of determination (COD or r^2) that is a measure of the "goodness of fit" of the quadratic curvature the data. A value of 1.00 indicates a perfect fit. In order to be used for quantitative purposes, r^2 must be greater than or equal to 0.99.

Selectivity:
(Analytical chemistry) the capability of a test method or instrument to respond to a target substance of constituent in the presence of non-target substances. (EPA-QAD)

Sensitivity:
The capability of a method or instrument to discriminate between measurement responses representing different levels (e.g., concentrations) of a variable of interest. (NELAC)

Spike:
A known mass of target analyte added to a blank, sample or sub-sample; used to determine recovery efficiency or for other quality control purposes.

If the mandated or requested test method does not specify the spiking components, the laboratory shall spike all reportable components to be reported in the Laboratory Control Sample and Matrix Spike. However, in cases where the components interfere with accurate assessment (such as simultaneously spiking chlordane, toxaphene and PCBs in Method 608), the test method has an extremely long list of components or components are incompatible, a representative number (at a minimum 10%) of the listed components may be used to control the test method. The selected components of each spiking mix shall represent all chemistries, elution patterns and masses permit specified analytes and other client requested components. However, the laboratory shall ensure that all reported components are used in the spike mixture within a two-year time period.. (NELAC)

Standard:
The document describing the elements of laboratory accreditation that has been developed and established within the consensus principles of NELAC and meets the approval requirements of NELAC procedures and policies. (ASQC)

Standard Operating Procedures (SOPs):
A written document which details the method of an operation, analysis, or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks. (QAMS)

Standardized Reference Material (SRM):
A certified reference material produced by the U.S. National Institute of Standards and Technology or other equivalent organization and characterized for absolute content, independent of analytical method. (EPA-QAD)

Surrogate:
A substance with properties that mimic the analyte of interest. It is unlikely to be found in environment samples and is added to them for quality control purposes.

Surrogate compounds must be added to all samples, standards, and blanks, for all organic chromatography methods except when the matrix precludes its use or when a surrogate is not available. Poor surrogate recovery may indicate a problem with sample composition and shall be reported to the client whose sample produced poor recovery. (QAMS)

Systems Audit (also Technical Systems Audit):
A thorough, systematic, qualitative on-site assessment of the facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a total measurement system. (EPA-QAD)

Toxic Substances Control Act (TSCA):
The enabling legislation in 15 USC 2601 et seq., (1976) that provides for testing, regulating, and screening all chemicals produced or imported into the United States for possible toxic effects prior to commercial manufacture. (NELAC)

Traceability:
The property of a result of a measurement whereby it can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons. (VIM-6.12)

Uncertainty:
A parameter associated with the result of a measurement that characterizes the dispersion of the value that could reasonably be attributed to the measured value.

Acronyms:

BS – Blank Spike
BSD – Blank Spike Duplicate
CAR – Corrective Action Report
CCV – Continuing Calibration Verification
CF – Calibration Factor
CFR – Code of Federal Regulations
COC – Chain of Custody
CRS – Change Request Form
DOC – Demonstration of Capability
DQO – Data Quality Objectives
DU – Duplicate
DUP - Duplicate
EHS – Environment, Health and Safety
EPA – Environmental Protection Agency
GC - Gas Chromatography
GC/MS - Gas Chromatography/Mass Spectrometry
HPLC - High Performance Liquid Chromatography

ICP - Inductively Coupled Plasma Atomic Emission Spectroscopy
ICV – Initial Calibration Verification
IDL – Instrument Detection Limit
IH – Industrial Hygiene
IS – Internal Standard
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
LIMS – Laboratory Information Management System
MDL – Method Detection Limit
MS – Matrix Spike
MSD – Matrix Spike Duplicate
MSDS - Material Safety Data Sheet
NELAC - National Environmental Laboratory Accreditation Conference
NELAP - National Environmental Laboratory Accreditation Program
PT – Performance Testing
QAM – Quality Assurance Manual
QA/QC – Quality Assurance / Quality Control
QAPP – Quality Assurance Project Plan
RF – Response Factor
RPD – Relative Percent Difference
RSD – Relative Standard Deviation
SD – Standard Deviation
SOP: Standard Operating Procedure
TAT – Turn-Around-Time
VOA – Volatiles
VOC – Volatile Organic Compound

Appendix 3.

Laboratory Certifications, Accreditations, Validations

TestAmerica Connecticut maintains certifications, accreditations, certifications, and validations with numerous state and national entities. Programs vary but may include on-site audits, reciprocal agreements with another entity, performance testing evaluations, review of the QA Manual, Standard Operating Procedures, Method Detection Limits, training records, etc. At the time of this QA Manual revision, the laboratory has accreditation/certification/licensing with the following organizations:

State	Responsible Agency	Certification	Lab Number
Connecticut	Department of Health Services	Drinking Water, Wastewater	PH-0497
Maine	Department of Health and Environmental Services	Wastewater/Solid, Hazardous Waste	CT023
Massachusetts	Department of Environmental Protection	Potable/Non-Potable Water	CT023
New Hampshire	Department of Environmental Services	Drinking Water, Wastewater NELAC	2528
New Jersey	Department of Environmental Protection	Drinking Water, Wastewater **NELAC***	CT410
New York	Department of Health	CLP, Drinking Water, Wastewater, Solid/ Hazardous Waste NELAC	10602
Rhode Island	Department of Health	Chemistry...Non- Potable Water and Wastewater	A43
Utah	Department of Health	RCRA-NELAC	2032614458

The certificates and parameter lists (which may differ) for each organization may be found on the corporate web site, the laboratory's public server, the final report review table, and in the following offices: QA, marketing, and project management.

* Primary Accrediting Authority - NELAC

Appendix 4.

Laboratory Test Methods

Analysis	Method	Analysis	Method
GC/MS Volatiles Prep	5030B	COD	410.4
GC/MS Volatiles Prep	5035H	Total Residual Chlorine	SM4500CL G
GC/MS Volatiles Prep	5035L	Hexavalent Chromium	7196A
GC/MS Volatiles Prep	3585	Trivalent Chromium	SM3500 CR D
GC/MS Volatiles-TCLP	1311ZHE	Color	SM2120B
GC/MS Volatiles	624	Specific Conductance	120.1
GC/MS Volatiles	8260B	Specific Conductance	SM2510B
GC/MS Volatiles	OLM3.2	Cyanide (Amenable)	SM4500 CN G
GC/MS Volatiles	OLM4.3	Cyanide (Total)	335.4
GC/MS Volatiles	524.2	Cyanide (Total & Amenable)	9012B
GC/Svoa Prep - Waters	3510C	Free Cyanide	D4282_02
GC/Svoa Prep - Soils	3550B	CLP Cyanide	ILM4.0
GC/Svoa Prep - Soils	3541	Cyanide Prep – oils/soils	9013
GC/Svoa Prep - Oils	3580A	Ignitability	1030
Florisil Cleanup	3620B	Flashpoint	1020A
Sulfur Cleanup	3660B	Odor	140.1
Acid Cleanup	3665A	Oil & Grease	1664A
GC/Svoa/Metals TCLP Prep	1311	Dissolved Oxygen	SM4500O G
GC/Svoa/Metals SPLP Prep	1312	Nitrogen (Ammonia)	350.1
Pesticides/PCB	608	Nitrogen (Ammonia)	SM4500NH3 B&G
Pesticides	8081A	Total Kjeldahl Nitrogen	351.2
PCB's	8082	Nitrogen – Nitrate/Nitrite	353.2
DRO(Diesel Range Organics)	8015B	Organic Nitrogen	351.2
CTETPH	CTETPH	Paint Filter Liquids test	9095A
GC/MS Svoa	625	Phenolics	420.4
GC/MS Svoa	8270C	Phenolics	9066
Metals Prep – Water	3010A	Phopsphorus	SM4500 PB.5 & E
Metals Prep - Soil	3050B	Orthophosphate	365.3
Metals Analysis	200.7	pH	SM4500H+B
Metals Analysis	200.8	Filterable Residue (TDS)	SM2540C
Metals Analysis	6010B	Non-Filterable Res (TSS)	SM2540B
Metals Analysis	6020	Total Residue (TS)	SM2540B
Mercury - Water	245.1	Total Volatile Residue (TVS)	160.4
Mercury - Water	7470A	Setteable Matter, Residue	SM2540F
Mercury – Soils	7471A	Total Fixed & Vol solids	SM2540G
Hardness	SM2340B	Salinity	SM2520B
Alkalinity	SM2320B	Sulfide	SM4500 S2 E
Anions	300.0	Temperature	SM2550B
Anions	9056	TOC	SM5310C
BOD/CBOD	SM5210B	TOC	9060
		TOC	Lloyd Kahn

Appendix 4.

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Analysis	Method	Analysis	Method
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GC/MS Volatiles-TCLP	1311ZHE	Color	SM2120B
GC/MS Volatiles	624	Specific Conductance	120.1
GC/MS Volatiles	8260B	Specific Conductance	SM2510B
GC/MS Volatiles	OLM3.2	Cyanide (Amenable)	SM4500 CN G
GC/MS Volatiles	OLM4.3	Cyanide (Total)	335.4
GC/MS Volatiles	524.2	Cyanide (Total & Amenable)	9012B
GC/Svoa Prep - Waters	3510C	Free Cyanide	D4282_02
GC/Svoa Prep - Soils	3550B	CLP Cyanide	ILM4.0
GC/Svoa Prep - Soils	3541	Cyanide Prep – oils/soils	9013
GC/Svoa Prep - Oils	3580A	Ignitability	1030
Florisil Cleanup	3620B	Flashpoint	1020A
Sulfur Cleanup	3660B	Odor	140.1
Acid Cleanup	3665A	Oil & Grease	1664A
GC/Svoa/Metals TCLP Prep	1311	Dissolved Oxygen	SM4500O G
GC/Svoa/Metals SPLP Prep	1312	Nitrogen (Ammonia)	350.1
Pesticides/PCB	608	Nitrogen (Ammonia)	SM4500NH3 B&G
Pesticides	8081A	Total Kjeldahl Nitrogen	351.2
PCB's	8082	Nitrogen – Nitrate/Nitrite	353.2
DRO(Diesel Range Organics)	8015B	Organic Nitrogen	351.2
CTETPH	CTETPH	Paint Filter Liquids test	9095A
GC/MS Svoa	625	Phenolics	420.4
GC/MS Svoa	8270C	Phenolics	9066
Metals Prep – Water	3010A	Phopsphorus	SM4500 PB.5 & E
Metals Prep - Soil	3050B	Orthophosphate	365.3
Metals Analysis	200.7	pH	SM4500H+B
Metals Analysis	200.8	Filterable Residue (TDS)	SM2540C
Metals Analysis	6010B	Non-Filterable Res (TSS)	SM2540B
Metals Analysis	6020	Total Residue (TS)	SM2540B
Mercury - Water	245.1	Total Volatile Residue (TVS)	160.4
Mercury - Water	7470A	Setteable Matter, Residue	SM2540F
Mercury – Soils	7471A	Total Fixed & Vol solids	SM2540G
Hardness	SM2340B	Salinity	SM2520B
Alkalinity	SM2320B	Sulfide	SM4500 S2 E
Anions	300.0	Temperature	SM2550B
Anions	9056	TOC	SM5310C
BOD/CBOD	SM5210B	TOC	9060
		TOC	Lloyd Kahn

Appendix E

Environmental Easement (To Be Developed)

Appendix F

Annual Inspection Checklist

SITE MANAGEMENT PLAN
APPENDIX F
ANNUAL INSPECTION CHECKLIST
ONE EDGEWATER STREET
STATEN ISLAND, NEW YORK

Date:

Inspector :

Weather Conditions:

Part I. Annual Composite Cover System Inspection

1. Is the Composite Cover System damaged?
   (use back or additional sheet if necessary):

Asphalt parking lot…….……..	☐	Yes	☐	No
Concrete sidewalks……..	☐	Yes	☐	No
Concrete building slab…….	☐	Yes	☐	No

- Disturbance location/ Size / Depth:

- Did disturbance encounter soils/ groundwater with residual impacts? (refer to SMP for depth of impacted soils and groundwater) If so, notify National Grid and NYSDEC.

- If soil was removed, obtain all available information regarding excavation and soil removal including analytical sampling results.

- Photo Number(s):

- Provide a detailed description: (use back or additional sheet if necessary):

2. Are composite cover materials showing any of the following signs of wear or alteration?:

Concrete or asphalt patches…….	☐	Yes	☐	No
Settling……..	☐	Yes	☐	No
Signs of wear……	☐	Yes	☐	No
Alterations……	☐	Yes	☐	No
Other…….....	☐	Yes	☐	No

- Disturbance Location/ Size

- Did disturbance encounter soils/ groundwater with residual impacts? (Refer to SMP for depth of impacted soils and groundwater). If so, notify National Grid and NYSDEC.

- If soil was removed, obtain all available information regarding excavation and soil removal including analytical sampling results and attach available data to this inspection report.

- Photo Number(s):

- Provide a detailed description: (use back or additional sheet if necessary):

3. Are there any odors observed? ☐ Yes* ☐ No

   Describe odor: _____

   Location of odor on property: _____

4. Are there any areas of settlement and/or erosion and/or unauthorized excavations or protrusions within the area of the composite cover system relative to the as-built surface grade of the cover? ☐ Yes* ☐ No

   Describe: _____

   * If yes, describe location, size, and amount of settlement. Repair engineering control deficiencies using cover system design criteria and using similar materials as the system in place. Certification of the repair will be made by a New York-Licensed Professional Engineer or qualified environmental professional.

Part II. Monitoring Well Network Inspection

1. Describe the results of the inspection of the Monitoring Well Network; are the wells intact and functional?

   Describe:

Part III. Annual Site-Wide Inspection

1. Are all Site records up to date? (E.g. The annual Periodic Review Report)

2. Is this Site in compliance with all Institutional Controls?

3. Evaluate the condition and effectiveness of the Engineering Controls:

Part IV. Land Use Changes

1. Is the current land use of the area within the limits of the composite cover system and being used as a parking area, sidewalks and office building? ☐ Yes ☐ No

   If no, describe: _____

2. If applicable, is an environmental easement on file in the Land Division of Records of the New York City Registrar's Office? ☐ Applicable ☐ Not Applicable

   If applicable, confirm that easement and any amendments are properly recorded.

   Provide the following information for the recorded easement.
   - Book Number:_____
   - Page Number:_____
   - Date easement was filed in Registrar's office:_____

3. Have any amendments and/or additional filings been recorded that may modify or supersede the easement? ☐ Yes ☐ No

   If yes, explain:_____

Part V. Follow-up Corrective Action

Description and scheduled date of any required corrective action (erosion repair, settlement repair, unauthorized excavation repair).

Inspector's Signature: _____ Date: _____

Reviewed by: _____ Date: _____

Submit Inspection Reports to:

National Grid
Mr. Andrew Prophete
287 Maspeth Road
Brooklyn, NY 11211

H:\WPROC\Project\KEYSPAN\CLIFTON\OU-2\1 Edgewater Street SMP\Final SMP\Appendix F - Annual Insp Checklist.doc

Appendix G

Monitoring Well Installation Logs (Electronic only)

Site Id: SB-137

GEI Consultants

Client: Keyspan Energy			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/20/04	Date Completed: 05/20/04
Remarks:		Ground Elevation: 7.98'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 35.00'
		Drilling Method: Geoprobe	
		Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description: color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
			0.1 ppm		0.0–5.0: Concrete bit and hand augered for potential utility concerns. Fill included concrete slab, little silt, fine to medium sand, trace gravel, dry, no odors or visual impacts. (FI)					
5–10		66			5.0–10.0: Black to brown/black, SILT, little fine sand, trace fine and coarse gravel (angular), glass fragments and wood fragments, slightly cohesive, non-plastic, soft, wet at 7'. (FI)					
			0.1 ppm						NONE	0
10–15		4	0.0 ppm	10	10.0–15.0: Brown, SILT, little fine sand, trace fine and coarse gravel, slightly cohesive, non-plastic, wet. No odor or visual impacts. (FI) Note: Coarse-grained gravel was lodged into the shoe of the macro-core that likely reuslted in low recovery.					

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-137

GEI Consultants

Client: Keyspan Energy			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/20/04	Date Completed: 05/20/04
Remarks:		Ground Elevation: 7.98'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 35.00'
		Drilling Method: Geoprobe	
		Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description (color, density, SOIL, admixture, moisture, other notes, ORIGIN.)	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
15-20		60			15.0-16.67: Gray fine to medium, SAND, trace clay, trace wood particles, trace rounded gravel, loose, non-cohesive, non-plastic, wet. No odor or visual impacts. (SP)					
					16.67-18.34: Gray fine to medium SAND, interstratified with soft gray CLAY-SILT layer, cohesive, plastic, wet. Trace sheen on water and fuel oil like odor. (SP)					-10
			47.7 ppm		18.34-19.50: Gray fine to medium SAND, interstratified with soft gray CLAY-SILT layer, cohesive, plastic, wet. Trace bleb of fuel oil-like material and moderate petroleum-like odor. (SP)	18.5-20.0		+	MODERATE	
					19.50-20.00: Black SILT/CLAY, trace fine sand layers, cohesive, plastic, soft, grains stained with petroleum-like material, petroleum-like odor. (CH)			+		
20-25		54		20	20.0-20.74: Gray SILT/CLAY, soft, cohesive plastic, no odor or visual impacts. (CL)				NONE	
					20.74-21.11: Gray, medium SAND, well-sorted, trace clay, trace silt, non-cohesive, non-plastic, wet. (SP)				MODERATE	
					21.11-22.04: Gray SILT/CLAY, with micro layers of fine sand, soft, cohesive plastic, wet, trace sheen in micolayers, organic odor. (CH)			+		
			415 ppm		22.04-25.0: Black stained SILT and CLAY, micro layers of fine sand, trace wood, cohesive, plastic, strong tar, odor, heavy tar coated sand layer from 22.6' to 22.8', vertical tar saturated sections of silt and clay around organic matter, sheen throughout. (CH)	22.5-23.5		+	STRONG	
25-30		46			25.0-25.9: Gray, medium to coarse GRAVEL with fine SAND, little silt, dense, non-cohesive, non-plastic. (GM)				NONE	
					25.9-27.6: Gray, fine SAND, trace silt, well-sorted, cohesive, moderately dense, non-plastic, organic odor, 27.5-27.6' black stained, sticky with strong fuel oil odor. (SP)				STRONG	
			21.9 ppm		27.6-28.3: Brown PEAT, cohesive, slightly plastic, little silt, micro layers of fine sand. (PT)	27.5-28.0			NONE	-20
					28.3-30.0: Gray, SILT and CLAY, cohesive, plastic, trace fine sand, moderately dense, wet, fuel oil like odor, no visual impacts. (CL)				MODERATE	

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-137

GEI Consultants

Client: Keyspan Energy			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/20/04	Date Completed: 05/20/04
Remarks:		Ground Elevation: 7.98'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 35.00'
		Drilling Method: Geoprobe	
		Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
30-35		56			30.0-32.7: Gray, fine SAND, trace to little silt, trace clay, cohesive, slightly plastic, moist, no odors or visual impacts. (SP)				NONE	
					32.7-35.0: Red-brown, SILT, little coarse sand, trace coarse angular gravel, little coarse sand, moderately stif to stiff, moist, no odor or visual impacts. (ML)	32.0-34.0				
					35.0: End of boring.					
				40						-30

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: RW-20

GEI Consultants

Client: Keyspan Corporation			
Project Number: 98248-1007	Project Name: Clifton Former MGP	Date Started: 05/21/04	Date Completed: 05/21/04
Remarks: GEOLOGY OBTAINED FROM SB-137. OFFSET APPROXIMATELY 5' FROM SB-137. 2-5' PREPACKED SCREENS USED.		Ground Elevation: 7.96'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 33.00'
		Drilling Method: Geoprobe	
		Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description: color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Vis. Signs of Contamination	Odors	Elevation (ft)	Well Construction
				10						0	

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: RW-20

GEI Consultants

Client: Keyspan Corporation	
Project Number: 98248-1007	Project Name: Clifton Former MGP
Remarks: GEOLOGY OBTAINED FROM SB-137. OFFSET APPROXIMATELY 5' FROM SB-137. 2-5' PREPACKED SCREENS USED.	

Date Started: 05/21/04	Date Completed: 05/21/04
Ground Elevation: 7.96'	Datum: NAVD 88
Contractor: Prosonic	Total Depth: 33.00'
Drilling Method: Geoprobe	
Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)	Well Construction
				20						10 20	

Legend: Physical Observations

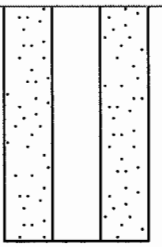
None
Sheen
Stain
Heavy

Site Id: RW-20

GEI Consultants

Client: Keyspan Corporation	
Project Number: 98248-1007	Project Name: Clifton Former MGP
Remarks: GEOLOGY OBTAINED FROM SB-137. OFFSET APPROXIMATELY 5' FROM SB-137. 2-5' PREPACKED SCREENS USED.	

Date Started: 05/21/04	Date Completed: 05/21/04
Ground Elevation: 7.96'	Datum: NAVD 88
Contractor: Prosonic	Total Depth: 33.00'
Drilling Method: Geoprobe	
Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)	Well Construction
											
										-30	
				40							

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-126

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/14/04	Date Completed: 05/14/04
Remarks:		Ground Elevation: 8.48'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 30.00'
		Drilling Method: Geoprobe	
		Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description: color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
0-5		100	0.0 ppm		0.0-5.0: Hand cleared for utility concerns. Black FILL, fine to medium sand, some silt, slag, clinker and coal fragments, non-cohesive, loose, no odors or visual impacts. (FI)				---	
5-10		52			5.0-10.0: FILL, medium to coarse sand and fine gravel, some clinker, ash and coal, non-cohesive, loose, well-sorted, wet at 8', no odor or visual impacts. (FI)					
			0.0 ppm		8.0: Apparent groundwater table.					0
10-15		35		10	10.0-15.0: Black, FILL, medium to coarse sand and fine to coarse gravel, clay and slate, little silt, some clinker, ash and coal, non-cohesive, loose, well-sorted, wet. No odor or visual impacts. (FI)				NONE	
			0.3 ppm		15.0-19.9: Black, FILL, medium to coarse sand and fine to coarse gravel, clay and slate, angular concrete fragments, little silt, some clinker, ash and coal, non-cohesive, loose, well-sorted, wet. No odor or visual impacts. (FI)					

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-126

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/14/04	Date Completed: 05/14/04
Remarks:		Ground Elevation: 8.48'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 30.00'
		Drilling Method: Geoprobe	
		Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
15-20		32								
										-10
					19.9-20.0: Fine SAND and SILT, fuel oil odor, coated grains, naphthalene odor. (SP)					
20-25	NR	0	166 ppm	20	20.0-22.5: Black, fine to medium SAND, trace wood fragments, little gravel, cohesive, sticky, non-plastic, naphthalene, petroleum and creosote tar like odor, stained, viscous tar, blebs of petroleum, sheen. (SP)	20.0-22.0		+ + + + + +		
			217 ppm							
					22.5-25.0: Redish brown, medium to coare SAND, well-sorted, trace silt and coarse gravel, dense, cohesive, non-plastic, wet. Petroleum and naphthalene odors, sheen in tip, no other visual impacts. (SP)					
25-30		22	116 ppm		25.0-27.7: Gray, medium to coarse SAND, little silt, trace coarse gravel, well-sorted, spotty sheen, fuel oil odor. (SP)				MODERATE	
					27.7-29.1: Brown, PEAT, little to some silt and clay, moderately stiff, roots, organic odor, no visual impacts. (PT)					
					29.1-30.0: Gray, fine to medium SAND, well-sorted, loose, wet sheen, naphthalene odor, trace tar coated grains. (SP)					-20
					30.0: End of boring, continue in SB-126A.			+ +		

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-126A

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/17/04	Date Completed: 05/17/04
Remarks: Offset from SB-126. Lithology for 0-30 feet is located on SB-126 log.		Ground Elevation: 8.48'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 45.00'
		Drilling Method: Geoprobe	
		Logged By: L.Willey/K.Amos	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description: color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
				10						0

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-126A

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/17/04	Date Completed: 05/17/04
Remarks: Offset from SB-126. Lithology for 0-30 feet is located on SB-126 log.		Ground Elevation: 8.48'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 45.00'
		Drilling Method: Geoprobe	
		Logged By: L.Willey/K.Amos	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
										-10
				20						
										-20
					Continued from SB-126					

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-126A

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/17/04	Date Completed: 05/17/04
Remarks: Offset from SB-126. Lithology for 0-30 feet is located on SB-126 log.		Ground Elevation: 8.48'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 45.00'
		Drilling Method: Geoprobe	
		Logged By: L.Willey/K.Amos	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
					30.0-34.5: Gray, fine to medium SAND, trace coarse sand and silt, well-sorted, moderately stiff, wet. Organic sulfur odor, no visual impacts.(SP)				MODERATE	
			0.0 ppm			33.0-34.0				
					34.5-35.0: Gray-brown SILT and CLAY, little organic matter, moderately stiff, cohesive. Organic sulfur odor, no visual impacts (CL)					
					35.0-36.3: Brown-gray SILT, trace clay, cohesive, slightly plastic, moderately stiff, no odor or visual impacts. (MH)					
					36.3-40.0: Gray, red and brown, fine to medium SAND, little silt, trace coarse sand, gravel, pieces of glacial till, cohesive, moderately dense, wet. No odors or visual impacts. (ML)					-30
			0.0 ppm	40					NONE	
					40.0-43.8: Fine to medium SAND, little to some silt, trace coarse gravel, trace fine gravel,trace silt nodules moderately dense, loose, wet. Non-cohesive. No odor or visual impacts. [Weathered Till] (ML)	odor				
			0.0 ppm		43.8-45.0: Red-brown, fine to medium SAND, wet, well-sorted, loose, no odors or visual impacts. (SW)	43.0-44.0				
					45.0: End of boring.					

Legend: Physical Observations

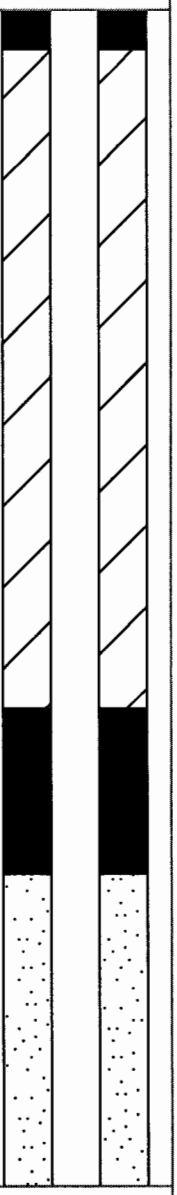
None | Sheen | Stain | Heavy

Site Id: RW-21

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/21/04	Date Completed: 05/21/04
Remarks: GEOLOGY OBTAINED FROM SB-126/126A. OFFSET APPROXIMATELY 5' FROM SB-126/126A. 2-5' PREPACKED SCREENS USED.		Ground Elevation: 8.42'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 30.00'
		Drilling Method: Geoprobe	
		Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description: color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology Vis. Signs of Contamination	Odors	Elevation (ft)	Well Construction
				10					0	



Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: RW-21

GEI Consultants

Client: Keyspan Corporation	
Project Number: 982482-1	Project Name: Clifton Former MGP
Remarks: GEOLOGY OBTAINED FROM SB-126/126A. OFFSET APPROXIMATELY 5' FROM SB-126/126A. 2-5' PREPACKED SCREENS USED.	

Date Started: 05/21/04	Date Completed: 05/21/04
Ground Elevation: 8.42'	Datum: NAVD 88
Contractor: Prosonic	Total Depth: 30.00'
Drilling Method: Geoprobe	
Logged By: Lynn Willey	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)	Well Construction
				20						-10 -20	

Legend: Physical Observations

None
Sheen
Stain
Heavy

Site Id: SB-95

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 04/28/04	Date Completed: 04/28/04
Remarks:		Ground Elevation: 9.89'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 32.00'
		Drilling Method: Geoprobe	
		Logged By: L.Willey/K.Amos	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description: color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
0-5		48			0.0-1.0: Concrete and gravel, dry. (FI)					
					1.0-5.0: Dark brown to black, fine to medium SAND, little FILL, slag, trace roadbase gravel, trace brick, little silt, non-cohesive, dry, no odor, no visual impacts. (FI)					
			0.8 ppm							
5-10		30			5.0-7.7: Concrete, gravel sized fragments, little medium to coarse sand, non-cohesive, loose, dry, no odor, no visual impacts. (FI)				NONE	
			0.9 ppm		7.7-10.0: Brown, fine to medium SAND, trace silt, trace gravel, wet, no odor, no visual impacts. (SP)					
10-15		60	0.8 ppm	10	10.0-11.7: Brown, medium to coarse SAND, trace to little silt, trace fine to coarse gravel, non-cohesive, loose, wet, no odor, no visual impacts. (SP)				NONE	0
					11.7-15.0: Brown, fine to medium SAND, little coarse sand, trace silt, well-sorted, loose, non-cohesive, wet, no odor, no visual impacts. (SP)	10-15				

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-95

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 04/28/04	Date Completed: 04/28/04
Remarks:		Ground Elevation: 9.89'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 32.00'
		Drilling Method: Geoprobe	
		Logged By: L.Willey/K.Amos	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description (color, density, SOIL, admixture, moisture, other notes, ORIGIN.)	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
15-20	UNKN	0	1.2 ppm		15.0-17.5: Brown, PEAT, little silt, some organic matter and rootlets, cohesive, soft, non-plastic, damp. (PT)					
					17.5-20.0: Gray, fine to medium SAND, trace coarse gravel, non-cohesive, loose, wet, no odor, no visual impacts. (SW)					
20-25		78		20	20.0-20.6: Gray, fine to medium SAND, little silt, trace organic matter, non-cohesive, loose, wet, no odor, no visual impacts. (SW)				NONE	-10
					20.6-23.3: Brown to gray brown, PEAT, some clay and silt, wood particles, cohesive, plastic, soft, organic odor, no visual impacts. (PT)					
			1.3 ppm		23.3-24.1: Gray, black, silty CLAY, cohesive, soft, no odor, no visual impacts. (CL)					
					24.1-24.5: Black, silt SAND, trace to little clay, non-cohesive, wet, no odor, no visual impacts. (SM)					
					24.5-25.0: Red brown, SILT, little clay, trace to little coarse sand, cohesive, slightly plastic, damp, no odor, no visual impacts. (ML)					
25-30		92	1.2 ppm		25.0-26.0: Brown, fine SAND, some silt, soft, wet, no odor, no visual impacts. (SP)				NONE	
					26.0-30.0: Red brown, TILL, silt, trace to little fine to coarse, little fine to coarse sand, trace medium sand, dense/stiff, dry, no odor, no visual impacts. (ML)	25-30				-20

Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: SB-95

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 04/28/04	Date Completed: 04/28/04
Remarks:		Ground Elevation: 9.89'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 32.00'
		Drilling Method: Geoprobe	
		Logged By: L.Willey/K.Amos	Certified By: Melissa Felter

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)
30-32		100	1.1 ppm		30.0-32.0: Red brown, TILL, silt, little medium to coarse sand, trace clay, trace to little fine gravel, cohesive, slightly plastic, dry/damp, no odor, no visual impacts. (ML)				NONE	
					32.0: End of boring.					
				40						-30

Legend: Physical Observations

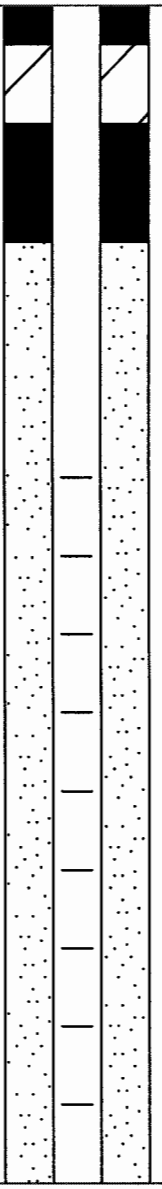
None | Sheen | Stain | Heavy

Site Id: RW-22

GEI Consultants

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/21/04	Date Completed: 05/21/04
Remarks: Geology obtained from SB-95. RW-22 offset approximately 5' from SB-95. 2-5' PREPACKED SCREEN USED.		Ground Elevation: 9.85'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 21.00'
		Drilling Method: Geoprobe	
		Logged By: L.Willey/K.Amos	Certified By: Lynn Willey

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description: color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology Vis. Signs of Contamination	Odors	Elevation (ft)	Well Construction
				10					0	



Legend: Physical Observations

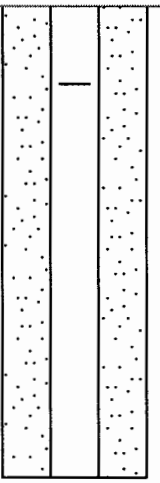
None | Sheen | Stain | Heavy

Site Id: RW-22

GEI Consultants

Client: Keyspan Corporation	
Project Number: 982482-1	Project Name: Clifton Former MGP
Remarks: Geology obtained from SB-95. RW-22 offset approximately 5' from SB-95. 2-5' PREPACKED SCREEN USED.	

Date Started: 05/21/04	Date Completed: 05/21/04
Ground Elevation: 9.85'	Datum: NAVD 88
Contractor: Prosonic	Total Depth: 21.00'
Drilling Method: Geoprobe	
Logged By: L.Willey/K.Amos	Certified By: Lynn Willey

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Physical Observations	Odors	Elevation (ft)	Well Construction
				20						-10	
										-20	

Legend: Physical Observations

None | Sheen | Stain | Heavy

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT NAME: Clifton Edgewater
CITY/STATE: Staten Island, New York
GEI PROJECT NUMBER: 061140-1-1003

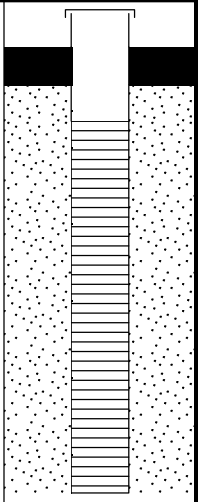
BORING LOG

CF-SB-140/CF-RW-23

GROUND SURFACE ELEVATION (FT): 9.27
LOCATION: 1 Edgewater Plaza
NORTHING: 650953.0556 **EASTING:** 611684.1666
TOTAL DEPTH (FT): 30.00
DRILLED BY: Zebra Environmental / Evan Moraits
DATUM VERT. / HORZ.: NAVD 88 / NAD83 NY East Zone
LOGGED BY: Jared Lewis and Melissa Felter
DATE START / END: 11/21/2006 - 11/21/2006
DRILLING DETAILS: Geoprobe / Geoprobe
WATER LEVEL DEPTHS (FT): ▽ 6.60

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	VISUAL IMPACTS	ODOR	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0									0 - 0.5 ASPHALT, HAND CLEARED. 0.5 - 5 WELL GRADED SAND (SW); ~80% sand, fine to coarse, ~15% gravel, ~5% fines; homogeneous, ~10% coal, max. size 3 in., dry, dark brown, FILL, clinker, HAND CLEARED.
5	S-1	5.0	27	54.2			PLO	CF-SB-140 (8.3-10)	5 - 6.6 WELL GRADED SAND (SW); ~75% sand, fine to coarse; homogeneous, ~15% coal and slag, ~5% fine to coarse gravel, ~5% fines, max. size 0.75 in., dry, black and gray, FILL, loose. 6.6 - 8.3 WELL GRADED SAND (SW); ~70% sand, fine to coarse; homogeneous, ~20% coal and slag, ~5% fine to coarse gravel, ~5% fines, max. size 0.5 in., wet, brown, FILL, loose.
10	S-2	5.0	60	52.9			PLO	CF-SB-140 (11.5-12.5)	8.3 - 10 WELL GRADED SAND (SW); ~85% sand, fine to medium; homogeneous, ~10% slag and coal, ~5% fines, max. size 0.5 in., moderate petroleum-like odor, wet, black, FILL, black stained, loose. 10 - 11 WELL GRADED SAND (SW); ~25% sand, fine to medium; homogeneous, ~70% coal and slag, ~5% fines, max. size 2 in., wet, dark brown and black, FILL, loose. 11 - 12.5 WELL GRADED SAND (SW); ~95% sand, fine to medium; homogeneous, ~5% fines, slight petroleum-like odor, wet, brown, slight spotty sheen, loose.
15	S-3	5.0	0						12.5 - 15 ORGANIC SOIL (OL); homogeneous, ~50% silt, ~50% peat, moist, brown, roots. 15 - 20 NO RECOVERY, REFUSAL AT 20.5', OFFSET TO CF-SB-140A.
20	S-4	5.0	0						20 - 25 NO RECOVERY.
25	S-5	5.0	35	40.1				CF-SB-140A (27.5-30)	25 - 30 SILT (ML); ~90% fines, low plasticity; homogeneous, ~5% fine to medium sand, ~5% fine to coarse gravel, max. size 1 in., moist, reddish brown, TILL, dense.
30									Bottom of borehole at 30.0 feet.

WELL CONSTRUCTION DETAILS



NOTES:

PEN = PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC = RECOVERY LENGTH OF SAMPLE
PID = PHOTOIONIZATION DETECTOR READING (JAR HEADSPACE)

ppm = PARTS PER MILLION
IN. = INCHES
FT. = FEET

NLO = NAPHTHALENE LIKE ODOR
PLO = PETROLEUM LIKE ODOR
TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG 1 EDGEWATER PLAZA 082808.GPJ GEI CONSULTANTS.GDT 8/28/08

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT NAME: Clifton Edgewater
CITY/STATE: Staten Island, New York
GEI PROJECT NUMBER: 061140-1-1003

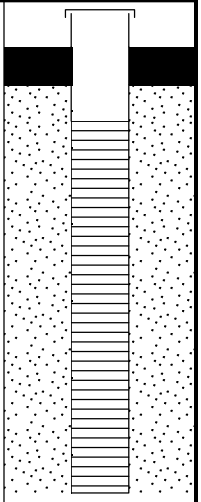
BORING LOG

CF-SB-145/CF-RW-24

GROUND SURFACE ELEVATION (FT): 9.16
LOCATION: 1 Edgewater Plaza
NORTHING: 651035.145 **EASTING:** 611751.3177
TOTAL DEPTH (FT): 25.00
DRILLED BY: Zebra Environmental / Evan Moraits
DATUM VERT. / HORZ.: NAVD 88 / NAD83 NY East Zone
LOGGED BY: Melissa Felter
DATE START / END: 11/20/2006 - 11/20/2006
DRILLING DETAILS: Geoprobe / Geoprobe
WATER LEVEL DEPTHS (FT): ▽ 3.50

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	VISUAL IMPACTS	ODOR	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0									0 - 0.5 HAND CLEARED. 0.5 - 3.5 WELL GRADED SAND (SW); ~85% sand, medium to coarse, ~10% gravel, ~5% fines; homogeneous, dry, brown, FILL, loose, HAND CLEARED. 3.5 - 4.75 WELL GRADED SAND (SW); ~85% sand, medium to coarse, ~10% gravel, ~5% fines; homogeneous, wet, brown, FILL, loose, HAND CLEARED. 4.75 - 5 LEAN CLAY (CL); ~95% fines, low plasticity, ~5% sand, ~0% gravel; homogeneous, wet, dark gray, HAND CLEARED. 5 - 10 NO RECOVERY.
5	S-1	5.0	0						
10	S-2	5.0	18				PLO PLO	CF-SB-145 (10-12)	10 - 11 FAT CLAY (CH); medium plasticity; homogeneous, moderate petroleum-like odor, wet, black. 11 - 12 WELL GRADED SAND (SW); ~70% sand, fine to medium; ~25% fine to coarse gravel, ~5% fines, max. size 1 in., moderate petroleum-like odor, wet, dark brown and black, spotty sheen.
15	S-3	5.0	30	18.5				CF-SB-145 (17.5-20)	12 - 15 SANDY SILT (ML); ~70% fines, low plasticity; homogeneous, ~15% fine to medium sand, ~15% fine to coarse gravel, max. size 1.5 in., wet, reddish brown, dense. 15 - 17 SILT (ML); ~85% fines, medium plasticity; homogeneous, ~10% fine to medium sand, ~5% fine to coarse gravel, max. size 1.5 in., wet, reddish brown.
20	S-4	5.0	36	19.6					17 - 20 WELL GRADED SAND (SW); ~95% sand, fine to medium; homogeneous, ~5% fines, wet, dark grayish brown, organic lens at 18-19', wood in tip with reddish silt. 20 - 25 SILT (ML); ~70% fines, low plasticity; homogeneous, ~15% fine to coarse gravel, ~15% fine to medium sand, max. size 1.5 in., moist, grayish brown to reddish brown, dense.
25									Bottom of borehole at 25.0 feet.

WELL CONSTRUCTION DETAILS



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TLO = TAR LIKE ODOR
CLO = CHEMICAL LIKE ODOR
ALO = ASPHALT LIKE ODOR

CrLO= CREOSOTE LIKE ODOR
OLO = ORGANIC LIKE ODOR
SLO = SULFUR LIKE ODOR
MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG 1 EDGEWATER PLAZA 082808.GPJ GEI CONSULTANTS.GDT 8/28/08

Appendix B

Metes and Bounds Description

KENNON SURVEYING SERVICES, Inc.

P. O. Box 4477, 5 Powder Horn Drive, Suite #4 **Phone: 732-564-1818**

Warren, New Jersey 07059 **Fax: 732-564-9999**

Property Description
Lot 50, Block 2842
Clifton, Staten Island, New York City
Richmond County, New York

A tract of land known as Lot 50, Block 2842 in Clifton, Staten Island, New York City, Richmond County, New York and being more particularly described as follows:

Commencing at the intersection of the southerly line of Willow Avenue with the westerly line of Bay Street; thence,

A. Along said southerly line South 59° 23' 13" East 120.00' to the POINT OF BEGINNING of the therein described tract; thence,

1. Along the westerly line of Lots 58 & 65 South 30° 54' 42" East 145.00'; thence,

2. Along a portion of the northerly line of Lot 76 and along the northerly line of Lots 78, 79, 80, 82, 83 and 84 South 59° 23' 13" West 150.75'; thence,

3. Along the easterly line of Lot 30 North 30° 36' 47" West 145.00' to the southerly line of the aforementioned Willow Avenue; thence,

4. Along said southerly line North 59° 23' 13" East 150.00' to the POINT OF BEGINNING of the herein described tract containing 21,804 square feet or 0.501 acres more or less.

_____ _____

Date

Kenny L. Kennon, P.L.S.
N.Y. License No. 50171

Project #2326

KENNON SURVEYING SERVICES, Inc.

P. O. Box 4477, 5 Powder Horn Drive, Suite #4 **Phone: 732-564-1818**

Warren, New Jersey 07059 **Fax: 732-564-9999**

Property Description
Lot 91, Block 2841
Clifton, Staten Island, New York City
Richmond County, New York

A tract of land known as Lot 91, Block 2841in Clifton, Staten Island, New York City, Richmond County, New York and being more particularly described as follows:

Beginning at the intersection of the northerly line of Willow Avenue with the westerly line of Bay Street; thence,

1. Along said northerly line South 59° 23’ 13” West 589.46; thence,

2. Along the easterly line Lot 134 North 30° 18’ 47” West 38.05; thence,

3. Along the easterly line of Lot 225 the following seven courses North 21° 46' 51" East 86.53'; thence,

4. North 19° 12’ 55” East 112.10’; thence,

5. North 65° 21’ 09” West 2.47’; thence,

6. North 21° 53’ 42” East 87.29; thence,

7. North 21° 33’ 45” East 32.43’; thence,

8. North 26° 45’ 16” West 6.71’; thence,

9. North 26° 49’ 56” East 61.47’; thence,

10. Along the easterly line of the Staten Island Railway, being Lot R1 along a curve to the left having a radius of 1000.37’, an arc length of 349.24’, a central angle of 20° 00’ 10” whose chord bears North 18° 41’ 28” East 347.47’ to the westerly line of Bay Street; thence,

11. Along said westerly line South 33° 30’ 24” East 504.72’ to POINT OF BEGINNING of the herein described tract containing 3.533 acres more or less.

_____ _____

Date

Kenny L. Kennon, P.L.S.
N.Y. License No. 50171

Project #2326

Appendix C

Excavation Work Plan

AECOM

Excavation Work Plan

(Appendix C of the Site Management Plan)

Former Clifton MGP Site
Staten Island, New York
NYSDEC Site No.: 2-43-023
Order on Consent Index #: D2-0001-98-04

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Figure 1 Entry Trucking Route

Figure 2 Exit Trucking Route

List of Acronyms

CAMP	Community Air Monitoring Plan
CCS	Composite Cover System
COC	Certificate of Completion
COIs	Constituents of Interests
DER-10	NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation
EC	Engineering Controls
EWP	Excavation Work Plan
HASP	Health and Safety Plan
MGP	Manufactured Gas Plant
NYCRR	New York Codes Rules and Regulations
NYC	New York City
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCBs	Polychlorinated Biphenyls
QAPP	Quality Assurance Project Plan
SCO	Soil Cleanup Objectives
SMP	Site Management Plan
SPDES	State Pollution Discharge Elimination System
VOCs	Volatile Organic Compounds

1.0 Notification

At least 15 business days prior to the start of any activity that is anticipated to encounter residual MGP contamination, the Property owner(s) or their representative(s) will notify National Grid and New York State Department of Environmental Conservation (NYSDEC). Currently, this notification will be made to:

National Grid Project Manager:
Name: Andrew Prophete
Address: 287 Maspeth Avenue, Brooklyn, NY 11221
Telephone: (718) 963-5412
Fax: (718) 963-5611
Email: Andrew.prophete@nationalgrid.com

NYSDEC Project Manager:
Name: Richard Dana, Section Chief
Address: New York State Department of Environmental Conservation
Site Control Section, Bureau of Technical Support
625 Broadway, Albany, New York 12233-7014
Telephone: (518) 402-9543
Fax: (518) 402-9595

This notification will include:

- A detailed description of the work to be performed, including the location and aerial extent, plans for re-grading, intrusive elements or utilities to be installed below the cover system, estimated volumes of contaminated soil to be excavated and any work that may impact an Engineering Control (EC);
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this Excavation Work Plan (EWP), including the Odor Control Plan;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix D of the Site Management Plan [(SMP); AECOM, 2014], otherwise, a statement that the HASP provided in Appendix D will be followed;

- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

2.0 Excavation Work Plan

2.1 Soil Screening Methods

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potential remaining contamination from the former Manufactured Gas Plant (MGP). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the Certificate of Completion (COC), and while the Site Management Plan is in effect.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

2.2 Stockpile Methods

Stockpiles containing known or suspected impacts will be continuously encircled with a berm. Contaminated water draining from the soils containing known or suspected impacts will be collected from inside the bermed area and disposed of off-site in an appropriate manner. Hay bales will be used as needed near catch basins, surface waters and other discharge points to prevent run-off of soils into sewers.

Stockpiles containing known or suspected impacts will be kept covered at all times with appropriately anchored tarps. Stockpiles containing known or suspected impacts will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles containing known or suspected impacts will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. Stockpiled material not being re-used on the site will be removed within 30 days following disposal facility characterization.

2.3 Materials Excavation and Load Out

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated residual MGP contaminated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements on the project site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under the SMP is posed by utilities or easements on the project site.

Loaded vehicles leaving the project site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYS

Department of Transportation (DOT) requirements (and all other applicable transportation requirements).

Locations where vehicles enter or exit the project site shall be inspected daily for evidence of off-site soil tracking. If necessary, trucks will be cleaned (via approved dry or wet methods) of loose soil found on outside of vehicle or tires.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the project site are clean of dirt and other materials derived from the project site during excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition if any site-derived materials are tracked off-site.

2.4 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

At a minimum, trucks should have competent cover systems and functional tailgates to prevent leakage of liquids. Trucks transporting residual MGP contaminated soils shall be lined with 6-mil polyethylene sheeting large enough to fully cover the top of the load. The truck covers shall be of an impermeable material (e.g. polyethylene sheeting). Additional automatic mesh tarps will be used to secure the liners. Loose-fitting canvas-type truck covers or mesh covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used. All trucks transporting residual MGP contamination will be decontaminated prior to leaving the project site. Decontaminated water, if any, will be collected and disposed of off-site in an appropriate manner.

The following truck transport routes are recommended for transporting residual MGP contamination:

1. Trucks will be required to enter and exit the site via I-278 (Staten Island Parkway) and northbound Bay Street in Clifton, Staten Island. The entry and exit trucking routes shown on Figures 1 and 2.
2. The entry truck route (Figure 1) shall be as follows:
   - Traveling on I-278 (Staten Island Expressway)
   - Take Exit for Bay Street
   - Continue on School Road
   - Left onto Bay Street
   - Left onto Willow Avenue (for Willow Avenue Construction Entrance) or Left into site (for Bay Street Construction Entrance)
   - Right off Willow Avenue into the site.
3. The exit trucking route (Figure 2) shall be:
   - Left out of site onto Willow Avenue (for Willow Avenue Construction Entrance) or Right out of site onto Bay Street (for Bay Street Construction Entrance)
   - Right on Bay Street
   - Right onto School Road
   - I-278 Ramp onto I-278.

It is the property owner/contractor's responsibility to follow all applicable Federal, State, local, and municipal rules, regulations, and guidelines (including NYCDOT and NYSDOT) regarding truck routes.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the project site will be kept clean of dirt and other materials during any project site activity and development.

2.5 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from areas known to have residual MGP contamination will be designated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this project site is proposed for unregulated off-site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this project site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate (i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc). Actual disposal quantities and associated documentation will be reported to National Grid following completion of the excavation work, and National Grid will include the information in the NYSDEC in the Periodic Review Report. The property owner shall provide the following documentation: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet unrestricted Soil Cleanup Objectives Soil Cleanup Objectives (SCOs) is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility). A qualified environmental professional can assist with determining the appropriate disposal facility for each waste stream, and the NYSDEC will review off-site disposal locations as identified in the required pre-excavation notification.

2.6 Materials Reuse On-Site

This section provides details for methods to be followed for materials reuse on-site. 'Reuse on-site' means reuse on-site of material that originates at the project site and which does not leave the project site during the excavation. All residual MGP contaminated material exposed and removed as part of the work at the project site shall be disposed off-site at detailed in this EWP.

All other material removed from the project site will require NYSDEC approval prior to any reuse on-site. The qualified environmental professional will ensure that procedures defined for materials reuse by the NYSDEC and DER-10 are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and non-residual MGP contaminated soil, that is approved by NYSDEC for re-use on-site will be placed below a demarcation layer or impervious surface, and will not be reused within a composite cover system (CCS), within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

2.7 Fluids Management

All liquids to be removed from the project site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the project site, but will be managed off-site.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream or river) will be performed under a SPDES permit.

2.8 Cover System Restoration

After the completion of soil removal and any other invasive activities, the CCS will be restored in a manner that complies with the Decision Document and with the SMP in effect. A demarcation layer, consisting of orange snow fencing material or equivalent material will be placed in excavation areas with residual MGP contamination. The demarcation layer will provide a visual reference to the top of the 'Residual MGP Contamination Zone', the zone that requires adherence to special conditions for disturbance of residual MGP contaminated soils defined in this SMP. If applicable, Figures 1-11 and 2-1 of the SMP will be updated by National Grid to show the revised residual MGP contamination. The revised figures will be included in the subsequent Periodic Review Report by National Grid, and in any updates to the SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the 'Residual MGP Contamination Zone.' The property owner shall notify National Grid of the plan to modify the cover element in the pre-excavation notification. National Grid will include a new or revised figure showing the modified surface in the subsequent Periodic Review Report and in any updates to the SMP.

2.9 Backfill from Off-Site Sources

All materials proposed for import onto the project site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP, as well as applicable local, State, and Federal regulations, prior to receipt at the project site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the project site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 2-1 of the SMP. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this project site, will not be imported onto the project site without prior approval by NYSDEC. Solid waste will not be imported onto the project site. Additionally all imported soils must meet 6NYCRR Part 375 Restricted Use Commercial SCOs.

Trucks entering the project site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

2.10 Stormwater Pollution Prevention

Silt fencing or hay bales will be installed around the entire perimeter of the construction area. Barriers and hay bale checks will be installed around the project site and at any adjacent sewer inflow points (e.g. inlets), and will be inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

2.11 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc., as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and Polychlorinated Biphenyls (PCBs)), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In that case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC’s Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline, and reported to National Grid for inclusion in the Periodic Review Report prepared pursuant to Section 5 of the SMP.

2.12 Community Air Monitoring Plan

Air sampling stations will be placed upgradient and downgradient of generally prevailing wind conditions. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the Community Air Monitoring Plan (Appendix D of the SMP) will be reported to NYSDEC and NYSDOH Project Managers.

2.13 Odor Control Plan

Fugitive emissions can be generated from a variety of activities including excavation, drilling, and dewatering and/or from the temporary staging of materials for characterization, consolidation, and scheduling for transportation.

Due to the constituents of interests (COIs) associated with the remedial activities at former MGP sites; fugitive emissions can take the form of volatile organic compounds (VOCs), odor, and/or dust. Dust can be entrained with low levels of high molecular weight constituents, while VOCs can volatilize into ambient air. Odor emissions may result from the atmospheric exposure of contaminated media. Contamination may be present in soils and groundwater. The potential for odor generation from groundwater is less than that from solids. The constituent concentrations associated with these odors are typically less than the levels that potentially pose a health risk as the odor threshold of COIs are typically less than health based action levels.

This odor control plan is capable of controlling emissions of nuisance odors off-site. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's qualified environmental professional, and any measures that are implemented shall be reported to National Grid, and will be discussed in the Periodic Review Report.

A three-tiered set of controls are proposed for this Odor Control Plan:

- Level I - Includes proactive measures to minimize the effect of fugitive emissions. Level 1 includes air monitoring to ensure that levels of VOCs and dust are under site-specific action levels.
- Level II – Procedures that are implemented in response to specific increases in fugitive emissions, but are not likely to have a significant impact in the schedule of project site activities.
- Level III – More aggressive procedures, also initiated in response to specific increases in fugitive emissions that are likely to have a more significant impact on production schedule and project site activities.

The site qualified environmental professional will be required to progressively implement these options until emission sources are controlled and ambient concentrations no longer have the potential to pose a health risk.

2.13.1 Level 1 Controls

Level 1 Controls will be built into the design of the field activities and involve physical controls, project site layout, and scheduling.

2.13.1.1 Physical Controls

The simplest form of physical control is the use of visual barrier cloth on the project site perimeter fencing. The resistance caused by the visual barrier will elevate the discharge point of emissions leaving the site to the top of the perimeter fence and will promote better mixing and dispersion. Another form of simple physical control is the required use of tarps on trucks that move or transport impacted material.

All stockpiles of impacted material should be covered, if left inactive for a period of more than two hours.

All trucks used for off-site transport will have tarps in place to cover impacted material as detailed in Section 2.2. On-site haul routes should be routinely wetted to control dust using water from a clean source. Groundwater from the site shall not be used for dust control.

2.13.1.2 Site Layout

The dispersion of fugitive emissions is controlled by meteorological conditions and their impact generally decreases with distance from the source. If possible, transfer/storage areas will be placed either downwind or significantly upwind of off-site receptors.

The height of the stockpiles should be lower than the top of the perimeter fencing (8 feet) to utilize the benefit of the barrier cloth. If stockpiles must be staged near the fence line (within 100 feet), they should be less than 8-feet in height.

2.13.1.3 Scheduling

Every effort should be made to minimize the amount of time that potentially contaminated material is stored on-site. Appropriate strategies involve the in-place pre-characterization of soils to be excavated and the sampling of stockpiles as soon as they are placed. Efficient scheduling/coordination of operations can also limit the impact of active emission sources. Close coordination of excavation activities can decrease the surface area of disturbed material, thereby reducing the size of the emission source. A smaller source area can facilitate the implementation of additional controls, if required.

2.13.2 Level II Controls

Air monitoring will routinely be performed at the fence line of the project site as delineated in the CAMP during all work activities. The results will be compared to site-specific action levels for VOCs and total particulates.

Level II controls will be enacted if the exceedance is confirmed or odors are detected at the fence line. If the action levels are exceeded, additional monitoring will be conducted to confirm the result. Level II controls will be enacted if the exceedance is confirmed. The site qualified environmental professional must then work through the applicable list of site controls until the fence line monitoring results for all parameters are determined to be less that their associated action levels. Specific Level II controls are discussed below.

2.13.2.1 Suppressing Agents

Several agents that can be applied over emissions sources have been determined to be effective in controlling emissions. These include odor suppressant foam for VOC mitigation and water spray for dust suppression.

The following suppressing agents have been identified for use but additional agents may be used or substituted for other proven agents such as odex, hydromulch, or ecosorb.

Odor suppressant foam

Odor suppressant foam can provide immediate, localized control of VOC and odor emissions. The foam is created by the injection of air into a foam concentrate/water mixture using a Pneumatic Foam Unit. The foam is applied via a hose to cover source areas to a depth of 3 to 6 inches. Foam (Rusmar AC-600 or equivalent) is a short term remedy and can be actively used to control VOC and odor emissions from active excavations/stockpiles, and during the loading of trucks. It is shipped as a concentrate and diluted with water at the site. Under normal conditions, this foam can last for several hours. However, it has been observed to degrade quickly in direct sunlight or precipitation so it must be applied liberally and frequently to all areas that require odor control.

Water spray

A spray of water can be used to minimize the amount of dust created. A water hose is effective for controlling dust over a small area, while lawn sprinklers or a dedicated water truck may be more efficient for extended control of large areas or on-site haul routes. All water must be from a clean source. Groundwater from the site shall not be used for odor or dust control.

2.13.2.2 Tarps

Tarps can provide effective control for source areas that are likely to be inactive for extended periods of time. To be effective, the size of the source area should be controlled such that it can be covered using a single tarp. Rolls of 6-mil polyethylene will be used to cover inactive stockpiles. Tarps will also be used for covering exposed soils loaded into trucks. All trucks will be lined with 6 mil polyethylene sheeting, the liners will be large enough to overlap and fully cover the top of the load. Additional automatic mesh tarps will be used to secure the liners.

2.13.3 Level III Controls

Level III controls are to be implemented when Level II controls have been exhausted and ambient concentrations of emissions continue to exceed the site-specific action levels. Each of the control options listed in this subsection has the potential to significantly affect the schedule/production rate of site activities. These delays may be required periodically to ensure that acceptable levels of fugitive emissions are maintained, and are preferable to a complete work cessation to control an emission event.

2.13.3.1 Production/Schedule

It may be necessary to reduce the excavation rate to reduce the surface area of disturbed media or slow the generation rate of stockpiles. These activities would result in smaller source areas that could be more effectively controlled using Level II techniques.

2.13.3.2 Meteorological Conditions

It may be necessary to limit certain activities to those periods when preferred meteorological conditions exist, such as wind direction or low temperatures are present. Odor generation is lower during cold months, so the property owner may choose to post-pone work until winter if needed.

2.13.3.3 Relocation of Activities

Another option is cease work and move work in the excavation to lesser-impacted areas until adequate control measures can be implemented or more favorable meteorological conditions return. Also, it may be beneficial to temporarily relocate material loading and transfer activity areas to other areas of the project site or within subsurface excavations to utilize the natural dispersion of emissions in the atmosphere, or shelter from the wind.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

2.14 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

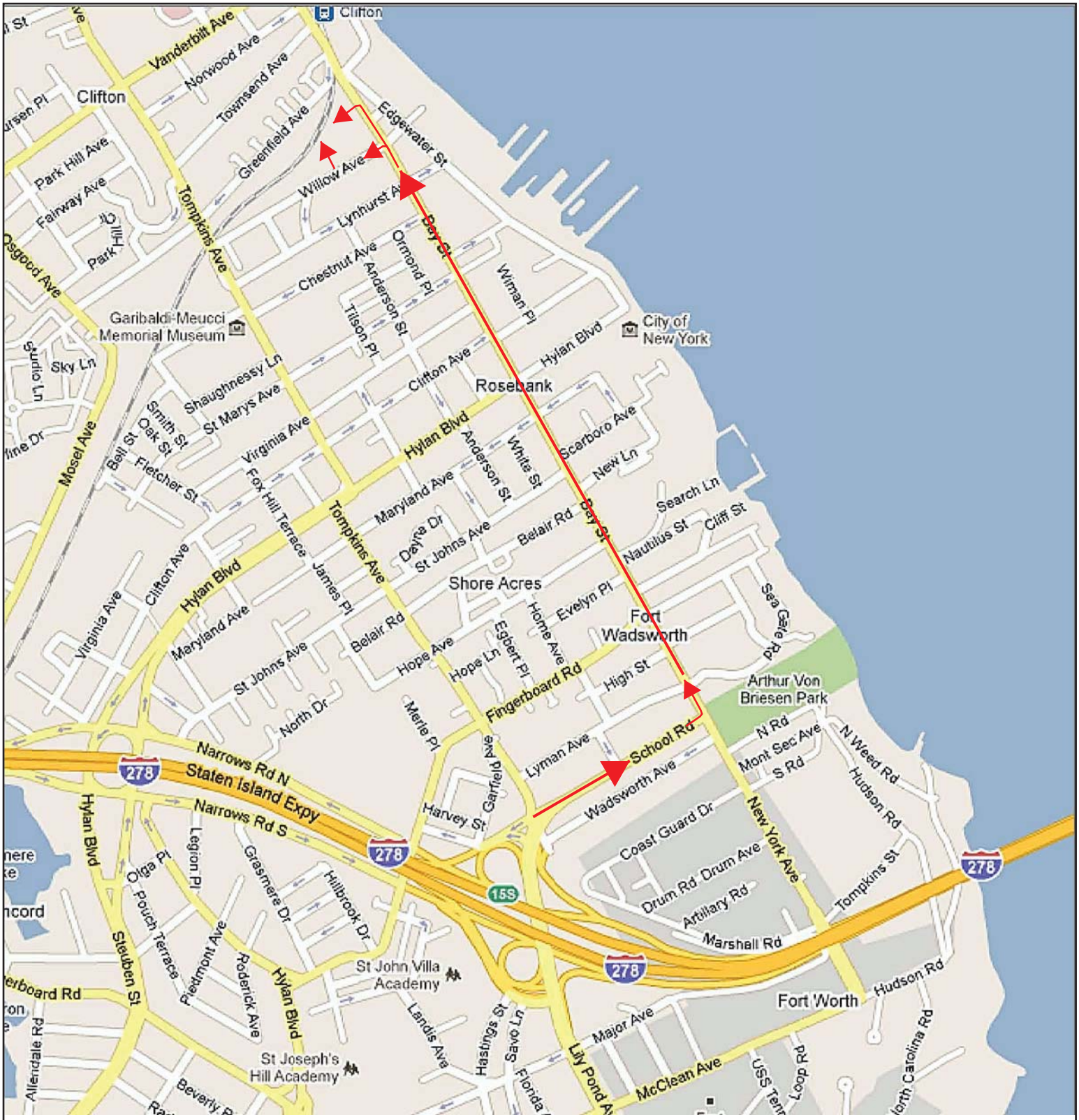
- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles;
- Clearing and grubbing will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production;
- Gravel will be used on roadways to provide a clean and dust-free road surface; and
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

2.15 Other Nuisances

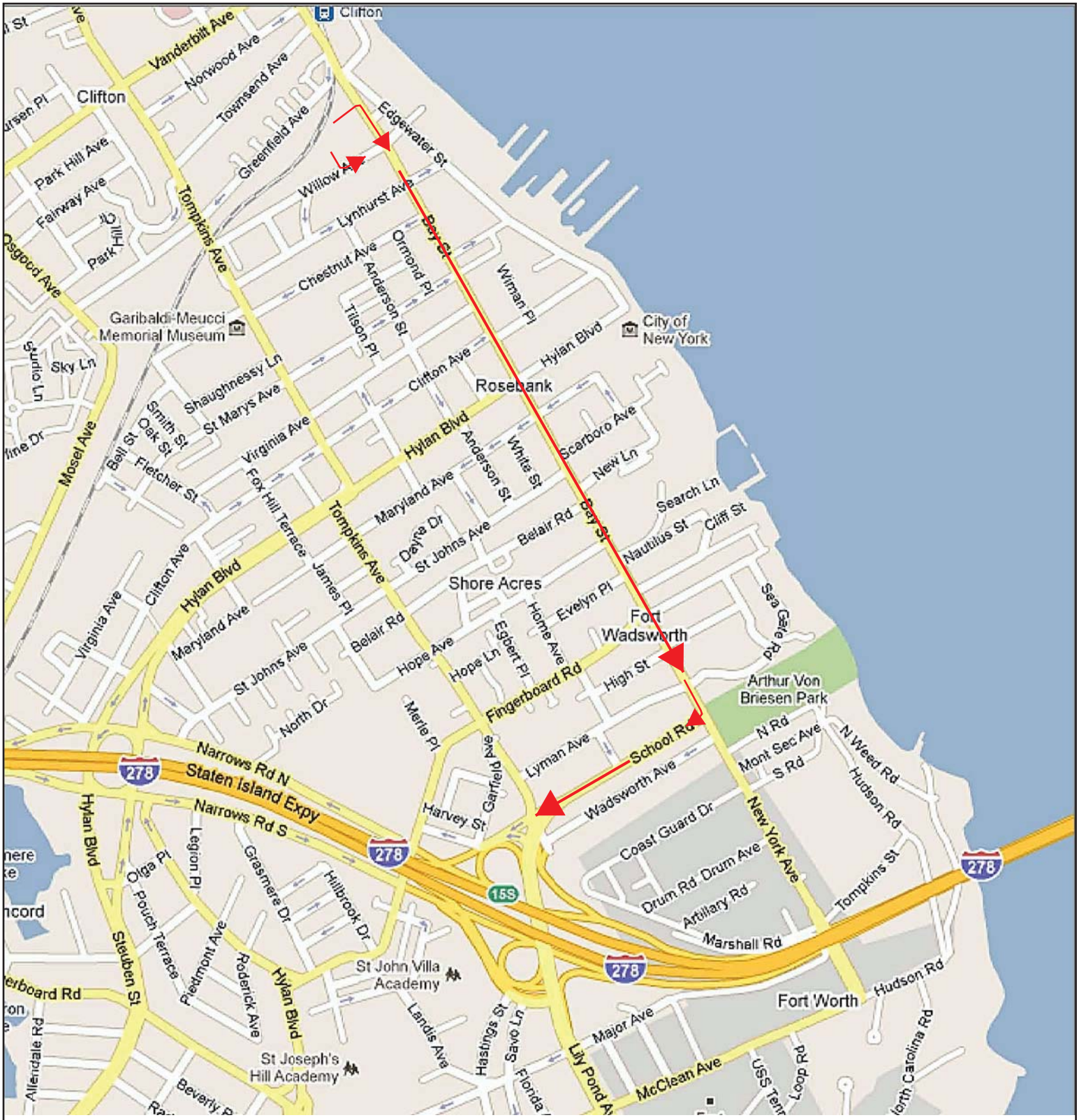
A plan for rodent control will be developed and utilized by the contractor prior to and during project site clearing and grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

Figures



NATIONAL GRID FORMER CLIFTON MGP SITE CLIFTON, NEW YORK	TRUCKING ROUTE - ENTRY
DATE: 16/01/2014	FIGURE 1



NATIONAL GRID FORMER CLIFTON MGP SITE CLIFTON, NEW YORK	TRUCKING ROUTE - EXIT
DATE: 16/01/2014	FIGURE 2

Appendix D

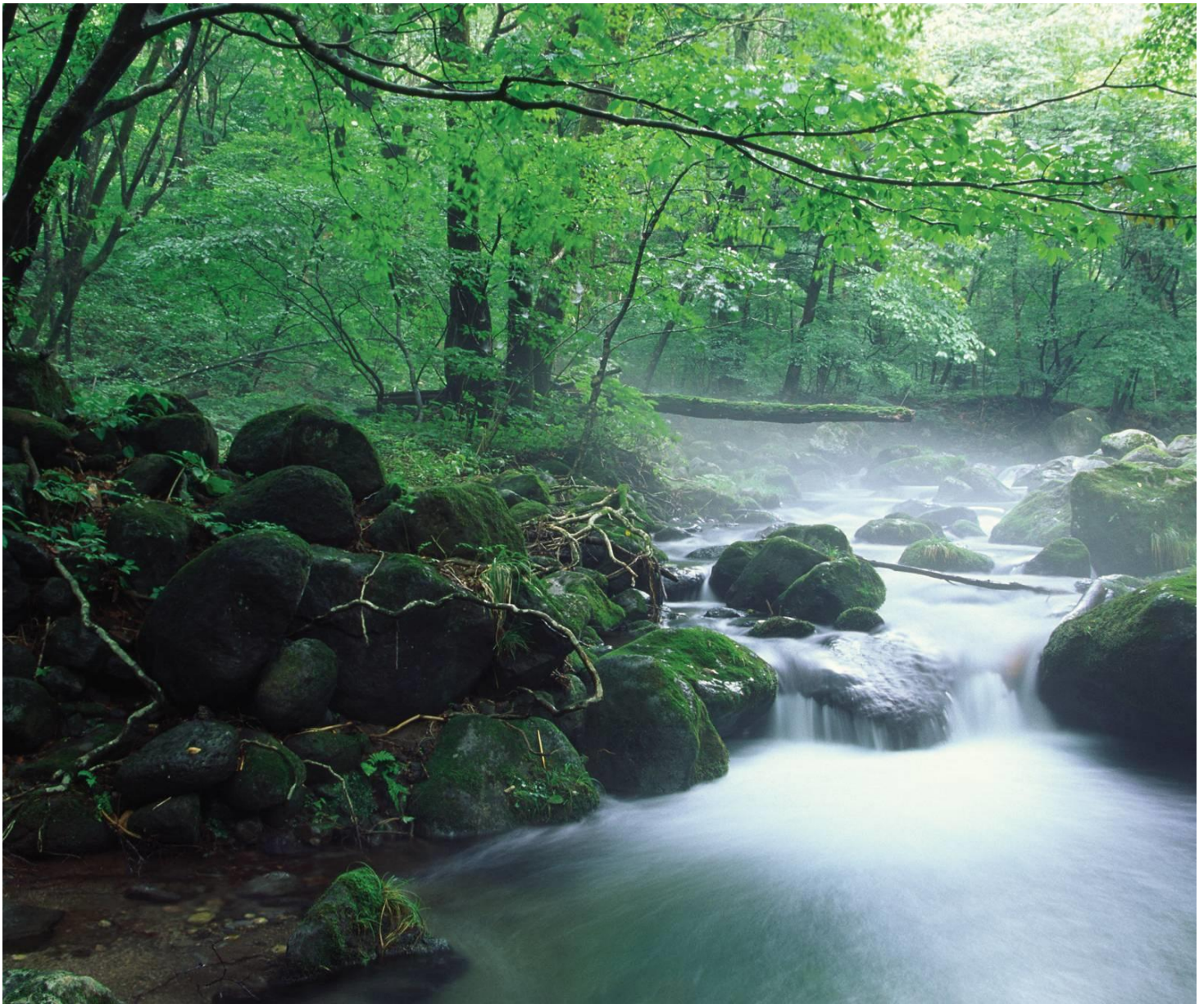
Health and Safety Plan and Community Air Monitoring Plan (Electronic Format)

Health and Safety Plan

Appendix D of the Site Management Plan

Former Clifton Manufactured Gas Plant Site

Staten Island, Richmond County, New York



Emergency Information and Hazard Assessment

Ground Intrusive Activities – Former Clifton MGP Site
Clifton, Richmond County, New York

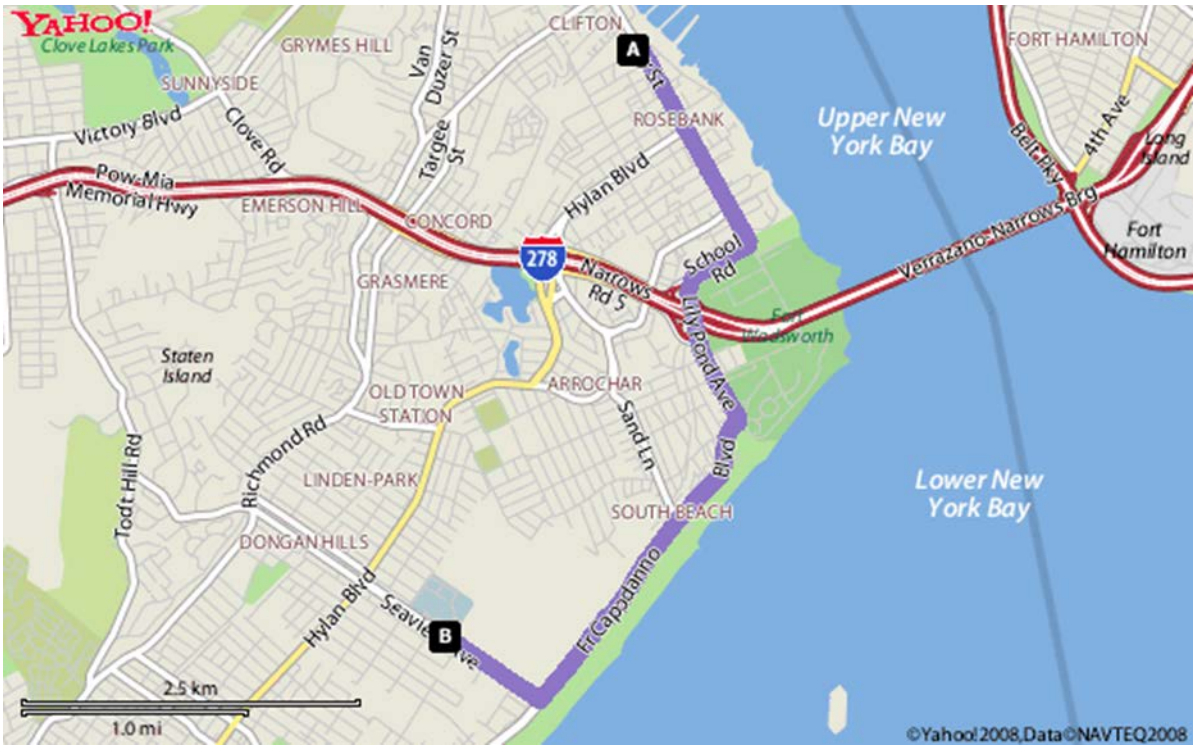
Hospital: Staten Island University Hospital

Address: 475 Seaview Avenue, Staten Island, NY

Phone #: (718) 226-9000

Directions from the Former Sag Harbor MGP site to Southampton Hospital

Start at 25 Willow Avenue, Staten Island, going towards Bay Street
Turn Right on Bay Street
Turn Right on School Road
Bear Left on Lily Pond Avenue
Turn Right on FR Capondanno Blvd.
Turn Right on Seaview Avenue
Arrive at 475 Seaview Avenue, Staten Island, on the Right.



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Emergency References

For critical injuries, dial 911 and/or seek treatment at the identified local Emergency Room

Ambulance: 911

Fire: 911

Police: 911

Underground Utilities – www.call811.com

DigNet of New York City and Long Island
Phone: (800) 272-4480
http://www.dignetynewyork.com/

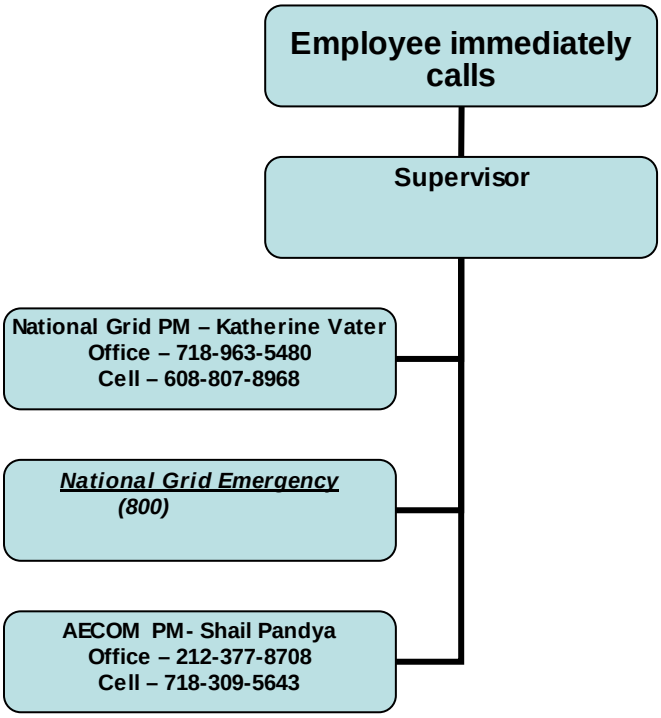
Emergency Chemical Information – InfoTrac (800) 535-5053

Poison Control Center – http://www.aapcc.org/
(800) 222-1222

Emergency Contact Phone Tree

Key Personnel:

National Grid PM – Katherine Vater
AECOM PM – Shail Pandya
National Grid Emergency -



AECOM Medical Records and Medical Consultant

In the event of a non-critical injury, and once preliminary reporting been completed, if the injured employee desires/needs to speak with a medical professional to consult on the nature of their injury and treatment options, employees may contact WorkCare directly if they have not be directed to call WorkCare, been contacted by WorkCare directly, or they have been unable to speak directly with any of the personnel identified in the Emergency Contact Phone Tree provided above.

Work Care North
Alameda, CA 94502
Telephone: 510-748-6900
Fax: 510-748-6915

Emergency Muster Point

The escape route from the site and an emergency muster point will be determined and provided to all workers during the project mobilization, and will be noted in the space below

Hazard Assessment

Task-Specific Hazard Assessment – Physical & Chemical

Hazard	General Site Hazard	Soil Boring & MW Installation	Soil Sampling	Groundwater Sampling	Utility Work	Excavation
Cold	√	√	√	√	√	√
Concrete Coring	√	√			√	√
Corrosive Liquids	√		√	√	√	√
Drilling	√	√				
Dust	√	√	√		√	√
Exposure to Chemical Hazards	√	√	√	√	√	√
Falling	√	√	√	√	√	√
Heat	√	√	√	√	√	√
Heavy Equipment	√	√			√	√
Insects	√	√	√	√	√	√
Lifting	√	√	√	√	√	√
Noise	√	√			√	√
Overhead Materials	√	√			√	√

Hazard	General Site Hazard	Soil Boring & MW Installation	Soil Sampling	Groundwater Sampling	Utility Work	Excavation
Overhead Utilities	√	√			√	√
Pinch Points	√	√	√	√	√	√
Poisonous Plants	√	√	√	√	√	√
Rotating Equipment	√	√			√	√
Sharp Objects	√	√	√	√	√	√
Splashing Liquids	√	√	√	√	√	√
Traffic	√	√	√	√	√	√
Tripping	√	√	√	√	√	√
Underground Utilities	√	√			√	√
Vehicle Operations	√	√	√	√	√	√
Weather	√	√	√	√	√	√

Chemical Hazards

Chemical Name	PEL[1]	TLV[2]	VP[3]	VD[4]	SG[5]	SOL[6]	FP[7]	LEL[8]	UEL[9]
Benzene	1	0.5	75	2.8	0.88	<1	12	1.2	7.8
Ethyl Benzene	100	100	7	4	0.88	<1	55	0.8	6.7
Hydrogen Cyanide	10	4.7 STEL	630	.94	0.69	100	0	5.6	40
Naphthalene	10	10	0.08	4.4	1.15	<1	174	0.9	5.9
Toluene	200	50	21	4	0.87	<1	40	1.1	7.1
Xylene	100	100	9	4	0.86	<1	81	1.1	7.0

[1] Permissible Exposure Limit in ppm
[2] Threshold Limit Value in ppm
[3] Vapor Pressure in mm Hg
[4] Vapor Density (air = 1)
[5] Specific Gravity (water = 1)
[6] Solubility in Water in %
[7] Flash Point in °F
[8] Lower Explosive Limit in % by volume
[9] Upper Explosive Limit in % by volume
NA = Not Applicable
? = Not known
C = Ceiling limit not to be exceeded

Unique Conditions

The National Grid PM (Katherine Vater) must be notified 15 business days prior to start of any ground intrusive activity as defined the Site Management Plan.

Ensure that all workers are made aware of the presence of a subsurface slurry wall on the 25 Willow Avenue property and a containment cell on the 40 Willow Avenue property. Please see SMP for extent.

Personal Protective Equipment

The minimum level of personal protective equipment required for field work is Level D. Level D consists of, hard hat, safety glasses, traffic safety vest, protective footwear, work gloves, and, as appropriate gloves for collection of environmental samples and hearing protection.

Additional personal protective equipment such as chainsaw chaps and sleeves, mesh face shield will be required for the cleaning and grubbing task.

Air Monitoring Instruments

Air monitoring in the breathing zone of field personnel potentially exposure to contaminated soils and groundwater will be conducted using a Photoionization detector (PID) with a 10.62 eV lamp.

Respiratory Protection

If conditions warrant Level C respirator protection in the form of half face or full face air purifying respirator with a combination organic vapors cartridge with P 100 filters will be required.

Job Hazard Analysis

AECOM

JHA Type: ☒ Investigation ☐ O&M ☐ Office ☐ Construction	☒ New ☐ Revised	Date:
Office: Client:	Location: Clifton, Richmond County, New York	
Work Type: Test Pitting, Drilling and Sampling Activities	Work Activity: Test pitting with a back hoe, soil boring via direct push and HAS, monitoring well installation, soil and groundwater sampling	

Personal Protective Equipment (PPE): Minimum PPE is Level D including: hard hat, safety glasses, steel-toed boots, hearing protection as needed, and gloves as needed (type dependent on job-specific requirements). Traffic vest with reflective material/tape if needed and polycoated tyvek suits is needed.

Development Team	Position/Title	Reviewed By	Position/Title	Date

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, and notification to required contacts (e.g. site managers, clients, subcontractors, etc.). Additionally, safety meeting must be performed and documented at the beginning of each workday. Relevant forms should be updated if modifications are made in the field once work begins. Also consider weather conditions (heat, cold, rain, and lightning).

Global Site Work Safety - applies to all activities

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Inclement Site Conditions/ Weather	Poor Lighting	• All workers should have flashlight available with spare batteries. • One line of communication should be open at all times.
	Exposure (E) to Lightning Strikes	• Fieldwork shall not be conducted when lightning can be seen or thunder heard from the work area. When lightning and/or thunder occur, employees are to cease work, perform emergency equipment shut down as needed, and then seek shelter. • Minimize contact with ground and keep body parts touching ground close together. • Follow HASP guidelines for resuming work
	E to Thunderstorms, Hurricanes	• Listen to radio announcements for updates • Visually track threatening weather, cease outdoor activities if necessary • Seek shelter.
	Heat Stress (HS)	• Monitor self and other workers when ambient temperature exceed 85°F • Wear appropriate clothing • Consume sufficient quantities of water/electrolytes to avoid dehydration • Monitor yourself and co-workers for signs of heat stress • Take frequent breaks and take shelter to cool-off if feeling signs of heat stress
	Cold Stress (CS)	• Wear adequate insulating clothing to maintain core temperatures above 36ºC • At air temperatures of 2ºC (35.6ºF) or less, if immersed in water or clothing becomes wet, immediately change clothing and get treated for hypothermia. • Cover metal handles of tools and control bars by thermal insulating material at temperatures below -1ºC (30ºF). • Protect hands with mittens if the air temperature is -17.5ºC (9ºF) or less. • Consume warm sweet drinks and soups to provide caloric intake and fluid volume. Limit the intake of coffee because of the diuretic and circulatory effects. • Work under constant protective observation (buddy system or supervision) at or below -12ºC (10ºF) ECT. • Monitor yourself and co-workers for signs of cold stress • Take frequent breaks and take shelter to warm if feeling signs of cold stress. Avoid conditions that induce sweating. • Minimize standing or sitting still.
Hand Safety	Hand injury	• Wear chemically protective gloves when in contact with contaminated material. • Use shears rather than utility knives to cut tubing or other materials. • Wear leather or heat-resistant gloves while performing manual work. • Avoid touching hot surfaces without proper protective equipment. • Identify and avoid pinch points • Do not grasp steel hoist cables during hoisting. • Use only appropriate tools for the task.
Ergonomic Safety	Lifting – Back and Foot injury	• Follow standard safe lifting practices. • Wear proper PPE, i.e., steel-toed shoes with metatarsals. • Use Mechanical lifting devices when ever possible. • Ensure path is clear prior to lifting and moving materials. • Ensure proper rigging.

Global Site Work Safety - applies to all activities (continued)

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Ergonomic Safety (continued)	Overexertion (O) when lifting supplies/equipment	• Use equipment whenever possible. • Procure help when lifting awkward loads or materials that weigh greater than 60 lbs. • Use proper lifting techniques.
Tool Safety	Damaged Tools or Improper Use of Tools Injury Property damage	• Training of personnel. • Inspection and maintenance of equipment. • Use of proper tools for the work being performed.
Chemical Safety	Contact With (CW) Chemicals	• Always show precaution, follow protocol, and were proper PPE including gloves and safety glasses while handling chemicals. • Keep portable eyewash kits nearby.
	E to Toxic Substances	• All workers will be trained in expected site-specific hazards prior to beginning work on-site. • Standards and safe work practices will be developed for any newly discovered toxic hazards that are determined to be present at the site •

Mobilization

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Arrive at the Site	Unsafe driving practices	• Review driving directions prior to departing site • Ensure seat belt is fastened • Do not use cell phone while driving • Safe driving in rain or severe weather • Obey all laws
Site Inspection	Contact With (CW) Hazardous Plants, Insects, and Animals	• Survey the surroundings before any activity for any hazardous plants and animals detailed in Section 2.5 of the HASP especially dogs, venomous insects, bees, and snakes • Use bug repellant sprays • Be aware of any coworkers with any insect bite allergies • Wear proper PPE, i.e., long sleeved shirt and long pants • Personnel to be trained in the proper procedures to be followed in the event that an animal exhibits abnormal behavior. • Seek first aid for any bites or stings (insect, snake, or otherwise) • Provide medications to the SHSO for any sting/bite allergies you may have
	Slip, Trip, and Fall on same level (FS) or to lower level (FL)	• Maintain a clean work area and good housekeeping practices by drying wet surfaces, cleaning up muddy areas, and keeping unnecessary equipment and supplies out of walkways. • Inspect tread on steel-toed boots for signs of wear and replace as necessary • When carrying field equipment maintain clear view of footing • Wear steel-toed boots that extend over the ankle • Never run while on the job site • Use backpacks for moving gear around the site to keep hands free. • Be aware of slippery conditions. • No work after dusk, without proper overhead lighting.

Mobilization (Continued)

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Equipment Set-up	Struck by (SB) Heavy Equipment	• Ensure backup alarms are operable • Never approach equipment without establishing eye contact with operator • Establish protocol for hand and arm signals
	Damaged Tools or Improper Use of Tools • Injury • Property damage	• Training of personnel. • Inspection and maintenance of equipment. • Use of proper tools for the work being performed.
	Overhead lines or obstructions	• Check all locations for overhead obstructions
	CW electrical energy	• Use operable ground fault circuit interrupters (GFCI's) for any tool. • Inspect sampling equipment for frayed cords, damaged parts, etc. at the start of each day.
	Hand injury	• Use shears rather than utility knives to cut tubing or other materials. • Wear leather or heat-resistant gloves while performing manual work. • Avoid touching hot surfaces without proper protective equipment. • Identify and avoid pinch points • Do not grasp steel hoist cables during hoisting. • Use only appropriate tools for the task.
	Lifting – Back and Foot injury	• Follow standard safe lifting practices. • Wear proper PPE, i.e., steel-toed shoes. • Use Mechanical lifting devices when ever possible. • Ensure path is clear prior to lifting and moving materials. • Ensure proper rigging.
	Mechanical Hazards – Pinch Points/Sharp edges	• Care should be taken when working around heavy equipment. These items feature sharp/hard edges that present cutting, scraping, and impalement hazards. • Identify and label pinch points on equipment

Investigative Activities

Setup soil, groundwater, and soil gas sampling locations	Underground utilities	• "Call before you dig" NY one call (Long Island) • Discuss utility situation with PM and Client before beginning any work.
Geoprobe® soil boring advancement, test pit digging and monitoring well installation	Safety equipment in Drill Rig not in place or operating	• Perform an initial and weekly inspection of heavy equipment.
	SB Heavy Equipment/ Heavy equipment operations	• Ensure backup alarms are operable • Ensure that emergency shut off button works on equipment • Keep proper clearance from equipment • Be aware of excavator swing radius • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • Operators should always wear seat belts while equipment is running • Operators must be aware of their surroundings at all times • Establish protocol for hand and arm signals • Do not climb on equipment; use proper stepping features and/or ladder that is braced properly. • Complete a drill rig inspection form before starting work to ensure there are no leaking hoses or damaged equipment.
	Mechanical Hazards - Pinch Points/Sharp edges	• Work at a safe distance from moving parts of the drill rig. • Ensure that equipment guards (whip guards) are in place and secure. • Ensure that personnel are aware of and familiar with the potential hazards of rotary equipment being used. • Keep hands and loose clothing away from rotating augers and drill stem.

Investigative Activities (continued)

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Geoprobe soil boring installation, and monitoring well installation (continued)	Noise	• Implement the two (2) feet rule, if shouting is required to be heard within two (2) feet of other personnel hearing protection is required. • Impulsive or impact noise must not exceed 140 db peak sound level. • Use engineering controls where applicable. • Use of hearing protection during drilling operations is required.
	Eye injury from flying debris or dust	• Wear protective eyewear. • Keep away from air rotary sample collection ports (e.g. cyclone samplers or diverters).
	Fire	• Have fire extinguishers on equipment. • Use fire watch as conditions warrant and as required by the hot work permit. • Obtain a hot work permit when using an external air compressor.
	Chemical exposure by inhalation or direct contact	• Position the drill rig and personnel upwind of drilling location, as practicable. • Provide air monitoring in the work area. • Personnel to use Modified Level D PPE (initially) with upgrade as needed. • Place drill cuttings into drums/containers and keep drums/containers closed as practicable during drilling. • Wear safety glasses.

Sampling Collection, Preparation, and Shipment

Collect soil and groundwater samples	E to toxic substances • Dermal contact with contaminated media • Ingestion of contaminated media	• Be alert during sampling to avoid splashing. • Wear proper PPE including protective gloves, protective coveralls, and safety glasses. • On exposure, rinse immediately with fresh water • Compliance with SOW/SOPs regarding the collection of samples. • Training of personnel. • Practice good personal hygiene and implementation of decontamination procedures using disinfectant.
	Mechanical Hazards – Pinch Points/Sharp edges/Impalement	• Care should be taken when working around sampling equipment. • Identify pinch points on equipment and include in the STAR form
	Slip, Trip, and FS on wet surfaces, over equipment, non stabilized surfaces and Weak or Narrow Embankments	• Wear appropriate slip-resistant boots with a steel toe. • Only the necessary personnel should be in the area of operation. • Always return equipment to proper storage location. • Avoid embankment edges. • Avoid positioning personnel downhill of equipment on embankments • Personnel to be cognizant of potential collapse of embankments. • Personnel to be cognizant of loose slopes.
	Caught Between (CB) pinch points	• When opening and closing bottle lids, be aware of pinch points. • Wear proper PPE including protective gloves, protective coveralls, and safety glasses. • Always keep attention focused on work.
	Lifting – Back and Foot injury	• Get assistance when lifting or moving heavy items if needed.
	Chemical Hazards - spills	• Exercise proper placement, handling, and storage of the chemical preservatives used during the sampling event. • Read associated MSDS • Ensure that the chemical/contaminated material is stored in a secondary containment device so that an unscheduled release of the chemical/contaminated material cannot occur.

Sampling Collection, Preparation, and Shipment (continued)

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Collect soil and groundwater samples (continued)	O by repeated motion	• Take breaks during sampling mixing. • Change personnel every four hours, if feeling tired. • Maintain good ergonomics.
	CW electrical energy	• Use operable GFCIs for any tool. • Keep electrical equipment away from wet surfaces and water. • Inspect sampling equipment for frayed cords, damaged parts, etc. at the start of each day.
Soil gas sampling	E to soil gas	• Measure for VOCs using a PID. • Respirator should be available for upgrade to Level C PPE
Secure samples in coolers for shipment	• Broken glass • Cross contamination	• Ensure sample bottles are securely packed in the cooler using bubble wrap and other packing materials.
Moving sample coolers	Heavy lifting	• Use proper technique or get help.
Ship samples to lab via FedEx	• Traffic Accident • Personal Injury	• Do not rush to get samples to FedEx. • Plan sampling activities to give adequate time to package samples and drop them off to Fed Ex location (if needed).

Test Pitting

Excavation/Backfilling of Test Pit	Chemical Exposure by Inhalation or Direct Contact	• Position the excavator and personnel upwind of excavation location, as practicable. • Provide air monitoring in the work area. • Upgrade PPE to use of respirator as needed. • Cover excavated soil stockpile, as practicable, until test pit is backfilled or excavated soil is disposed of. • Wear safety glasses.
	Noise	• Implement the two (2) feet rule, if shouting is required to be heard within two (2) feet of another then hearing protection is required. • Impulsive or impact noise must not exceed 140 db peak sound level. • Use engineering controls where applicable. • Use of hearing protection during excavation operations is required.
	Dust	• Use engineering controls (water truck) to the extent possible to wet down soils prior to excavation and backfill activities.
	Overhead/Underground Utilities	• Review available maps and have utilities located. • Ensure that overhead clearances for heavy equipment are within required limitations.
	Decon/Contact with High Pressure Water	• Direct pressure spray wand away from people and keep hands and feet away from discharge. • Personnel performing decon to wear full-face shield, gloves, rubber boots and tyvek or polycoated tyvek.

Demobilization

Decon sample preparation area and sampling tools	E and CW with airborne mists or vapors	• Always show precaution, follow protocol, and wear proper PPE including gloves and safety glasses while handling chemicals • Keep portable eyewash kits nearby
Decon sample preparation area and sampling tools (continued)	Chemical Hazards - spills	• Exercise proper placement, handling, and storage of the chemical solutions used during decontamination. • Read associated MSDS • Ensure that decontamination is carried out in a secondary containment device so that an unscheduled release of the contaminated decon water cannot occur.
	E to toxic substances • Dermal contact with contaminated media • Ingestion of contaminated media	• Be alert during decontamination to avoid splashing. • Wear proper PPE including protective gloves, protective coveralls, and safety glasses. • On exposure, rinse immediately with fresh water. • Training of personnel.
	Cross-contamination	• Wash your hands prior to touching your food or other “clean” materials that may be tainted by what is on your hands.
Closing drums of soil cuttings	• Heavy lifting • Cut or pinch from drum ring	• Use proper technique or get help. • Wear leather work gloves.

Job Hazard Analysis

AECOM

JHA Type: ☐ Investigation ☐ O&M ☐ Office ☒ Construction	☒ New ☐ Revised	Date
Office: Manhattan Client: National Grid USA Location: Clifton, Richmond County, New York		
Work Type: Excavation	Work Activity: Excavation and backfilling on the National Grid and Offsite Properties, loading and transport of impacted materials, dewatering, water treatment and discharge, excavation soil (if required) and water sampling	

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: hard hat, safety glasses or goggles, steel-toed boots, high visibility safety vest, hearing protection as needed, and gloves as needed (type dependent on job-specific requirements).

Additional PPE may be required in the Health & Safety Plan (HASP). Also refer to the HASP for air monitoring, and emergency procedures.

Development Team	Position/Title	Reviewed By	Position/Title	Date

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, and notification to required contacts (e.g. site managers, clients, subcontractors, etc.). Additionally, safety meeting must be performed and documented at the beginning of each workday. Relevant forms should be updated if modifications are made in the field. Also consider weather conditions (heat, cold, rain, lightning).

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
1. General Site Safety	Hand injury	• Use shears rather than utility knives whenever practical. • Wear leather or heat-resistant gloves while performing manual work. • Avoid touching hot surfaces without proper protective equipment. • Identify and avoid pinch points • Use only appropriate tools for the task.
	Slip, Trip, and Fall on same level or to lower level	• Maintain a clean work area and good housekeeping practices by drying wet surfaces, cleaning up muddy areas, and keeping unnecessary equipment and supplies out of walkways. • Inspect tread on steel-toed boots for signs of wear and replace as necessary • When carrying field equipment maintain clear view of footing • Never run while on the job site • Use backpacks for moving gear around the site to keep hands free. • Be aware of slippery conditions.
	Lifting – Back and Foot injury	• Follow standard safe lifting practices. • Wear proper PPE, i.e., steel-toed shoes with metatarsals. • Use Mechanical lifting devices when ever possible. • Ensure path is clear prior to lifting and moving materials.
	Overexertion when lifting supplies/equipment	• Use equipment whenever possible. • Procure help when lifting awkward loads or materials that weigh greater than 60 lbs. • Use proper lifting techniques.
	Contact with electrical energy	• Use operable GFCIs for any tool. • Inspect electrical equipment for frayed cords,

		damaged parts, etc. at least once a week.
	Heat Stress	• Monitor self and other workers when ambient temperature exceed 85°F • Wear appropriate clothing • Consume sufficient quantities of water/electrolytes to avoid dehydration • Monitor yourself and co-workers for signs of heat stress • Take frequent breaks and take shelter to cool-off if feeling signs of heat stress
	Fall to Lower Level (from trailers, equipment)	• Limit walking on elevated surface • Clean mud from boots prior to walking on trailers • Only rental company personnel to remove equipment off of low boy trailers (should equipment be rented)
	Trip/Slip/Fall on Same Level	• Establish and enforce housekeeping protocol
	Safety equipment not in place or operating	• Perform an initial and weekly inspection of heavy equipment
2. Equipment Mobilization	Struck by Heavy Equipment	• Ensure backup alarms are operable • Never approach equipment without establishing eye contact with operator • Establish protocol for hand and arm signals • Limit walking on elevated surface
	Fall to Lower Level (from trailers, equipment)	• Clean mud from boots prior to walking on trailers • Only rental company personnel to remove equipment off of low boy trailers (should equipment be rented)
	Trip/Slip/Fall on Same Level	• Establish and enforce housekeeping protocol
	Safety equipment not in place or operating	• Perform an initial and weekly inspection of heavy equipment
3. Excavation	Struck by Heavy Equipment/ Heavy equipment operations	• Ensure backup alarms are operable • Keep proper clearance from equipment • Be aware of excavator swing radius • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • Operators should always wear seat belts while equipment is running • Operators must be aware of their surroundings at all times • Establish protocol for hand and arm signals
	Fall to Lower Level (from trailers, equipment)	• Limit walking on elevated surface • Clean mud from boots prior to walking on trailers • Only rental company personnel to remove equipment off of low boy trailers (should equipment be rented)
	Trip/Slip/Fall on Same Level	• Establish and enforce housekeeping protocol
	Safety equipment not in place or operating	• Perform an initial and weekly inspection of heavy equipment

	Hydrocarbon exposure/ Chemical exposure and Dust exposure	• Perform air monitoring prior to entering excavation area (MultiRae meter) • Continue to monitor periodically throughout the day • Properly document all calibration activities and readings performed on the proper sheets • Continue to monitor periodically throughout the day • Properly document all calibration activities and readings performed on the proper sheets
	Noise	• Use hearing protection and make sure it is inserted properly
	Sidewall instability	• Carefully examine the condition of the sidewall prior to approaching the edge • Signs of instability: look for active sloughing of soils, water seepage in the sidewall, and the presence of tension cracks in the surface above the side wall • Never stand in the excavation immediately adjacent to a side wall • If it is necessary to enter the excavation, always select a sloped route that is not too steep and proceed slowly
	Uneven ground	• Wear steel-toed boots that extend over the ankle • Never run while on the job site
	Underground utilities	• Check utility plans and expose if necessary prior to work
4. Loading haul trucks	Heavy equipment operation	• Keep proper clearance from equipment • Be aware of loaders rapid movements • Establish eye contact with operator(s) and truck drivers prior to approaching equipment • Listen for backup indicators
	Impacted Soil Exposure	• Wear splash proof PPE over Nomex coveralls when spraying trucks • Don face shield prior to spraying trucks
	Falling material	• Never stand on the opposite side of a trailer that is being loaded; material may spill over the side
Truck decontamination	Impacted Soil Exposure	• Wear splash proof PPE over Nomex coveralls when spraying trucks • Don face shield prior to spraying trucks
	Slips, trips, falls	• Exposed liner in sump area is very slippery, extreme caution must be used • Never run around the decon area • The decon area will be kept in an order fashion
	Heavy equipment operation	• Never approach a truck until it comes to a complete stop • Truck driver and decon personnel must make eye contact prior to approaching the truck or before truck movement is initiated • Driver shall sound the horn once prior to pulling out to serve as a warning to decon personnel • Decon personnel shall give a visual indication that all is clear prior to the driver

		pulling out of the decon area
	Falling material	• Decon personnel shall take care to avoid standing directly under the trailer as they try to remove pieces of sludge that may be lodged on the truck. • Use extension poles to remove loose material overhead
Backfill excavation	Heavy equipment operations	• Keep proper clearance from equipment • Be aware of heavy truck traffic • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • To the maximum extent possible, remain clear of confined areas in which multiple pieces of equipment are operating
	Noise	• Use hearing protection and make sure it is inserted properly
	Uneven ground – backfilled ground may be very uneven, padfoot compactor leaves a rough uneven	• Wear steel-toed boots that extend over the ankle • Never run while on the job site; caution should be used while traversing backfilled areas
Soil Sampling (If Needed)	Chemical exposure and Dust exposure	• Perform air monitoring prior to entering excavation area (dust monitor and PID) • Continue to monitor periodically throughout the day • Properly document all calibration activities and readings performed on the proper sheets
	Entering excavations	• NEVER enter an excavation deeper than 4 feet bgs!!! Sampling in deep excavations will be conducted using the backhoe. • Maintain a safe distance from where the current excavation is being conducted. • Be sure the operators are aware of your location at all times. • Always wear proper PPE including gloves while sampling.
Truck/Vehicle Traffic	Contact with Pedestrian and Road Traffic	• Ensure all site personnel are wearing orange safety vests. • If necessary, employ flagmen on public street.
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Job Hazard Analysis

AECOM

JHA Type: ☐ Investigation ☐ O&M ☐ Office ☒ Construction	☒ New ☐ Revised	Date:
Office: Client: Loc: Clifton, Richmond County, New York		
Work Type: Demolition	Work Activity: Various Demolition	

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: Safety glasses, Steel toed boots, hard hat, Leather gloves, orange safety vest, face shield, hear protection (plugs and/or muffs)

Additional PPE may be required in the Health & Safety Plan (HASP). Also refer to the HASP for air monitoring, and emergency procedures. Please refer to Excavation JHA for additional site-specific requirements.

Development Team	Position/Title	Reviewed By	Position/Title	Date

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Jack-Hammering Concrete (hand operated hammer)	1. Flying Debris	• Wear appropriate PPE: hardhat with face shield, safety glasses, leather gloves, steel-toed boots, full body clothing.
	2. Noise	• Wear appropriate hearing protection in areas where decibel levels are > 85db • Be sure to use the hearing protection properly (either plugs, muffs or both)
	3. Vibration/ergonomic hazards	• Where appropriate footwear and gloves to lessen the effects of vibration on the body • Take frequent breaks: share the task with coworkers. • Use proper body positioning, avoid straining the back when moving the hammer
	4. Steel reinforcement bar removal	• Wear proper hand protection (leather gloves)

Hammering Concrete using backhoe/excavator hammer attachment	1. Flying Debris 2. Noise 3. Heavy Equipment Operation	• Wear appropriate PPE: hardhat with face shield, safety glasses, leather gloves, steel-toed boots, full body clothing. • Wear appropriate hearing protection in areas where decibel levels are > 85db • Be sure to use the hearing protection properly (either plugs, muffs or both) • Keep proper clearance from equipment • Be aware of excavator or backhoe swing radius • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • To the maximum extent possible, remain clear of confined areas in which multiple pieces of equipment are operating • Operators should always wear seat belts while equipment is running • Operators must be aware of their surroundings at all times
Loading debris onto trucks	1. Heavy Equipment Operation 2. Manually handling/moving concrete and steel debris 3. Heavy Equipment (Truck Traffic)	• Keep proper clearance from equipment • Be aware of excavator or backhoe swing radius • Establish eye contact with operator(s) prior to approaching equipment • Listen for backup indicators • To the maximum extent possible, remain clear of confined areas in which multiple pieces of equipment are operating • Operators should always wear seat belts while equipment is running • Operators must be aware of their surroundings at all times • Avoid hand injuries by wearing proper hand protection (leather gloves are recommended) • Do not attempt to lift more than you're capable of lifting safety • If debris is too large to handle, employ heavy equipment to move it. • Wear appropriate eye protection, hard hat, and steel-toed boots • Keep proper clearance from moving trucks • Maintain eye contact with drivers or communicate your actions with them • Listen for backup indicators • Stay clear of areas around the truck while they are being loaded with debris; falling debris could cause serious injury or a fatality.

Health and Safety Plan

Appendix D of the Site Management Plan

Former Clifton Manufactured Gas Plant Site

Staten Island, Richmond County, New York

January 2016

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Attachment A Health and Safety Plan Receipt and Acceptance Form

Attachment B EHS Field Forms

Attachment C Community Air Monitoring Plan

1.0 Introduction

This Health and Safety Plan (HASP) is required as an element of the remedial program at the Former Clifton Manufactured Gas Plant (MGP) site under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by the NYS Department of Environmental Conservation (NYSDEC). The HASP is appended to the Site Management Plan [(SMP), AECOM, 2014] as Appendix D which was developed in accordance with Order on Consent Index A2-0552-0606, Site Number 224061 [NYSDEC, 2007], which was executed in 2007.

It is important to note that:

- This HASP as a part of the SMP details Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of the ECL, 6 NYCRR Part 375 and the Order on Consent (Index Number A2-0552-0606, Site Number 243023) for the Site, and thereby cause for applicable penalties.

1.1 HASP Purpose

The purpose of this HASP is to identify hazards associated with the Former Clifton MGP site located in Staten Island, New York and specifies engineering and administrative controls and personal protective equipment necessary to mitigate the risks associated with these hazards. This HASP addresses the hazards recognized prior to writing or updating the documents. As new hazards are encountered, a Job Hazard Assessment (JHA) or Job Safety Analysis (JSA) must be conducted and the results input into the HASP.

This HASP also assigns responsibilities for the implementation of safety programs on this project and defines monitoring and emergency response planning specific to the project.

1.2 HASP Applicability

This HASP has been developed by AECOM. It establishes the health and safety procedures required to minimize potential risk to field personnel and contractor personnel involved with:

- Ground intrusive activities including utility work, boring completion, monitoring well installation, and excavation; and

- Activities related to implementation of the SMP including soil vapor intrusion and groundwater monitoring.

For purposes of further discussion in this SMP, the term "Site" will comprise of Block 2841, Lot 91 (25 Willow Avenue) and Block 2842 Lots 50, 58, 60, 61, 62, and 65 (40 Willow Avenue) as described in Section 1.2.1 of the SMP.

This HASP addresses the hazards associated with the Site and has been written to comply with the requirements of the Occupational Safety and Health Administration (OSHA) Personal Protective Equipment Standard (29 CFR 1910.132) for all activities and the OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) for tasks where there are potential exposures to subsurface contaminants. All activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable federal, state, and local health and safety regulations. Personnel covered by this HASP who cannot or will not comply will be excluded from project site activities.

This plan should be distributed to the employees of any contractors who are involved with any activities covered under the Clifton Site Management Plan [(SMP); AECOM, 2014]. Each employee must sign a copy of the attached Acknowledgement and Acceptance form (see Attachment A).

This HASP only pertains to the tasks that are listed in Section 3.0 of the SMP. A task specific HASP or addendum to this HASP will be developed at a later date for any other subsequent investigative/remedial activities at the project site.

1.3 Organization/Responsibility

1.3.1 Project Manager

The project manager is responsible for ensuring that the requirements of this HASP are implemented when applicable. Some of the specific responsibilities for each of the personnel include:

- The PM will assure that all personnel to whom this HASP applies have received a copy of it;
- Providing adequate authority and resources to the on-site SSO to allow for the successful implementation of all necessary safety procedures;
- Supporting the decisions made by the SSO;
- Coordinating the activities of all subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project.

1.3.2 Site Safety Officer

The SSO will be on-site during all activities covered by this HASP. The SSO is responsible for enforcing the requirements of this HASP once work begins. The SSO has the authority to immediately correct all situations where noncompliance with this HASP, by other staff or contractors, is noted and to immediately stop work in cases where an immediate danger is perceived. Some of the SSO's specific responsibilities include:

- Coordinate work activities, review safety issues, and plan for upcoming activities;
- Assuring that all personnel to whom this HASP applies have submitted a completed copy of the HASP receipt and acceptance form;
- Assuring that all personnel to whom this HASP applies have read the HASP in its entirety prior to any site work and have attended a pre-entry briefing and any subsequent safety meetings that are conducted by and/or the selected Contractor during the implementation of the program;
- Procuring and distributing the PPE and safety equipment needed for this project;
- Verifying that all PPE and health and safety equipment are in good working order;

- Verifying that subcontractors are prepared with the PPE, respiratory protection and safety equipment required for this program;
- Stopping or modifying the contractor's work, if necessary, to ensure compliance with the Community Air Monitoring Plan;
- Monitoring and controlling the safety performance of all personnel to ensure that required safety and health procedures are being followed;
- Conducting accident/incident investigations and preparing accident/incident investigation reports, in conjunction with the contractor's SSO;
- Conducting the pre-entry briefing prior to beginning work and subsequent safety meetings as necessary and in coordination with the contractor's SSO; and,
- Initiating emergency response procedures in accordance with Section 11.0 of this HASP, and in coordination with the contractor's SSO.

1.3.3 Field Personal

All field personnel covered by this HASP are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading the HASP in its entirety prior to the start of project site work;
- Submitting a completed HASP Acceptance Form to the SSO prior to the start of work;
- Attending the required pre-entry briefing prior to beginning on-site work and any subsequent safety meetings that are conducted during the implementation of the program;
- Participating in any site-wide safety meetings;
- Bringing forth any questions or concerns regarding the content of the HASP to the PM or the SSO prior to the start of work;
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the SSO; and,
- Complying with the requirements of this HASP and the requests of the SSO.

1.4 Management of Change/Modification of the HASP

1.4.1 Management of Change

The procedures in this HASP have been developed based on Site history, previous Site investigations, and completed remedial activities. Every effort has been made to address the chemical and physical hazards that may be encountered by personnel during Site activities. However, unanticipated Site-specific conditions or situations may occur during the implementation. As such, this HASP must be considered a working document that is subject to change to meet the needs of this dynamic project.

1.4.2 HASP Modification

Should significant information become available regarding potential on-site hazards, it will be necessary to modify this HASP. All proposed modifications to this HASP must be reviewed and approved by the NYSDEC and the NYS Department of Health (NYSDOH) before such modifications are implemented. Any significant modifications must be incorporated into the written document as addenda and the HASP must be reissued. Sign-off forms will accompany each addendum and must be signed by all personnel

covered by the addendum. The HASP addenda should be distributed during the daily safety meeting so that they can be reviewed and discussed. Attendance forms will be collected during the meeting.

1.4.3 Job Safety Analysis (JSA)

A JSA will be prepared for each task to be performed prior to commencing work. The use of new techniques will be reviewed and if new hazards are associated with the proposed changes, they will be documented and evaluated on the JSA form. An effective control measure must also be identified for each new hazard. JSA forms will be reviewed by National Grid prior to being implemented. Once approved, the completed forms will be reviewed with all field staff during the daily safety meeting. A blank JSA form is presented as Attachment B.

1.4.4 Employees Working Alone

Employees working alone at project sites will review the JSA for their tasks as they are conducting their daily overview and reconnaissance of the site. After completing the JSA review/revision and site reconnaissance, the employee should call the Project Manager and report any new hazards or site conditions observed.

2.0 Site Description

2.1 Site Location

The Site is located in Staten Island, Richmond County, New York and occupies two properties at the intersection of Bay Street and Willow Avenue and is identified as Block 2841 and Lot 91 and portion of Block 2842 and Lot 50 on the City of New York Tax Map (Figure 1-3). The 25 Willow Avenue portion of the site is an approximately 3.5-acre area bounded by the Staten Island Rapid Transit Operating Authority right of way to the north, Willow Avenue to the south, Bay Street to the east, and commercial property (89 Willow Avenue) to the west (see Figure 1-2). The 40 Willow Avenue portion of the site is an approximately 0.5-acre area bounded by Willow Avenue to the north, private residences to the south, Bay Street to the east, and a commercial property to the west.

2.2 Site History

2.2.1 Operational/Disposal History

The Former Clifton Manufactured Gas Plant was operated by the Richmond County Gas Light Co. from 1856 to 1901. The plant was then operated by the New York and Richmond Gas Company from 1901 until 1957. The Brooklyn Union Gas Co. (d/b/a National Grid New York) acquired the latter company in 1957, at which point Manufactured Gas Plant operations ceased. The above ground structures of the Manufactured Gas Plant were demolished in the spring of 1959.

The 25 Willow Avenue property (OU-2) was the location of the main operational facility of the former Manufactured Gas Plant. The manufacture gas plant consisted of a brick retort and water gas house where gas was produced, a purifying house, and other structures, including a 75-foot-diameter relief holder. Tar and fuel oil storage tanks were also located on the property. The 40 Willow Avenue property (OU-1) was the location of an additional relief holder, which used to store manufactured gas.

Over the years, by-products, such as coal tar, generated from the manufacture gas plant operations have leaked or been released from the former relief holders and other structures resulting in the contamination of soil and groundwater.

2.2.2 Remedial History

The NYSDEC and National Grid entered into an Order on Consent in April 1998 for the investigation and remediation of the site. Remedial Investigations were conducted from 2002 through 2008 and Remedial Actions including excavation and off-site disposal, vertical barrier wall installation, construction of vertical containment cell, and dense non-aqueous phase liquid (DNAPL) recovery system installations completed from 2007 and 2013.

2.3 Potential Contaminants of Concern

Potential contaminants of concern in soil and groundwater include:

- Volatile Organic Compounds (VOCs), primarily Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)

- Semi Volatile Organic Compounds (SVOCs), primarily naphthalene and low molecular weight PAHs
- Cyanide, bound to iron to form ferric-ferrocyanide, is a component of some Manufactured Gas Plant (MGP) tars.

3.0 Chemical Hazard Assessment and Control

3.1 Chemical Hazards

Typical wastes associated with former MGP operations could include VOCs such as BTEX, polycyclic aromatic hydrocarbons (PAHs), tar-like materials, cyanide complexes and compounds, and certain trace metals associated with ash and clinkers.

3.1.1 Volatile Organic Compounds

The VOCs associated with MGP wastes include BTEX. Exposure to the vapors of BTEX above their respective OSHA permissible exposure limits (PELs) may produce irritation of the mucous membranes of the upper respiratory tract, nose, and mouth. Overexposure may also result in the depression of the central nervous system (CNS). Symptoms of such exposure include drowsiness, headache, fatigue and drunken-like behaviors. Prolonged overexposure to benzene vapors has detrimental effects on the blood-forming system ranging from anemia to leukemia. The PEL for benzene is 1 part per million (ppm), as an 8 hour time-weighted average (TWA). The American Conference of Governmental Industrial Hygienists (ACGIH) recommends a threshold limit value (TLV) of 0.5 ppm, as an 8-hr TWA. The OSHA PEL for ethylbenzene is 100 ppm, as an 8-hr TWA. The PEL for toluene is 200 ppm, as an 8-hr TWA. However, the ACGIH recommends a TLV of 50 ppm for toluene. Xylene is a flammable, colorless liquid with an OSHA PEL of 100 ppm, as an 8-hour TWA. Inhalation of xylene vapors above the PEL may result in motor activity changes, irritability, and drunken-like behaviors. Xylene vapors are also irritating to the eye.

3.1.2 Polycyclic Aromatic Hydrocarbons

Typical coal gasification byproducts (coal tar) are referred to as PAH compounds. PAH compounds are a family of multiple ring aromatic compounds commonly found in fossil fuels and formed from the incomplete combustion of organic materials. Repeated contact with PAH compounds may cause photosensitization of the skin, producing skin burns after subsequent exposure to ultra-violet light. Certain PAHs as a group are considered potential human carcinogens (CaPAH). OSHA regulates PAHs as coal tar pitch volatiles (CTPV) and has established a PEL for CTPV of 0.2 mg/m3, as an 8-hr TWA.

Of the PAH compounds typically present at MGP sites, naphthalene is typically present at higher concentrations than the other compounds. Naphthalene is easily detected due to its characteristic moth-ball like odor. The inhalation of high concentrations of naphthalene vapor may result in nausea, vomiting, abdominal pain, and irritation of the bladder. Prolonged overexposure may result in renal shut down. The OSHA PEL for naphthalene, as an 8-hr TWA, is 10 ppm.

3.1.3 Oxide Box Wastes

Blue staining is the characteristic associated with the presence of oxide box wastes (ferrocyanide). Therefore, the presence of this material is very easily identified during field investigations. The cyanides associated with oxide box wastes are present in a form that is generally unavailable or complexed with metals such as iron, which makes the cyanide more stable. Thus, the reported effects of free cyanide are not applicable. OSHA has not established a PEL for ferro/ferri cyanide compounds. Similarly, the ACGIH has not recommended a TLV for these compounds.

3.1.4 Metals

Lead is a common component of urban fill and soils present at industrial sites, such as former MGP and electrical generating sites. In general, the inhalation of metal dusts is irritating to the upper respiratory tract and nasal mucous membranes. Most metal dusts may cause dermatitis and/or eye irritation. The early symptoms of lead poisoning, as a result of overexposure (either through ingestion or inhalation) include fatigue, sleep disturbance, headache, aching bones and muscles, digestive irregularities, abdominal pains, and decreased appetite. Chronic overexposures to lead affect the CNS and male and female reproductive systems. Lead has also been identified as a fetotoxin. The OSHA PEL for inorganic lead is 50 micrograms per cubic meter (ug/m^3).

3.1.5 Dust

Dust generated during coring or cutting of concrete, boring, or excavations can be hazardous to the respiratory system and irritating to the eyes. Dust can also carry the contaminants of concern potentially exposing workers by skin contact and inhalation. The ACGIH has established an eight-hour exposure limit for dust at 3 mg/M3. The concentrations of the chemicals of concern in the soil are low enough that inhalation of dust would not by itself be an exposure hazard. However contamination of skin and clothing can provide additional exposures. Therefore the generation and contact with dust should be minimized.

Water or other methods should be used to control dust during dusty operations; however care must be used to prevent electrical shock if electric tools are used in the same area. If dusts become irritating and engineering controls such as the application of water cannot be used, respirators should be donned as discussed in Section 7.

3.1.6 Hazardous Substances Brought On-Site

A material safety data sheet (MSDS) must be available for each hazardous substance that are brought on the property. This includes solutions/chemicals that will be used to decontaminate sampling equipment or to calibrate air monitoring equipment. These MSDSs will remain on site for the duration of the program. Additionally, the Contractor will maintain a binder of MSDSs for the materials they are using on site in their trailer for all employees to review, if necessary.

In addition, all containers of hazardous materials that brought on site must be labeled in accordance with OSHA's Hazard Communication Standard. Either the original manufacturer's label or an NFPA 704M label specific for the material (as shown at the right) is considered to be an acceptable label.

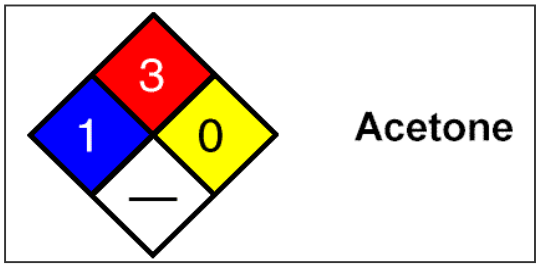


Table 3-1 Summary of Hazardous Properties of Potential Contaminants

Chemical Name	PEL[1]	TLV[2]	VP[3]	VD[4]	SG[5]	SOL[6]	FP[7]	LEL[8]	UEL[9]
Benzene	1	0.5	75	2.8	0.88	<1	12	1.2	7.8
Ethyl Benzene	100	100	7	4	0.88	<1	55	0.8	6.7
Hydrogen Cyanide	10	4.7 STEL	630	.94	0.69	100	0	5.6	40

Chemical Name	PEL[1]	TLV[2]	VP[3]	VD[4]	SG[5]	SOL[6]	FP[7]	LEL[8]	UEL[9]
Naphthalene	10	10	0.08	4.4	1.15	<1	174	0.9	5.9
Toluene	200	50	21	4	0.87	<1	40	1.1	7.1
Xylene	100	100	9	4	0.86	<1	81	1.1	7.0

[1] Permissible Exposure Limit in ppm

[2] Threshold Limit Value in ppm

[3] Vapor Pressure in mm Hg

[4] Vapor Density (air = 1)

[5] Specific Gravity (water = 1)

[6] Solubility in Water in %

[7] Flash Point in □F

[8] Lower Explosive Limit in % by volume

[9] Upper Explosive Limit in % by volume

NA = Not Applicable

? = Not known

C = Ceiling limit not to be exceeded

3.2 Chemical Exposure and Control

3.2.1 Chemical Exposure Potential

Employees can be exposed by inhalation to the chemicals of concern during the installation of the soil borings and sampling activities or utility maintenance or excavation. Another route of potential exposure to the contaminants of concern is via direct dermal contact with soils and groundwater during sampling.

Although highly unlikely, exposure to all of the contaminants of concern can occur via ingestion (hand-to-mouth transfer). The decontamination procedures described in Section 9.0 address personal hygiene issues that will limit the potential for contaminant ingestion.

3.2.2 Chemical Exposure Control

The chemical hazards associated with the ground intrusive activities and SMP monitoring activities can be controlled in several ways, including:

Perform air monitoring (Section 6) in the worker's breathing zone to determine exposure to the chemicals of concern during the installation of soil borings and the sampling program. If exposures exceed the action levels, respiratory protection as discussed in Section 7, will be donned.

To avoid direct dermal contact with contaminated media, protective clothing, as described in Section 7 will be required when collecting samples and decontaminating sampling equipment.

3.3 Hazardous Waste Management

Waste generated as a result of investigation activities will be containerized local to the point of generation, sampled for characterization purposes and secured prior to off-site transportation and disposal. Upon receipt of analytical results, the project team will work with National Grid to properly characterize, profile and dispose of the waste(s).

4.0 Physical Hazards and Controls

4.1 Working Around Heavy Machinery

4.1.1 Drill Rig

Use of a drill rig to advance soil borings and install monitoring wells will require all personnel in the vicinity of the operating rig to wear steel-toed boots, hard hats, hearing protection and safety eyewear. Drill rigs are considered to be heavy equipment, and therefore precautions must be incorporated into job activities when working in close proximity to drill rigs. In addition the wearing the PPE that has been determined to be necessary for the project, employees will need to ensure that Drill Rig Operators conduct inspections of the drill rig on a daily basis. A drill rig inspection is included in Attachment B as a reference. Focal points of the inspection should include checking hydraulic lines, tools and drilling equipment, emergency stop switches, and other parts of the equipment to insure that they are maintained in a safe operating condition.

Employees will also consider the staging their work area so that they are not within the shadow of the drill rig's mast. Working within this area creates a potential to be contacted by the drill rig if it were to tip over on its side. Likewise, when establishing a drilling location, the rig shall be positioned so that it won't clip overhead power lines should it tip over.

Additionally, the following safety requirements must be adhered to:

- All drill rigs and other machinery with exposed moving parts must be equipped with an operational emergency stop device. Drillers and geologists must be aware of the location of this device. This device must be tested prior to job initiation and periodically thereafter.
- The driller must never leave the controls while the tools are rotating unless all personnel are kept clear of rotating equipment.
- A long-handled shovel or equivalent must be used to clear drill cuttings away from the hole and from rotating tools. Hands and/or feet are not to be used for this purpose.
- A remote sampling device must be used to sample drill cuttings if the tools are rotating or if the tools are readily capable of rotating. Samplers must not reach into or near the rotating equipment. If personnel must work near any tools, which could rotate, the driller must shut down the rig prior to initiating such work.
- Driller's Drillers, helpers and geologists must secure all loose clothing, long hair, or jewelry when in the vicinity of drilling operations.
- Only equipment, that has been approved by the manufacturer, may be used in conjunction with drilling equipment Pins that protrude excessively from augers shall not be allowed
- No person shall climb the drill mast while tools are rotating.
- No person shall climb beyond 6 feet above ground on the drill mast without the use of ANSI-approved fall protection (approved belts, lanyards and a fall protection slide rail) or portable ladder that meets the requirements of OSHA standards.
- When using the rig's hoist to lift or move objects other than the equipment associated with the direct push operation, an assessment of the force required to perform the lift and the rig's design

specifications must be made to determine whether the lift can be made safely. In all cases personnel must not be in line with the cable when it is under tension.

- If drilling operations are to be performed within an enclosed space proper procedures must be followed to prevent the accumulation of carbon monoxide within the work area.
- Open doors and windows and provide ventilation to the outside.
- Employ the use of a mechanical ventilation system, i.e. blower or fan, appropriately sized for the room to circulate fresh air.
- Connect equipment exhaust points to hoses that can be direct ventilated to an outside area.

4.1.1.1 Rotary Auger & Rotating Parts

Exposure to rotating parts can occur when working near the drilling rig or the internal combustion engine. All rotating parts should be covered with guards to prevent access by workers. When performing maintenance activities that require the rotating parts to be exposed, workers should not allow loose clothing, hands, or tools to approach the rotating parts. Guards must be replaced as soon as possible after completing the maintenance task.

Operation of drilling equipment also creates hazards associated with pinch points and rotating equipment. Employees will evaluate work procedures to avoid placing their body and extremities in the path of rotating equipment and tools to avoid being struck by moving equipment, tools and machinery. Similarly, these hazards also create pinch point hazards where the body and extremities, especially the hands, can be caught in moving equipment and crushed. Employees will evaluate equipment and tool use procedures to identify pinch points and develop procedures to avoid placing body parts in a position where they can be caught in moving equipment, tools and machinery.

4.1.1.2 Direct Push Hazards

Use of the Direct Push System to advance soil borings and collect soil samples will require all personnel in the vicinity of the operating unit to wear steel-toed boots, hardhats, hearing protection and safety eyewear. Personnel shall not remain in the vicinity of operating equipment unless it is required for their work responsibilities. Additionally, the following safety requirements must be adhered to:

- A remote vehicle ignition is located on the control panel of the Geoprobe unit. This allows the operator to start and stop the vehicle engine from the rear. This device must be tested prior to job initiation and periodically thereafter. All employees should be aware of how to access and operate the rear ignition.
- The driller must never leave the controls while the probe is being driven.
- Drillers, helpers and geologists must secure all loose clothing when in the vicinity of drilling operations.
- The Geoprobe vehicle shall not be moved any distance with the probe in the extended position. Check for clearance at roof or the vehicle before folding the Geoprobe out of the carrier vehicle.
- Be sure the parking brake is set, or vehicle wheels have been chocked, before probing.
- Never allow the derrick foot to be lifted more than 6" off of the ground surface.
- Deactivate hydraulics when adding or removing probe rods, anvils or any tool in the hammer.
- Verify that all threaded parts are completely threaded together before probing.

Cuts and Lacerations

Geoprobe soil samples are collected in acetate liners that must be cut open in order to collect the sample. Additionally, tubing will need to be cut to facilitate groundwater sampling. Additional tasks for the job may also pose laceration hazards. Tube-cutters are available and should be used to eliminate this hazard. However, if it is necessary to use knives or blades, follow the safety precautions listed below:

- Keep your free hand out of the way
- Secure the acetate liner so it won't roll or move while you are cutting
- Use only sharp blades; dull blades require more force which results in less knife control
- Pull the knife at an angle to your body; pulling motions are easier to manage
- Don't put your knife in your pocket
- Use a hooked knife (i.e. linoleum knife) or a utility knife with a self-retracting blade
- Wear leather or Kevlar® gloves when using knives or blades.

4.1.1.3 Sonic Drilling

Use of a Sonic Drill Rig to advance soil borings, collect soil samples and/or install monitoring wells will require all personnel in the vicinity of the operating unit to wear steel-toed boots, hardhats, hearing protection and safety eyewear. Personnel shall not remain in the vicinity of operating equipment unless it is required for their work responsibilities. Additionally, the following safety requirements must be adhered to:

- A remote vehicle ignition may be located on the control panel of the Drill Rig. This allows the operator to start and stop the vehicle engine from the rear. This device must be tested prior to job initiation and periodically thereafter. All employees should be aware of how to access and operate the rear ignition.
- The driller must never leave the controls while the probe is being driven.
- Drillers, helpers and geologists must secure all loose clothing when in the vicinity of drilling operations.
- The Drill Rig shall not be moved any distance with the mast in the extended position. Check for clearance at roof or the vehicle before folding the Rig out of the carrier vehicle.
- Be sure the parking brake is set, vehicle wheels have been chocked and/or outrigger stabilizers have been positioned before drilling.
- Never allow the derrick foot to be lifted more than 6" off of the ground surface.
- Deactivate hydraulics when adding or removing rods, anvils or any tool in the hammer.
- Verify that all threaded parts are completely threaded together before drilling.

4.1.2 Soil Loading Machinery

Heavy equipment including excavators and soil loading machinery will be used to excavate impacted soils. Heavy equipment at the project site requires all employees working in the exclusion zone to wear ANSI-approved hard hats, steel-toed safety shoes/boots, safety glasses and hearing protection, as well as traffic vests as indicated above.

Operators will inspect the equipment daily before use to ensure safe operating conditions and to determine that the brakes and operating systems are in proper working condition and that all required safety devices are in place and functional (i.e., reverse gear alarms are working properly).

All personnel will place the spotter within close proximity to the operating machinery. When working around heavy equipment, employees should:

- make sure that the operator is aware of your presence/activities;
- stay in the operator's line of sight, don't work in his/her blind spot;
- approach areas where equipment is operating from a direction visible to the operator;
- be aware of the swing radius of the excavator;
- do not walk or work underneath loads handled by digging equipment;
- do not ride in buckets of loaders;
- stand away from soil stockpile areas to avoid being struck by any spillage or falling materials.; and,
- develop a series of hand signals to facilitate communication with the operator.

4.2 Trench/Excavation Cave-In or Collapse

The excavation depths vary depending on the activity to be completed. In some instances the proposed depths exceed five feet. Under no circumstances is the project team to enter an unshored or unsloped excavation greater than five feet in depth. If samples need to be collected, they will be collected from the bucket of the backhoe or by using a remote sampling device.

4.3 Concrete and Asphalt Coring & Cutting

Cutting and coring concrete and asphalt can involve numerous hazards. The noise generated as a result of the tools used, and adequate hearing protection is necessary when conditions outlined in the Noise section below are encountered. Tools used which can include drills and saws, must be appropriately guarded to prevent hands, PPE, and other objects from being caught-up in the moving parts and drawing employees in. Dust may also be generated while cutting concrete and either respiratory protection or dust suppression will need to be utilized to prevent exposure. Additional consideration must be given chemical hazard concerns that may exist in the materials underlying the concrete.

4.4 Corrosive Liquids

Site activities may require the use of corrosive liquids for preserving samples once collected, identifying substances in the field, or as part of system operations and maintenance. When corrosive liquids are identified in the work area, PPE upgrades will need to include an appropriate glove to mitigate the hazard, protective eye wear to guard against splashing liquids, and the potential need for poly-coated Tyvek to be worn. Additionally, the job task will be analyzed to determine if splashing and spilling can be minimized through the use of special equipment or procedures. Examples include using a funnel, identifying an alternative substance for use, and more.

4.5 Flying Objects Hazards

Activities involving the use of power tools, drilling rigs, and hand tools, among other activities, can create flying object hazards where objects can become projectiles. When flying objects represent projectiles employees need to use equipment that is appropriately guarded to minimize the creation of projectile hazards, and also use the appropriate PPE including hard hats, safety goggles, face shields to prevent projectiles from causing injuries to employees.

4.6 Hand Safety

4.6.1 Glove Selection

To protect onsite workers from hand injuries, the following gloves will be used for when performing a specific duty:

Brightly colored gloves will be used to help emphasize and easily locate the hands. It is recommended that the color of gloves be changed monthly to draw attention to the hands.

Pinch points are found between a moving object and a stationary object, or between two continuously moving objects. Yellow hand stickers will be placed on equipment to remind workers of pinch points.

4.6.2 Working with Glassware

Glass bottles, laboratory equipment, and VOA vials can break and cause lacerations and puncture wounds. The follow preventive measures should be taken to reduce the potential for broken glassware.

- Package all glassware such that there is no glass to glass contact during transportation or storage;
- Assume that any time glass strikes another object it is damaged;
- Inspect all glassware for cracks, scratches, and other damage before using;
- Lids and caps should be “finger tight” unless there is a torque specification and you use a torque wrench;
- Never fill a glass container (other than VOA vials with a septum) liquid full, always leave an air space to buffer thermal expansion of the liquid; and
- Avoid rapid temperature changes when filling glass containers.

Glass often has flaws that cannot be detected by visual inspection and the force needed to open and tighten lids can cause these flaws to fracture the glass. Any time force is applied to glass, workers should wear leather or preferably Kevlar® gloves. Kevlar® glove liners are available for use under Nitrile or cotton gloves.

4.6.3 Hand Tools

Rules for the safe use of hand tools:

- Select the right size tool for the job. Don’t use “cheaters” and avoid pulling old tools from the waste stream. There’s a reason why they were thrown away!
- All hand tools must be in safe condition.
- Handles must be sound, straight and tight-fitting.

- Always inspect tools before use and replace or repair worn or damaged tools.
- Always keep the cutting edges sharp and never test a cutting edge with your finger.
- When working on an elevated surface (ladder, truck, scaffold), ensure your tools are secure. Falling tools can cause serious injury.
- Always carry your tools correctly and never put sharp or pointed tools in your pocket.
- When carrying hand tools, always point the cutting edge to the ground.
- Always keep your tools in a dry place to prevent rust.
- Cutting tools must be kept sharp and properly shaped.
- Secure work pieces prior to cutting or drilling.
- Keep the unused hand and other people away from the tool.

4.6.4 Specific Tool Use

4.6.4.1 Screwdrivers

Most screwdrivers are not designed to be used on electrical equipment. Use an insulated screwdriver for electrical work.

Do not hold an object in the palm of one hand and press a screwdriver into it; place the object on a bench or table. Never hammer with a screwdriver. Never use a screwdriver with a broken handle, bent or burred blade, etc.

4.6.4.2 Pliers

Do not use pliers as a substitute for hammers, wrenches, pry bars, etc. Use insulated pliers when doing electrical work. Inspect the pliers frequently to make certain that they are free of breaks or cracks.

Use the right type of pliers for the specific task – adjustable, locking (Vise Grip®), standard, bolt size fit, pipe wrench.

4.6.4.3 Hammers

Use the correct hammer for the specific type of striking work (task) to be done. Always wear safety glasses when using a hammer to strike an object. Always use the claw portion of a hammer to remove nails and not as a pick or awl. Have an unobstructed view and swing when using a hammer. Watch for overhead interference on back and forward swing. Use a good grip and use something other than your hand to hold a nail when starting hammering. Check for defects on the handle and head before using. If the hammer head shows signs of mushrooming, replace it immediately.

Handles may be wood, tubular/solid steel or fiberglass. Replace any hammer with a loose handle before the head flies off and causes injury to you or someone else. Tighten loose handles with the proper wedges; never use nails or staples for wedges. If a steel or fiberglass handle is loose replace it, since it is more difficult to repair than a wooden one. Some fiberglass handles can be tightened with the aid of a repair kit with epoxy materials.

4.6.4.4 Wrenches

Select the correct size of wrench for the job. Never use a pipe wrench as a wrench handle extension. Too much leverage can ruin a tool and cause injury.

To avoid sudden slips, stand in a balanced position and always pull on the wrench instead of pushing against the fixed jaw, particularly when a pinch point is created. Wear gloves when using a wrench in a confined space.

Whenever possible use a box end wrench instead of an open end wrench to avoid slipping.

4.6.4.5 Chisels

Always wear safety goggles or a face shield when using a chisel. Drive chisels outward and away from your body. Do not use chisels to pry. Keep edges sharp for most effective work and protect when not in use. Driven tools (chisels, punches, etc.) must be dressed to remove any mushrooming. Use the proper hammer when using a chisel.

4.6.4.6 Knives

Always perform a thorough Job Safety Analysis (JSA) to define the proper cutting tool for the task.

Always place the item to be cut on a solid surface, attempt to hold the cut item without your hand and cut in a direction away from the body and hand.

Always keep hands and body clear of the knife stroke. Always keep the cutting tool blades sharp.

Make sure there is plenty of open space around you when using any cutting tool.

Use the following safer tools in replace of fixed open blade knives (FOBK) whenever possible:

- Self-retracting utility knives
- Guarded utility knives
- Shears, snips, and/or scissors
- Concealed blade cutters
- Pipe cutters
- Specialty cutters (e.g. Geoprobe Acetate Liner Cutter)
- Ratcheting tools

4.6.5 Power Tools

To prevent hazards associated with the use of power tools, workers should observe the following general precautions:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords away from heat, oil and sharp edges.
- Disconnect tools when not using them, before servicing or cleaning them and when changing accessories such as blades, bits and cutters.
- If a tool is only temporarily being removed from the power source and the cord is not in the immediate control of the user, it is strongly suggested that a cord plug lockout be used to prevent the tool from accidentally being re-plugged in.

- Secure work with clamps or vise, freeing up both hands to operate the tool.
- Avoid accidental starting. Do not hold fingers on the switch button when carrying a plugged-in tool.
- Keep tools sharp and clean for best performance.
- Wear appropriate clothing. Loose clothing or jewelry can become caught in moving parts.
- Keep all guards in place.

4.6.6 Electric Tools

A variety of power tools may also be used during the proposed activities. When using portable tools that are electrically powered, follow the safety precautions listed below:

- Check to see that electrical outlets used to supply power during field operations is of the three wire grounding type.
- Extension cords used for field operations should be of the three wire grounding type and designed for hard or extra-hard usage. This type of cord uses insulated wires within an inner insulated sleeve and will be marked S, ST, STO, SJ, SJO or SJTO.
- NEVER remove the ground plug blade to accommodate ungrounded outlets.
- Do not use extension cords as a substitute for fixed or permanent wiring. Do not run extension cords through openings in walls, ceilings or floors.
- Protect the cord from becoming damaged if the cord is run through doorways, windows or across pinch points.
- Examine extension and equipment cords and plugs prior to each use. Damaged cords with frayed insulation or exposed wiring and damaged plugs with missing ground blades MUST BE REMOVED from service immediately.
- All portable or temporary wiring which is used outdoors or in other potentially wet or damp locations must be connected to a circuit that is protected by a ground fault circuit interrupter (GFCI). GFCI's are available as permanently installed outlets, as plug-in adapters and as extension cord outlet boxes. DO NOT CONTINUE TO USE A PIECE OF EQUIPMENT OR EXTENSION CORD THAT CAUSES A GFCI TO TRIP.
- When working in flammable atmospheres, be sure that the electrical equipment being used is approved for use in Class I, Division I atmospheres.
- Do not touch a victim who is still in contact with current. Separate the victim from the source using a dry, nonmetallic item such as a broomstick or cardboard box. Be sure your hands are dry and you are standing on a dry surface. Turn off the main electrical power switch and then begin rescue efforts.

4.7 Noise Exposure

The use of drilling equipment and construction machinery can expose the field team to noise levels that exceed the OSHA PEL of 90 dB for an 8-hour day. Exposure to noise can result in the following:

- Temporary hearing losses where normal hearing returns after a rest period;
- Interference with speech communication and the perception of auditory signals;
- Interference with the performance of complicated tasks; and,

- Permanent hearing loss due to repeated exposure resulting in nerve destruction in the hearing organ.

Since personal noise monitoring will not be conducted during the proposed activities, employees must follow this general rule of thumb: If the noise levels are such that you must shout at someone two (2) feet away from you, you need to be wearing hearing protection. Employees can wear either disposable earplugs or earmuffs but all hearing protection must have a minimum noise reduction rating (NRR) of 27 dB.

4.8 Overhead Materials

Overhead materials can include objects, tools, utilities, equipment and machinery that are, or have the potential to be, elevated above the work area. Overhead materials pose a significant safety risk because of the force that can be generated when they fall and strike an employee. Special attention should be paid when setting up a work area to evaluate the potential for overhead materials to cause traumatic blunt force trauma. Consideration must be given to potential for these overhead objects to be contacted during the course of work by employees and Subcontractors, and what the result of contacting these overhead materials will be.

If possible, the work area should be adjusted or moved so that no overhead materials present a hazard. Likewise, if the object overhead can be relocated to remove the hazard, that is the preferred course of mitigation. When the hazard can't be eliminated, then protective measures to shield the employees from being struck by falling objects should be taken. As a last resort, and as part of the minimum PPE for project site work, employees working in areas where falling objects pose a hazard will wear a hard hat.

4.9 Pinch Points

The use of hand tools, mechanical equipment, heavy machinery and more can create pinch points within the working area. Pinch points can be recognized when moving objects are present in the work space in close proximity to employees, and it is reasonable to assume that a part of the employee's body can be caught between the moving objects. Pinch points will be considered when performing a Job Safety Analysis for the task being performed and recommendations will be made to reduce the potential for body parts to become caught in moving parts, including but not limited to:

- The use of PPE, e.g. gloves, boots, etc, to protect exposed body parts;
- Guarding machinery and equipment to prevent body parts from being caught in the moving objects;
- Using tools as an extension of the body to avoid placing body parts in the path of harm. When tools are used as an extension of the body consideration will be given to how the tool may become a hazard if it is caught within moving parts.

4.10 Slips, Trips and Fall Hazards

On any work area, it is expected that the ground might be uneven. The ground surface might be unreliable due to settling. Surface debris might be present and wet or swampy areas can exist.

Employees should walk around, not over or on top of debris or trash piles. When carrying equipment, identify a path that is clear of any obstructions. It might be necessary to remove obstacles to create a smooth, unobstructed access point to the work areas on project site.

During the winter months, snow shovels and salt crystals or calcium chloride should be kept on site to keep work areas free of accumulated snow and ice. Furthermore, use sand or other aggregate material to help keep work surfaces from being slippery, especially where salt/calcium chloride cannot be used. In addition, make sure work boots have soles that provide good traction. When walking on ice is necessary crampons or Yaktrax® should be used.

Maintaining a work environment that is free from accumulated debris is the key to preventing slip, trip and fall hazards at construction sites. Essential elements of good housekeeping include

- Orderly placement of materials, tools and equipment;
- Placing trash receptacles at appropriate locations for the disposal of miscellaneous rubbish;
- Prompt removal and secure storage of items that are not needed to perform the immediate task at hand; and,
- Awareness on the part of all employees to walk around, not over or on, equipment that might have been stored in the work area.

4.11 Splashing Liquids

Groundwater sampling activities can produce splashing hazards in the work area. Employees will use techniques that minimize the production of splashing hazards while handling liquids, including groundwater, sample container preservatives, decontamination solutions and any other liquids in the work area. Employees will also evaluate the working tasks to consider the use of goggles while working with liquids.

4.12 Back Safety

Using the proper techniques to lift and move heavy pieces of equipment is important to reduce the potential for back injury. The following precautions should be implemented when lifting or moving heavy objects:

- Use mechanical devices to move objects that are too heavy to be moved manually.
- If mechanical devices are not available, ask another person to assist you.
- Bend at the knees, not the waist. Let your legs do the lifting.
- Do not twist while lifting.
- Bring the load as close to you as possible before lifting.
- Be sure the path you are taking while carrying a heavy object is free of obstructions and slip, trip and fall hazards.

4.13 Traffic Safety

4.13.1 Transportation Plan

The Excavation Work Plan (Appendix A of the SMP) contains a transportation plan for the Site. This plan addresses requirements for accessing the project site, limitations of public use of the streets or sidewalks adjacent to the project site, securing any necessary permits to use and/or close public streets and sidewalks, and the need for flaggers and signage when traffic flow will be impeded on public streets.

4.13.2 Basic Procedures

To make certain that motorists are aware of our presence, all employees who are potentially exposed to traffic hazards should wear orange or yellow ANSI Class II or III safety vests. Work area should be delineated with traffic cones, or other suitable warning barriers, to prevent motorists from inadvertently driving through. As for vests, cones or other barrier materials should be reflectorized if work will be performed during dusk or evening hours. Where it is not feasible to implement such procedures, a standby observer should be assigned to warn the work crew of any impending traffic hazards.

4.13.3 Work On/Adjacent to Public Roadways

For projects that involve potential exposure to traffic on or adjacent to public roadways, consult the "Work Zone Traffic Control" handbook, under "Traffic Control" on AECOM's H&S Website, at the following web address: http://intranet.AECOM.com/healthweb.

The handbook was developed by the State of Maine DOT and provides examples of traffic control applications for typical road work situations (e.g., closure of one lane of a two lane road, stationary work on the shoulder of a road, mobile work along the shoulder of a road, etc.). Although it was written to reflect the basic requirements of Part VI of the Federal Highway Administration's (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), this handbook is not a regulatory document. Since specific requirements will vary from state to state, and within a state, by county, city or town.

4.13.4 Flagging/Redirecting Traffic

Specific requirements exist when traffic must be redirected around a work area that is on or adjacent to a public roadway. In certain locations only police officers may redirect traffic. As a minimum, OSHA requires that flaggers be formally trained in accordance with the requirements specified in ANSI D6.1-1971.

http://www.atssa.com/cs/flagger

When traffic must be redirected, and the local police do not perform that role, a traffic control firm should be hired (these are frequently listed in the yellow pages under "safety").

4.14 Driving Safety

Drivers must be licensed to drive the class of vehicle they are operating and trained in defensive driving. Drivers and passengers must comply with all traffic laws and posted signs, and will not operate a vehicle if under the influence of impairing medication, alcohol, or any other substance.

Make sure that the following basic safe driving practices are followed at all times while working on this project:

- Always wear a seat belt while operating a motor vehicle or while traveling as a passenger.
- Obey speed limits and local traffic laws at all times.
- Obtain proper directions to the project site in advance and take the route that is most likely to be free of known traffic hazards (e.g., congestion, construction, etc.) and that avoids travel through potentially dangerous neighborhoods.
- Abstain from distractions while driving (e.g., the use of cell phones, eating/drinking, reading maps, etc.) If necessary, stop the vehicle and pull over to perform such activities safely.

- Do not operate a motor vehicle if you are tired and/or have not had sufficient rest. AECOM's H&S policy 1.2 limits the maximum length of the workday to 16 hours for fieldwork. This limit includes the time spent driving to/from a site.

- All unattended personnel transport vehicles will not be allowed to idle, and must be turned off when not in use.

4.14.1.1 Planning / Preparation

- Prior to departure, check traffic reports, weather conditions, road construction, and road closures. If necessary, develop an alternate route and new, approved JMP (Journey Management Plan).

- Prior to entering the vehicle, inspect the vehicle.

- Leave early to allow for contingencies.

4.14.1.2 Secure Packing

Do not move your vehicle unless all equipment and supplies are secured. Items and material which may roll, slide, or move about in your vehicle while traveling are a major hazard. Secure the load!

4.14.1.3 Emergency Procedures

Always move out of traffic if possible; even if those in front of you have stopped. Stopping on an active highway can precipitate being hit from the rear. If you must stop on an active roadway, leave at least one car length in front of you, and watch the rear mirror, so you can ease up if someone behind can't stop. Keep your flashers on in this situation. If you are the only driver coming to a stop on an active roadway, leave the flashers on and when safe to do so, exit the car and get to a safe location.

If you must stop due to vehicle failure, etc. try to coast out of traffic. Put on your flashers, and tie a white handkerchief, etc. on the driver's side door or mirror. If you remain in the vehicle, lock the doors. Use your cell phone to summon help.

4.15 Utility Hazards

4.15.1 Underground Utilities

Law requires that a utility clearance be performed prior to initiation of any subsurface work.

Dig Net of New York City and Long island
(800) 272-4480 or http://www.dignetnycli.com/

Call to request a mark-out of natural gas, electric, telephone, cable television, water and sewer lines in the proposed drilling locations. In many locations, a separate location request must be submitted to the municipality providing potable water, sanitary and storm sewerage. Work will not begin until the required utility clearances have been performed.

Utility clearance organizations typically do not mark-out underground utility lines that are located on private property. As such, the drilling contractor must exercise due diligence and try to identify the location of any private utilities on the property being investigated in several ways, including:

- Obtaining as-built drawings for the areas being investigated from the property owner;
- Visually reviewing each proposed soil boring locations with the property owner or knowledgeable site representative;
- Performing a geophysical survey to locate utilities;
- Hiring a private line locating firm to determine the location of utility lines that are present at the property;
- Identifying a no-drill zone; or
- Hand digging in the proposed soil boring locations if insufficient data is available to accurately determine the location of the utility lines.

The client or property owner may have specific requirements and procedures for underground utility clearance.

4.15.2 Overhead Utilities

All overhead lines will be considered “energized” unless properly de-energized, grounded and tested by the utility company before working within the clearance distance as defined below. The SSO must observe de-energizing process and reconfirm that the lines are de-energized on a daily basis.

Any vehicle or mechanical equipment that is capable of having parts of its structure elevated near energized overhead lines shall be operated so that a minimum clearance of 10 feet is maintained at all times. This 10 foot distance shall be increased a minimum of 0.4 inches for each 1 kV over 50 kV. If the voltage of the overhead line is unknown, maintain a clearance distance of 35 feet from ground projection of the nearest power line to the vehicle. Any work within the clearance distance must be approved by the Regional Health and Safety Manager and the utility company.

Precautions must be taken when handling lengths of pipe or tubing that can approach overhead power and utility lines. When working with pipe or tubing, maintain a distance equal to the length of pipe plus the clearance distance defined above.

4.16 Weather

4.16.1 Inclement Weather

The Site Safety Officer will check the weather forecast for the project area each morning prior to mobilization. Predicted weather conditions will be included in the Job Safety Analysis. Weather changes should initiate a review and update of the JSA as necessary.

Severe weather can occur with little warning. The employee must be aware of the potentials for lightning, flash flooding and high wind events.

Be Prepared, Know What is Coming your Way

- Listen to the radio for severe weather alerts.
- Check the Storm Prediction Center's web page for alerts and warnings.

http://www.spc.noaa.gov/products/wwa/

- Pay attention to the weather in your area, up wind of your location, and in the watershed upstream from your location.
- When in the field, be aware of the route you must take to get to shelter.
- When working in low areas be aware of the potential for flash flooding and the route to higher ground.

4.16.2 Heat Stress

4.16.2.1 Types of Heat Stress

Heat related problems include heat rash, fainting, heat cramps, heat exhaustion and heat stroke. Heat rash can occur when sweat isn't allowed to evaporate; leaving the skin wet most of the time and making it subject to irritation. Fainting may occur when blood pools to lower parts of the body and as a result, does not return to the heart to be pumped to the brain. Heat related fainting often occurs during activities that require standing erect and immobile in the heat for long periods of time. Heat cramps are painful spasms of the muscles due to excessive salt loss associated with profuse sweating.

Heat exhaustion results from the loss of large amounts of fluid and excessive loss of salt from profuse sweating. The skin will be clammy and moist and the affected individual may exhibit giddiness, nausea and headache.

Heat stroke occurs when the body's temperature regulatory system has failed. The skin is hot, dry, red and spotted. The affected person may be mentally confused and delirious. Convulsions could occur. EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH. A person exhibiting signs of heat stroke should be removed from the work area to a shaded area. The person should be soaked with water to promote evaporation. Fan the person's body to increase cooling.

Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks.

4.16.2.2 Early Symptoms of Heat-Related Health Problems:

decline in task performance	excessive fatigue
incoordination	reduced vigilance
decline in alertness	muscle cramps
unsteady walk	dizziness

4.16.2.3 Susceptibility to Heat Stress Increases due to:

lack of physical fitness	obesity
lack of acclimatization	drug or alcohol use
increased age	sunburn
dehydration	infection

People unaccustomed to heat are particularly susceptible to heat fatigue. First timers in PPE need to gradually adjust to the heat.

4.16.2.4 The Effect of Personal Protective Equipment

Sweating normally cools the body as moisture is removed from the skin by evaporation. However, the wearing of certain personal protective equipment (PPE), particularly chemical protective coveralls (e.g., Tyvek), reduces the body's ability to evaporate sweat and thereby regulate heat buildup. The body's efforts to maintain an acceptable temperature can therefore become significantly impaired by the wearing of PPE.

4.16.2.5 Measures to Avoid Heat Stress:

The following guidelines should be adhered to when working in hot environments:

- Establish work-rest cycles (short and frequent are more beneficial than long and seldom).
- Identify a shaded, cool rest area.
- Rotate personnel, alternative job functions.
- Water intake should exceed sweat produced. Most workers exposed to hot conditions drink less fluids than needed because of an insufficient thirst. **DO NOT DEPEND ON THIRST TO SIGNAL WHEN AND HOW MUCH TO DRINK.** Consume enough liquid to force urination every two hours. In humid climates ice water or ice should be consumed to help maintain normal body temperature since evaporation does not provide an efficient mechanism for heat removal.
- Eat light meals before and during work shifts. Avoid highly salted foods.
- Drink sports drinks such as Gatorade® diluted 1:1 with water.
- Save most strenuous tasks for non-peak heat hours such as the early morning or at night.
- Avoid alcohol during prolonged periods of heat. Alcohol will cause additional dehydration.
- Avoid double shifts and/or overtime.

The implementation and enforcement of the above mentioned measures will be the joint responsibility of the Project Manager and health and the Site Safety Officer. Potable water and fruit juices should be made available each day for the field team.

4.16.2.6 Heat Stress Monitoring Techniques

Site personnel should regularly monitor their heart rate as an indicator of heat strain by the following method:

Radial pulse rates should be checked by using fore-and middle fingers and applying light pressure top the pulse in the wrist for one minute at the beginning of each rest cycle. If the pulse rate exceeds 110 beats/minute, the next work cycle will be shortened by one-third and the rest period will be kept the same. If, after the next rest period, the pulse rate still exceeds 110 beats/minute, the work cycle will be shortened again by one-third.

4.16.3 Cold Stress

4.16.3.1 Type of Cold Stress

Cold injury is classified as either localized, as in frostbite, frostnip or chilblain; or generalized, as in hypothermia. The main factors contributing to cold injury are exposure to humidity and high winds, contact with wetness and inadequate clothing.

The likelihood of developing frostbite occurs when the face or extremities are exposed to a cold wind in addition to cold temperatures. The freezing point of the skin is about 30° F. When fluids around the cells of the body tissue freeze, skin turns white. This freezing is due to exposure to extremely low temperatures. As wind velocity increases, heat loss is greater and frostbite will occur more rapidly.

4.16.3.2 Symptoms of Cold Stress

The first symptom of frostbite is usually an uncomfortable sensation of coldness, followed by numbness. There might be a tingling, stinging or aching feeling in the affected area. The most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Symptoms of hypothermia, a condition of abnormally low body temperature, include uncontrollable shivering and sensations of cold. The heartbeat slows and can become irregular, the pulse weakens and the blood pressure changes. Pain in the extremities and severe shivering can be the first warning of dangerous exposure to cold.

Maximum severe shivering develops when the body temperature has fallen to 95° F. Productive physical and mental work is limited when severe shivering occurs. Shivering is a serious sign of danger. Immediately remove any person who is shivering from the cold.

4.16.3.3 Methods to Prevent Cold Stress

When the ambient temperature, or a wind chill equivalent, falls to below 40°F (American Conference of Governmental Industrial Hygienists recommendation), project site personnel who must remain outdoors should wear insulated coveralls, insulated boot liners, hard hat helmet liners and insulated hand protection. Wool mittens are more efficient insulators than gloves. Keeping the head covered is very important, since 40% of body heat can be lost when the head is exposed. If it is not necessary to wear a hard hat, a wool knit cap provides the best head protection. A facemask may also be worn.

Persons should dress in several layers rather than one single heavy outer garment. The outer piece of clothing should ideally be wind and waterproof. Clothing made of thin cotton fabric or synthetic fabrics such as polypropylene is ideal since it helps to evaporate sweat. Polypropylene is best at wicking away moisture while still retaining its insulating properties. Loosely fitting clothing also aids in sweat evaporation. Denim is not a good protective fabric. It is loosely woven which allows moisture to penetrate. Socks with a high wool content are best. If two pairs of socks are worn, the inner sock should be smaller and made of cotton, polypropylene or similar types of synthetic material that wick away moisture. If clothing becomes wet, it should be taken off immediately and a dry set of clothing put on.

If wind conditions become severe, it might become necessary to shield the work area temporarily. The SSO and the PM will determine if this type of action is necessary. Heated break trailers or a designated area that is heated should be available if work is performed continuously in the cold at temperatures, or equivalent wind chill temperatures, of 20° F.

Dehydration occurs in the cold environment and can increase the susceptibility of the worker to cold injury due to significant change in blood flow to the extremities. Drink plenty of fluids, but limit the intake of caffeine

4.16.4 Work/Rest Cycles for Cold Weather

If wind chill temperatures fall below minus 25°F, breaks from the cold will occur at a rate of one every hour. If wind chill temperatures fall below minus 45°F, all work will cease and persons will be required to go indoors. Also see Section 1.1.1 regarding shift duration. However, these guidelines can be modified at any time based on actual project site conditions and professional judgment rendered by either the Field Manger and/or SSO. For example, the Field Manger and/or SSO will evaluate field crew fitness; the condition of their cold-weather gear, including boots; and will observe employees alertness, including fatigue and rate of cold tolerance/acclimation.

If weather conditions warrant, portable tents might become necessary to shield the work area from wind, rain, snow, etc. The SSO and the Field Manager will determine if this type of action is necessary. However, under no conditions will the tents be heated and as a precautionary measure, a Photoionization Detector (PID) with a 10.6 ev lamp will be used to monitor the breathing zone of personnel inside the tent. See Section 6 for action levels based on PID readings. A JSA should be prepared and discussed with all workers detailing the precautions for working in these cold weather conditions.

4.17 Well Development and Groundwater Monitoring

During purging and development of borings into monitoring wells, the PPE indicated in Section 7 below will be worn to avoid chemical contact / exposure, as well as physical trauma. Bailing wells requires proper gloves, eye protection, and possibly protective coveralls to prevent splashing. Back and lifting precautions outlined in Section 5.1 shall be used to avoid ergonomic injuries.

4.18 Confined Spaces

Confined Space entry may be required for personnel to enter vaults or manholes in the work areas. The following procedures must be followed in an event confined space entry is necessary. Proper permits must be obtained and regulatory agencies notified prior to performing a confined space entry.

When working in industrial settings, it is common to need to enter a confined space to make observations, collect samples, or perform other duties. AECOM employees or sub contractors must not enter any confined space containing a hazard.

A confined space is defined as any space that meets the following criteria:

- Is not designed for human occupancy
  - excludes vehicles, elevator cabins etc,
  - includes elevator shafts and wells, tanks, vaults, etc.
- Is large enough to physically enter with the whole body, and
- Has a restricted exit path (you must climb over pipes, through man ways, etc.)

If the confined space contains any hazard, entry may only be made if permitted in writing by the space owner or the Regional Health and Safety Manger, the entry is monitored by an observer, and with the prior written approval of the Regional Health and Safety Manager.

Typical hazards include but are not limited to:

- Flammable materials
- Toxic materials
- Corrosive materials
- Exposed electrical circuits
- Falls greater than six feet
- Moving machinery
- Oxygen deficient atmosphere

If there is any doubt about whether a space meets the above criteria, call the Health and Safety Staff.

4.19 Hot Work

Prior to initiation of any hot work procedures, a “Hot Work Permit” (Attachment B) must be approved by a National Grid representative and the SSHO.

4.20 Biological Hazards

If the program is implemented in the spring, summer or fall, biological hazards associated with adjacent woods and wetlands may pose a potential concern for employees involved with project oversight.

4.20.1 Poisonous Plants

Persons working on this program should be aware of the possible presence of poisonous plants and insects. **Poison ivy** is a climbing plant with leaves that consist of three glossy, greenish leaflets. Poison ivy has conspicuous red foliage in the fall. Small yellowish-white flowers appear in May through July at the lower leaf axils of the plant. White berries appear from August through November. Poison ivy is typically found east of the Rockies. **Poison oak** is similar to poison ivy but its leaves are oak-like in form. Poison oak occurs mainly in the south and southwest. **Poison sumac** typically occurs as a small tree or shrub and may be 6-20 feet in height. The bark is smooth, dark and speckled with darker spots. Poison sumac is typically found in swampy areas and east of the Mississippi. The leaves have 7-13 smooth-edged leaflets and drooping clusters of ivory-white berries appear in August and last through spring.

The leaves, roots, stems and fruit of these poisonous plants contain urushiol. Contact with the irritating oil causes an intensely itching skin rash and characteristic, blister-like lesions. The oil can be transmitted on soot particles when burned and may be carried on the fur of animals, equipment and apparel.

Proper identification of these plants is the key to preventing contact and subsequent dermatitis. Wear long sleeves and pants when working in wooded areas. In areas of known infestation, wear Tyvek coveralls and gloves. Oils are easily transferred from one surface to another. If you come in contact with these poisonous plants, wash all exposed areas immediately with cool water to remove the oils. Some commercial products such as Tecnu's Poison Oak-n-Ivy Cleanser claim to further help with the removal of oils.

4.20.2 Ticks

Ticks are bloodsuckers, attaching themselves to warm-blooded vertebrates to feed. If a tick is not removed, or if the tick is allowed to remain for days feeding on human blood, a condition known as **tick paralysis** can develop. This is due to a neurotoxin, which the tick apparently injects while engorging. This neurotoxin acts upon the spinal cord causing incoordination, weakness and paralysis.

Deer ticks are associated with the transmission the bacteria that causes Lyme Disease. Female deer ticks are about one-quarter inch in length and are black and brick red in color. Males are smaller and all black. The early stages of Lyme disease, which can develop within a week to a few weeks of the tick bite, is usually marked by one or more of these signs and symptoms:

- Tiredness
- Chills and fever
- Headache
- Muscle and/or join pain
- Swollen lymph glands
- Characteristic skin rash (i.e. bullseye rash)

Tick season lasts from April through October; peak season is May through July. You can reduce your risk by taking these precautions:

- During outside activities, wear long sleeves and long pants tucked into socks. Wear a hat, and tie hair back.
- Use insecticides to repel or kill ticks. Repellents containing the compound DEET can be used on exposed skin except for the face, but they do not kill ticks and are not 100% effective in discouraging ticks from biting. Products containing permethrin kill ticks, but they cannot be used on the skin -- only on clothing. When using any of these chemicals, follow label directions carefully.
- After outdoor activities, perform a tick check. Check body areas where ticks are commonly found: behind the knees, between the fingers and toes, under the arms, in and behind the ears, and on the neck, hairline, and top of the head. Check places where clothing presses on the skin.
- Remove attached ticks promptly. Removing a tick before it has been attached for more than 24 hours greatly reduces the risk of infection. Use tweezers, and grab as closely to the skin as possible. Do not try to remove ticks by squeezing them, coating them with petroleum jelly, or burning them with a match.
- Report any of the above symptoms and all tick bites to the RHSM for evaluation.

4.20.3 Mosquito-Borne Illnesses

4.20.3.1 Eastern Equine Encephalitis

Eastern equine encephalitis is a rare disease that is spread to horses and humans by infected mosquitoes. It is among the most serious of a group of mosquito-borne virus diseases that can affect the central nervous system and cause severe complications and even death. Although relatively small outbreaks of human disease have occurred in the United States, the frequency of this disease is

increasing with most cases reported from the eastern seaboard states, the Gulf Coast, and some inland mid-western areas.

After infection, the virus invades the central nervous system, including the spinal cord and brain. Most people have no symptoms; others get only a mild flu-like illness with fever, headache, and sore throat. For people with infection of the central nervous system, a sudden fever and severe headache can be followed quickly by seizures and coma. About half of these patients die from the disease. Of those who survive, many suffer permanent brain damage and require lifetime institutional care. Symptoms usually appear 4 to 10 days after the bite of an infected mosquito. Confirming diagnosis is based on tests of blood or spinal fluid.

4.20.3.2West Nile Virus

West Nile encephalitis is an infection of the brain caused by the West Nile virus, which is transmitted by infected mosquitoes. Following transmission from an infected mosquito, West Nile virus multiplies in the person's blood system and crosses the blood-brain barrier to reach the brain. The virus interferes with normal central nervous system functioning and causes inflammation of the brain tissue. However, most infections are mild and symptoms include fever, headache and body aches. More severe infections may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis and rarely, death. Persons over the age of 50 have the highest risk of severe disease.

Prevention centers on public health action to control mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that cause the disease, use the following control measures:

- If possible, stay inside between dusk and dark. This is when mosquitoes are most active.
- When outside between dusk and dark, wear long pants and long-sleeved shirts.
- Spray exposed skin with an insect repellent, preferably containing DEET.

4.20.4 Wasps and Bees

Wasps (hornets and yellow-jackets) and bees (honeybees and bumblebees) are common insects that may pose a potential hazard to the field team if work is performed during spring, summer or fall. Bees normally build their nests in the soil. However, they use other natural holes such as abandoned rodent nests or tree hollows. Wasps make a football-shaped, paper-like nest either below or above the ground. Yellow-jackets tend to build their nests in the ground but hornets tend to build their nests in trees and shrubbery.

To avoid bees and wasps when working outdoors:

- Avoid the use of heavily scented soaps, shampoos, perfumes, colognes, after-shaves and cosmetics.
- Avoid shiny buckles and jewelry.
- Cover exposed skin and wear gray, white or tan rather than bright colors. Flowery prints and black especially attract insects.
- Remove food sources from site that may attract bees. Social wasps thrive where humans discard food.

- Check for new nests during the warmer hours of the day during July, August and September. Bees are very active then.

Bees are generally more mild-mannered than wasps and are less likely to sting. Bees can only sting once while wasps sting multiple times because their stinger is barbless. Wasps and bees will sting in defense of itself or its nest. To avoid being stung:

- Slowly raise your hands to protect your face, remaining calm and stationary for a while and then move very slowly away.
- Never swing, strike or run rapidly away since quick movement often provokes attack and painful stings.
- Restrain from throwing rocks or spraying nests with water.
- Avoid creating loud noises and disturbance near the nest

When a wasp or bee stings, they inject a venomous fluid under the skin. The venom causes a painful swelling that may last for several days. If the stinger is still present, carefully remove it with tweezers. Then,

- Wash the area carefully with soap and water. This should be continued several times a day until the skin is healed.
- Apply a cold or ice pack, wrapped in cloth for a few minutes.
- Apply a paste of baking soda and water and leave it on for 15 to 20 minutes.
- Take acetaminophen for pain.

Wasp stings can be life-threatening to persons who are allergic to their venom.

If you develop hives, difficulty breathing or swallowing, wheezing or similar symptoms of allergic reaction, **SEEK MEDICAL ATTENTION IMMEDIATELY**. People with known allergies to insect stings should NEVER work alone.

5.0 Air Monitoring

The Site is known to have tar impacts dating from the Site's historical use as an MGP. As such, the contaminants of concern are VOCs and SVOCs. The primary VOCs of concern are BTEX. The primary SVOCs of concern are PAHs such as naphthalene and benzo(a)pyrene. Airborne dust is also a concern and must be monitored due to its ability to co-transport contaminants and because of its nuisance properties. Odors, though not necessarily indicative of high contaminant concentrations, could create a nuisance and will be monitored and controlled to the extent practicable

5.1 Monitoring

5.1.1 VOC Monitoring

A photoionization detector (PID), such as a RaeSystems MiniRae 2000 PID equipped with a 10.6 ev lamp or equivalent, will be used to screen the breathing zone of employees during all subsurface investigations as Site and off-Site area conditions warrant but no less than at least once every hour. If breathing zone concentrations of total VOCs are sustained (5 minutes) above 5 ppm (calibrated to isobutylene), a measurement will be made for the presence of benzene using a colorimetric detector tube. In the absence of benzene, respiratory protection will be donned if total VOC concentration is sustained at 25 units as indicated by the PID. If benzene is present at concentrations of 1 ppm or more as indicated by the detector tube, respiratory protection will be donned. Requirements for respiratory protection are outlined in Section 6.2 of this HASP.

5.1.2 Dust Monitoring

Dust control measures, as described in this HASP, will be implemented to prevent and/or control the concentration of airborne dust levels during the subsurface activities. A MIE Data-Ram total dust monitor, or its equivalent, will be used to monitor the effectiveness of these engineering controls and to determine if measures to mitigate the dust are effective and/or if respiratory protection is required.

An action level of 0.15 mg/m^3 has been established for total dust (sustained within the breathing zone for 15-minutes) and is based on the PEL for PAHs. The total dust monitor will be used to determine that total dust levels within the established restricted areas are maintained below this action level. The readings will be taken at the locations within the restricted area, and during the time periods, which are likely to represent worst case conditions. The determination of worst case will be made by the SSO and will be dependent upon such variables as the type of work being performed and number of personnel or level of activity in the zone.

Task	Instrument	Action Limit and Action
All tasks involving potential exposure to contaminated soils and/or groundwater	Photoionization Detector	**5 ppm calibrated to isobutylene**; Don respiratory protection as discussed in Section 6
All tasks involving exposure to site chemicals of concern	Colorimetric detector tubes or Draeger Chip System for Benzene	**0.5 ppm Benzene** Don respiratory protection described in section 6.2
All tasks with the potential to generate dust.	Particulate meter	**>1.0 mg/m^3**; Apply dust suppression controls and don respiratory protection **>1.5 mg/m^3**; **STOP WORK** until levels are reduced below1.0 mg/m^3

5.2 Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) has been developed for the Site. The Site is located in a commercial community. This CAMP presents methods and procedures that will be used to provide protection for the downwind residences and businesses by assuring that the work activities do not spread constituents off-site through the air.

The community air monitoring will be performed around the project site perimeter and will measure the concentrations of organic vapors and dust. Air monitoring will be continuous during the activities. Monitoring will be conducted prior to mobilization to establish a baseline. The CAMP developed as per the NYSDEC DER-10 (NYSDEC, January 2010) is attached as Attachment C.

5.3 Personal Air Sampling

The need for personal air sampling is not anticipated during the activities covered by this HASP. The Project Manager can prescribe personal air sampling based on observations or concerns recognized during the project.

5.4 Calibration and Recordkeeping

Equipment will be calibrated in accordance with the Contractor's standard operating procedures. A log of the calibrations and readings will be kept in the field notebook. Daily calibration information will also be recorded in the field notebook.

6.0 Personal Protective Equipment

Personal protective equipment (PPE) will be worn during these activities to prevent on-site personnel from being injured by the safety hazards posed by the project site and/or the activities being performed. In addition, chemical protective clothing will be worn to prevent direct dermal contact with the project site's chemical contaminants. The following table describes the PPE to be worn for certain specific tasks. At a minimum, steel toe safety shoes, safety glasses with side shields, and nitrile or NAPL-resistant gloves will be worn when working in the areas with remaining contamination as detailed in the SMP.

6.1 Chemical Protective Clothing

PPE Item	Environmental Monitoring	Excavation and Utility Work	Sample Collection
Hard Hat	✓	✓	✓
Steel Toed Safety Shoes	✓	✓	✓
Safety Glasses with Sideshields	✓	✓	✓
ANSI-approved Class II Traffic Vest	✓	✓	✓
Outer Nitrile Gloves with inner Latex liners			✓
Kevlar gloves			
Hearing Protection	✓	✓	✓

6.2 Engineering Controls to Prevent Exposure to Contaminants of Concern

Engineering controls will be used by the Contractor to control dusts, vapors and odors both inside the structure and at the project site perimeter, if necessary. If the engineering controls are unsuccessful at controlling employee exposures within the structure to below the action limits defined in Section 5.1.1 and 5.1.2 of this HASP, then Level C respiratory protection will be required.

6.3 Respiratory Protection

Respiratory protection, as described below, will be required if worker breathing zone PID concentrations are sustained above the action levels in the following table.

Task	Action Limit	Respiratory Protection	Level
All tasks involving potential exposure to contaminated soils and/or groundwater	5 ppm as Isobutylene for 5 minute	Half or full face mask respirator with combination organic vapor/HEPA cartridges	C
	10 ppm as Isobutylene	Full face respirator with organic vapor/HEPA cartridges	C
	50 ppm as isobutylene	**STOP WORK**	
All tasks involving potential exposure to contaminated soils and/or groundwater	0.5-10 ppm as Benzene on Draeger tube	Half or full face mask respirator with combination organic vapor/HEPA cartridges	C
	10 ppm as Benzene on Draeger tube	Full face respirator with organic vapor/HEPA cartridges	C
	50 ppm as Benzene on Draeger tube	**STOP WORK**	
All tasks with the potential to produce Dust	1.0 mg/m^3 particulates in air	Half or full face mask respirator with combination organic vapor/HEPA cartridges	C
	1.5 mg/m^3 particulates in air	**STOP WORK** and apply dust suppression techniques until levels have returned to ambient conditions	C

Respiratory protection (half or full face mask respirator with combination organic vapor/HEPA cartridges) should also be donned if odors become objectionable at any time or if respiratory tract irritation is noticed.

All employees who are expected to don respiratory protection must have successfully passed a qualitative or quantitative fit-test within the past year for the brand, model and size respirator they plan to don.

If worn, respirators will be cleaned after each use with respirator wipe pads and will be stored in plastic bags after cleaning. Respirators will be thoroughly cleaned using disinfectant material within one week following any respirator use. Refer to the cleaning instructions provided with the respirator or specified by Appendix B-2 to the OSHA regulations at 29 CFR 1910.134.

6.4 Other Safety Equipment

The following is a list of additional safety items that may need to be available at the project site depending on the facility activity level, proximity to emergency assistance and other factors:

- Portable, hand-held eyewash bottles,
- First aid kit,
- Type A-B-C Fire extinguisher,
- Fire blanket,
- Emergency telephone and, if available, two-way radio on facility frequency,
- Emergency air horn,
- Drinking water, ice and cups,
- Caution tape or traffic cones,
- High visibility traffic vests (if working near vehicle traffic),
- Traffic cones or barricades,
- Flashlight/lantern, and
- Spill containment kit.

7.0 Site Control/Decontamination

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, hazardous work areas will be clearly identified and decontamination procedures will be required for personnel and equipment leaving those areas.

7.1 Designation of Zones

AECOM designates work areas or zones as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November 1985. They recommend that the areas surrounding each of the work areas to be divided into three zones:

- Exclusion or "Hot" Zone
- Contamination Reduction Zone
- Support Zone

7.1.1 Exclusion Zone

An exclusion zone will be established around the work area. The perimeter of the exclusion zone will be marked with caution tape, traffic cones or other identifier so that employees, visitors, and client or host employer personnel are aware of the work being conducted.

All field and contractor personnel entering these work areas must wear the prescribed level of protective equipment.

7.1.2 Contamination Reduction Zone

A decontamination zone will be established adjacent to each work area. Personnel will remove contaminated gloves and other disposable items in this area and place them in a plastic bag until they can be properly disposed of.

7.1.3 Support Zone

The support zone will include the area outside of the exclusion zone.

7.1.4 Site Access Control

The public will be restricted from the project site and monitoring well locations (during monitoring) by fences, barricade tape, traffic cones, and/or signs.

7.1.5 Parking and Staging Areas

Parking will be restricted to areas that have been cleared of tall grass and combustible material. Vehicles parked on the public streets will be marked with cones both in front of and behind the vehicle.

7.1.6 Pedestrian Walkways

Pathways within the work areas will be kept clear of obstructions. Public pathways will be clearly marked to provide access to the business onsite and protect the public from the hazards of the project.

7.2 General Site Safety Practices

The following measures are designed to augment the specific health and safety guidelines provided in this plan.

- The "buddy system" will be used at all times by all field personnel. No one is to perform field work alone. Standby team member must be intimately familiar with the procedures for initiating an emergency response. If an employee will be alone in a work area, they will develop a procedure to contact their Supervisor or PM on a regular schedule to confirm that the employee is safe. Subcontractors working on-site can help fulfill the role of a Buddy while project site activities are occurring.
- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in the immediate work area and the decontamination zone. Water and Ice may be consumed in all areas to prevent heat stress but precautions must be taken to prevent contamination of the water and ice.
- Smoking is prohibited in all work areas. Matches and lighters are not allowed in these areas.
- Hands must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.
- Beards or other facial hair that interfere with respirator fit are prohibited.
- The use of alcohol or illicit drugs is prohibited during the conduct of field operations.
- All equipment must be decontaminated or properly discarded before leaving the project site in accordance with the project work plan.
- Parking and pedestrian areas will be established and communicated to all workers.

8.0 Decontamination

8.1 Personal Decontamination

Proper decontamination is required of all personnel before leaving the project site. Decontamination will occur within the contamination reduction zone.

Regardless of the type of decontamination system required, a container of potable water and liquid soap should be made available so employees can wash their hands and face before leaving the project site for lunch or for the day.

8.2 PPE Decontamination

Disposable PPE, such as Tyvek coveralls, gloves, etc. will be removed in the decon zone and placed in garbage bags. Final disposal of contaminated PPE will be in accordance with the work plan.

If worn, respirators assigned to an individual will be cleaned after each use with respirator wipe pads and will be stored upright in plastic bags. Respirators will be thoroughly cleaned using disinfectant material within one week following any respirator use. Respirators that have the potential to be shared by employees within the workplace will be completely dismantled and thoroughly cleaned after each use. Refer to the cleaning instructions provided with the respirator or specified by Appendix B-2 to the OSHA regulations at 29 CFR 1910.134.

8.3 Equipment Decontamination

Equipment will be decontaminated prior to being moved to other locations. Decontamination procedures will be specified in the Field Sampling and Analysis Plan (FSAP).

9.0 Medical Monitoring and Training Requirements

Each worker subject to this HASP shall have copies of documentation that the requirements for training, medical surveillance, and respirator use are current. Copies of these documents shall be made available to any owner or their representative upon request.

9.1 Medical Monitoring

All personnel performing activities covered by this HASP must be active participants in a medical monitoring program that complies with 29 CFR 1910.120(f). Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any work on the project site covered by this HASP.

9.2 Health and Safety Training

9.2.1 HAZWOPER

All personnel performing activities covered by this HASP must have completed the appropriate training requirements specified in 29 CFR 1910.120 (e). Each individual must have completed an annual 8-hour refresher training course and/or initial 40-hour training course within the last year prior to performing any work on the project sites covered by this HASP.

9.2.2 Pre-Entry Briefing/Tailgate Meetings

Prior to the commencement of daily project activities, a pre-entry briefing or tailgate meeting will be conducted by the SSO to review the specific requirements of this HASP, review and revise the JSA, discuss Incidents, Near Misses and lessons learned from the previous day's activities, and discuss project site conditions that have changed since the previous day or trip to the project site. Attendance at the daily tailgate meeting is mandatory for all personnel covered by this HASP at the project site and must be documented on the attendance form provided in Attachment A. HASP sign-off sheets should also be collected at the time of the tailgate meetings. All documentation should be maintained in the project file.

The pre-entry briefing must be completed for each new employee before they begin work at the project site. Short safety refresher meetings will be conducted, as needed, throughout the duration of the project.

10.0 Emergency Response

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." This section is written to comply with the requirements of 29 CFR 1910.38 (a).

The basic elements of an emergency evacuation plan include:

- employee training
- alarm systems
- escape routes
- escape procedures
- critical operations or equipment
- rescue and medical duty assignments
- designation of responsible parties
- emergency reporting procedures
- methods to account for all employees after evacuation

10.1 Spill Response

Employees are only authorized to respond to incidental spills and releases of hazardous substances. The following criteria must be met for a spill to be considered incidental with the employee having the ability to respond to the spill:

- Quantity of spilled material is minimal enough where additional, third party assistance is not needed to manage the spill
- Material is not immediately threatening to impact an open water way
- The conditions of the spill do not present a hazardous condition that is immediately dangerous to life and health (IDLH)
- The employee responding has:
  - received training on proper spill response techniques relative to the spilled material
  - full knowledge of what has been spilled and the proper clean up techniques to be used
  - the means to protect themselves against exposure to harmful conditions caused by the spill including the necessary PPE
  - the means to containerize and dispose of the spilled material properly

Employees may be equipped with the following materials, assembled into a spill response kit, to manage incidental workplace spills:

- Absorbent pads or media, i.e. speedy-dry, kitty litter
- Broom and dust pan to clean up spent granular spill control media or impacted earth
- Shovel to clean up impacted earth or create a dam or dyke to prevent the spill area from increasing
- Disposal drums and over-pack drums
- Appropriate waste identification labels
- Appropriate PPE

If a spill is not considered incidental, then additional assistance will be sought to aid in clean-up. The responding employee shall contact the Project Manager and provide initial notification of the release. The Project Manager will then notify the client representative and determine a suitable course of action. Chem-trec may be contacted to provide additional support in responding to a spill. Consideration will need to be given to whether or not the spill is deemed to be a reportable quantity (RQ) by the EPA, if the National Spill Response Center needs to be contacted due to surface water impact, and if local, state or federal agencies need to be contacted to provide information related to public health threats and environmental impact.

All petroleum related spills above 5-gallons on an non-impermeable surface, and in the vicinity of a waterway must be reported to the PM, RSM, and DEC PM, with the PM providing notification to the client representative, no matter how small the spill is. After initial response actions have been completed an incident investigation will be performed to determine the root causes of the incident and corrective actions, and lessons learned shall be shared to prevent future reoccurrence. Once the response is complete, the responding employee will also conduct an inventory of supplies used during the response effort and re-stock any used response equipment that could not be decontaminated and reused.

10.2 Employee Training

Employees must be instructed in the site-specific aspects of emergency evacuation. On-site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed.

10.3 Alarm System/Emergency Signals

An emergency communication system must be in effect at all project sites. The simplest and most and effective emergency communication system in many situations will be direct verbal communications. Each project site must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices cannot be clearly perceived above ambient noise levels (i.e., noise from heavy equipment; drilling rigs, backhoes, etc.) and anytime a clear line-of-sight cannot be easily maintained amongst all personnel because of distance, terrain or other obstructions.

Verbal communications will be adequate to warn employees of hazards associated with the immediate work area. A portable phone will be located at the project site to ensure that communications with local emergency responders is maintained, when necessary.

10.4 Escape Routes and Procedures

The escape route from the project site and an emergency muster point will be determined and provided to all workers during the project mobilization.

Prior to mobilizing to a new project area, the Site Safety Officer or his designee will confirm that the escape routes are clear and lead to a safe area.

10.5 Employee Accounting Method

The SSO is responsible for identifying all personnel on-site at all times. Field personnel and subcontract employees will notify the SSO when they enter and leave the project site. The SSO will account for all FIELD PERSONNEL and its subcontract employees following an evacuation.

10.6 Injuries and Illnesses

The phone numbers of the police and fire departments, ambulance service, and local hospital are provided in the emergency reference sheet on page 1. This sheet will be posted in the site vehicle.

10.6.1 First Aid

Minor injuries will be treated on project site using materials from the first aid kit or other local sources. All cuts and abrasions will be cleaned with potable water and a clean dressing applied. The injured employee will be evaluated at the end of the work day and the following day when the employee arrives at the project site to determine whether the wound has started the healing process. The wound will be protected from contamination during the project activities.

10.6.2 Professional Treatment

In the event an injury or illness requires more than first aid treatment, the SSO will accompany the injured person to the medical facility and will remain with the person until release or admittance is determined. The escort will relay all appropriate medical information to the on-site project manager and the RSM.

If the injured employee can be moved from the accident area, he or she will be brought to the CRZ where their PPE will be removed. If the person is suffering from a back or neck injury the person will not be moved and the requirements for decontamination do not apply. The SSO must familiarize the responding emergency personnel about the nature of the site and the injury. If the responder feels that the PPE can be cut away from the injured person's body, this will be done on-site. If this not feasible, decontamination will be performed after the injured person has been stabilized.

10.7 Designation of Responsible Parties

The SSO is responsible for initiating emergency response. In the event the SSO can not fulfill this duty, the alternate SSO will take charge.

10.8 Emergency Response Drills

A table-top run through of the evacuations procedures will be conducted the first day on the project site and reviewed with all workers arriving on site after that date.

Emergency Response drills and subsequent personnel briefings on evacuation procedures will be documented in the safety briefing agenda or briefing notes.

10.9 Incident Reporting and Investigation

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an Incident investigation and report. The investigation should be conducted as soon as emergency conditions are under control. The purpose of the investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided. An Incident investigation form is presented in Attachment B of this HASP. The injured employee's supervisor, the Project Manager, and the RSM should be notified immediately of the injury.

If a subcontractor employee is injured, they are required to notify the SSO. Once the incident is under control, the subcontractor will submit a copy of their company's Incident investigation report to the SSO.

10.10 EMERGENCY REFERENCES

Ambulance:	911
Fire:	911
Police:	911
Medical Services:	Staten Island University Hospital 475 Seaview Avenue, Staten Island, NY
Hospital Telephone:	(718) 226-9000
On Site Telephone:	Bring portable communications.

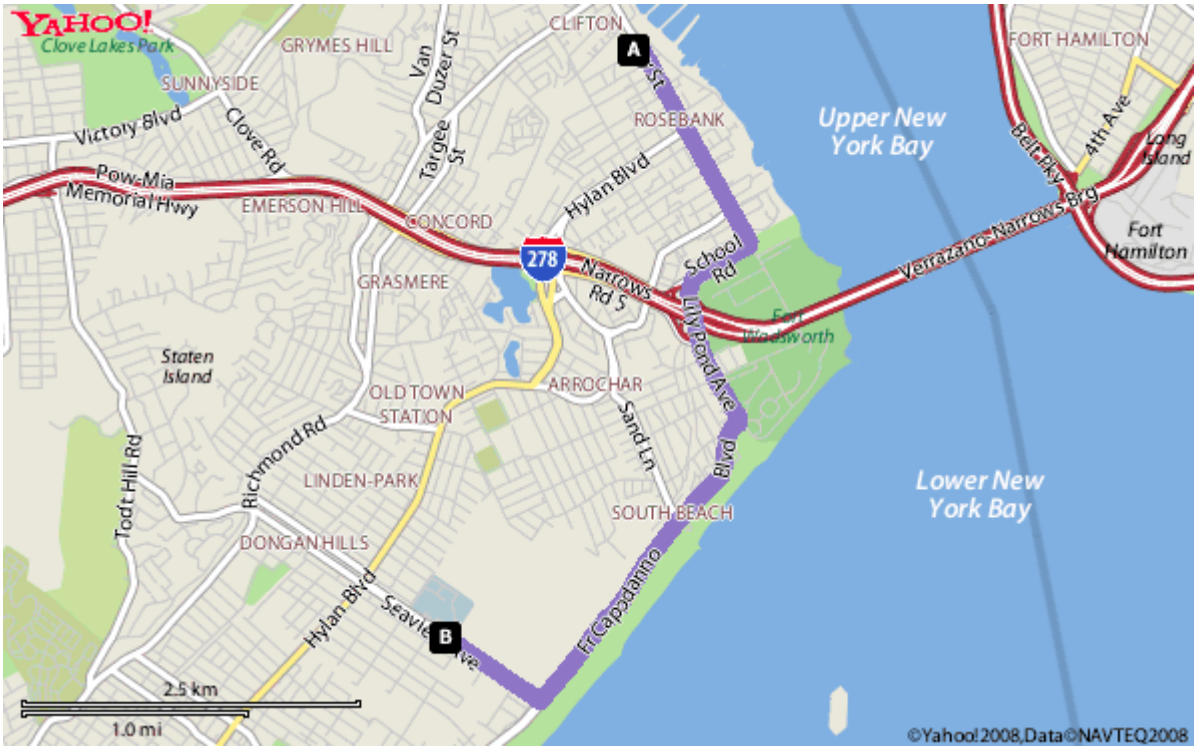
10.11 Emergency Route Directions

1. Start at 25 Willow Avenue, Staten Island, going towards Bay Street
2. Turn Right on Bay Street
3. Turn Right on School Road
4. Bear Left on Lily Pond Avenue
5. Turn Right on FR Capondanno Blvd.
6. Turn Right on Seaview Avenue
7. Arrive at 475 Seaview Avenue, Staten Island, on the Right.

Total Distance: 3.9 miles

Total Estimated Time: 13 minutes

Map Showing Route from the site to the Hospital:



Attachment A

Health and Safety Plan Receipt and Acceptance Form

Health and Safety Plan Receipt and Acceptance Form

Former Clifton Manufactured Gas Plant Site

Staten Island, New York

I have received a copy of the Health and Safety Plan prepared for the above referenced site, I have read and understand its content and I agree that I will abide by its requirements.

Name	Signature	Company	Date

Attachment B

EHS Field Forms

Blank Job Safety Analysis Form

Job Safety Analysis

JSA Type: ☐ Investigation ☐ O&M ☐Office ☐ Construction ☐ Other	☐ New ☐ Revised	**Date**:
Work Activity:		
Personal Protective Equipment (PPE):		

Development Team	Position/Title	Reviewed By	Position/Title	Date

❶ Job Steps[1]	❷ Potential Hazards[2]	❸ Critical Actions[3]	STOP Stop Work Criteria
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•
		•	•

1 – Target number of job steps: six to ten

2 – Codes for Potential Hazards:

Caught Between (CB)	Contacted By (CBy)	Caught On (CO)	Fall To Below (FB)	Overexertion (O)	Struck Against (SA)
Caught In (CI)	Contact With (CW)	Exposure (E)	Fall - Same Level (FS)	Release To (RT)	Struck By (SB)

3 – Types of Critical Actions: Elimination, Engineering Controls, Safe Work Practice / SOP, Administrative Controls, and/or PPE.

4 – Stop Work Trigger: Condition or situation that would require work to be stopped and hazards re-assessed.

Health and Safety Plan Pre-Entry Briefing Attendance Form

Health and Safety Plan Pre-Entry Briefing Attendance Form

Former Clifton Manufactured Gas Plant Site

Staten Island, New York

Conducted by:		**Date Performed:**	
Topics Discussed:	1. Review of the content of the HASP (Required)		
	2.		
	3.		
	4.		

Printed Name	Signature	Representing

Drill Rig Inspection Form

Drilling Safety Audit

Project Name:
Date:
Auditor:

Project Number:
Subcontractor Audited:

General Safety		
Safety Officer Designated for Job:	☐ Yes	☐ No
Name:		
Safety Meeting Performed (Daily)	☐ Yes	☐ No
Personal Protective Equipment (PPE)		
Hard Hats	☐ Yes	☐ No
Safety Glasses	☐ Yes	☐ No
Steel Toed Boots	☐ Yes	☐ No
Hearing Protection	☐ Yes	☐ No
Work Gloves	☐ Yes	☐ No
Orange Work Vests	☐ Yes	☐ No
Traffic Cones and Signs	☐ Yes	☐ No
Other	☐ Yes	☐ No
Disposal of PPE in Proper Waste Containers (if applicable)	☐ Yes	☐ No
Comments:		
Daily Inspections of Drill Rig:		
Structural Damage, Loose Bolts	☐ Yes	☐ No
Proper Tension in Chain Drives	☐ Yes	☐ No
Loose or Missing Guards, Fluid Leaks	☐ Yes	☐ No
Damaged Hoses and/or Damaged Pressure	☐ Yes	☐ No
Gages and Pressure Relief Valves	☐ Yes	☐ No
Comments:		

Check and test all safety devices such as:		
Emergency shutdown switches, at least daily	☐ Yes	☐ No
Check all gages and warning lights and ensure control levers are functioning properly	☐ Yes	☐ No
First Aid and fire extinguishers on drill rig	☐ Yes	☐ No
Back up alarm functioning properly	☐ Yes	☐ No
Comments:		

Drill Crew Training Requirements:		
40-hour OSHA Training	☐ Yes	☐ No
8-hour Annual Refresher Training	☐ Yes	☐ No
Drill Rig Training/Safe Operating Practices	☐ Yes	☐ No
First Aid/CPR	☐ Yes	☐ No
Emergency Procedures	☐ Yes	☐ No
Emergency Phone Numbers Posted	☐ Yes	☐ No
Site Orientation	☐ Yes	☐ No
Health and Safety Plan Review	☐ Yes	☐ No
Comments:		

Housekeeping:		
Suitable storage for tools, materials, and supplies	☐ Yes	☐ No
Pipes, drill rods, casing, and augers stacked on racks to prevent rolling and sliding	☐ Yes	☐ No
Platforms and other work areas free of debris materials and obstructions	☐ Yes	☐ No
Comments:		

Hand Tools:		
Tools in good condition	☐ Yes	☐ No
Broken tools discarded and replaced	☐ Yes	☐ No
Right tool used for the right job	☐ Yes	☐ No
Comments:		

Drilling Operations:		
Mast or derrick down when moving rig	☐ Yes	☐ No
Overhead obstructions identified before mast is raised	☐ Yes	☐ No
Drill rig stabilized using leveling jacks or solid cribbing	☐ Yes	☐ No
Secure and lock derrick	☐ Yes	☐ No
Comments:		

Overhead and Buried Utilities:		
Buried utilities identified and marked	☐ Yes	☐ No
Safe distance of drill rig from overhead power lines	☐ Yes	☐ No
Comments:		

Wire Line Hoists Wire Rope and Hardware:		
Inspection for broken wires where reduction in rope diameter, wire diameter, fatigue, corrosion, damage from gear jamming, crushing, bird caging, kinking	☐ Yes	☐ No
Inspect and lubricate parts daily	☐ Yes	☐ No
Comments:		

Auger Operations: What to look for:

- A system of responsibility between the operator and the tool handler when connecting and disconnecting auger sections and inserting and removing auger fork.
- During connecting and disconnecting auger sections and inserting auger for the tool, handler should position himself away from the auger column while it is rotating.
- When securing the auger to the power coupling, pin should be inserted and tapped into place using a hammer or other similar device.
- Tool hoist should be used to lower second section of auger into place.
- Both operators should be clear of auger as it is being lifted into place.
- Long-handled shovel should be used to move dirt away from auger.

Overall Summary:

Hot Work Permit Form

Hot Work Permit

Permit Valid
For 1 Work Day

Site Name: _____ **Project Number**:_____
H&S Officer:_____ **Client**:_____

Hot Work Description:_____

_____

_____

Workers/Welders Conducting Hot Work:_____

Permits Must be Completed in its Entirety Before Hot Work Begins

	Yes	No
Has project supervisor been notified of intended Hot Work?		
Does client representative need to be notified of the intended Hot Work?		
Will Hot Work impact the general public, clients, or operation employees?		
Will the intended Hot Work need to be coordinated with other contractors who may be working on the site to make them aware of any hazards and the scope of work to be performed?		
Have hazardous energy sources been identified, isolated, and locked out – tagged out before the start of the project?		
Will Hot Work be conducted within a confined space?		
All testing equipment (i.e., CGI, oxygen meter, etc.) and firefighting equipment (i.e., extinguisher, etc.) have been checked to ensure proper operation and calibration before the start of this project?		
Has a fire watch been designated and on station?		
Have coatings on metal surfaces been tested for ignitability and flame spread?		
Has the area been cleared of all flammable materials?		
Have all fuel sources been identified and protected?		
Has the area been restricted with proper barriers and signs?		
Has the area been tested to be certain that atmosphere is 0% LEL before starting Hot Work?		
Have flame sensitive areas and equipment (including cylinders and gas delivery lines) exposed to slag and sparks been protected by flame resistant blankets or removed from the area?		
Have all equipment and hoses been protected from falling metal structures and debris?		

Have escape routes been identified before starting work?		
Is ventilation equipment needed? Type needed:		

The Following Protective Equipment Will be Required:

	Yes	No		Yes	No
Welding Goggles/Shield Tint			Supplied Air Respirator		
Safety Boots			Head Protection		
Leather gloves			Safety Harness		
Hearing Protection			Welding Leathers – Top		
APR Cartridge			Welding Leathers - Bottom		

Permit Valid for 1 Work Day

The following procedures will be applicable prior to Hot Work on tanks or other types of enclosed structures. (Check all that apply and fill in appropriate information)

- ☐ Ventilate to 0% LEL
- ☐ Confined Space Entry Permit
- ☐ Mechanical Ventilation Required
- ☐ Cold Cut Only Method Allowed:_____
- ☐ Hot Cutting Permitted Method Allowed:_____

Inert to <_____% Oxygen

Approvals:

_____
Date

_____
National Grid Representative

_____
Site Safety Officer

_____
Fire Watch

_____
Performed Hot Work Employee

File Permit in Project Work File and Health and Department

Injury/Exposure Report

Injury/Exposure Report

Name Of Injured: _____ **Job Title:** _____

Male/Female: _____ **Date of Hire:** _____

Date of Birth: _____ **Date/Time of Injury/Exposure:** _____

Supervisor: _____ **Time Employee Began Work:** _____

Project Manager: _____ **H&S Coordinator:** _____

Project Number: _____ **Log Number:** _____

Employee's Home Address: _____

_____

_____

Place/Location of Injury/Exposure: _____

Address: _____

_____

_____

Accident Description:

_____

_____

_____

_____

_____

_____

_____

What was employee doing just before the incident? (Describe)

_____

_____

_____

_____

_____

_____

_____

Severity of Injury/Exposure (non-disabling, disabling, medical treatment, fatality):

☐ First Aid Only ☐ Medical Treatment Only ☐ Non-Occupational ☐ Fatality

Nature of Injury/Exposure (please check):

☐ Fractures	☐ Blisters	☐ Heat Exhaustion	☐ Dislocations
☐ Respiratory Allergy	☐ Toxic Respiratory	☐ Exposure	☐ Concussion
☐ Heat Burns	☐ Toxic Ingestion	☐ Faint/Dizziness	☐ Abrasions
☐ Chemical Burns	☐ Cold Exposure	☐ Lacerations	☐ Radiation Burns
☐ Frostbite	☐ Dermal Allergy	☐ Punctures	☐ Bruises
☐ Heatstroke	☐ Ergonomic	☐ Sprains	☐ Bites

☐ Other:_____

Parts of Body Affected (Specify Right/Left):_____

Date Medical Care was received:_____

Facility where Medical Care was received:

Clinic/Hospital Name:_____

Attending Physician:_____

Clinic/Hospital Address:_____

Clinic/Hospital Telephone Number:_____

Causative agent most directly related to injury/exposure:_____

_____

_____

_____

Was weather a factor? (check one) ☐ Yes ☐ No

If yes, describe weather conditions:_____

_____

_____

_____

Unsafe mechanical/physical/environmental conditions at time of exposure injury (be specific):____

_____

_____

_____

_____

Personal factors (list):_____

_____

_____

Was injured person/persons using required PPE? (check one) ☐ Yes ☐ No

Was there any property damage? (check one) ☐ Yes ☐ No

If yes, what was damaged?_____

Estimated Cost of Property Damage: $_____

Present a detailed narrative description of the injury/exposure. How did it occur? Why? Objects, equipment, tools used, circumstances, assigned duties, etc. (be specific):_____

Were there any witnesses to injury/exposure? ☐ Yes ☐ No

If yes, list name(s)/office location(s) (including subcontractors):

What can be done to prevent a recurrence of this type of accident?_____

Forward this form to the following within 24 hours of the incident

- ☐ Health and Safety Department
- ☐ Regional Manager – Local
- ☐ Human Resources Department
- ☐ Operations Manger – Local
- ☐ Health and Safety Coordinator – Local

Employee's Signature _____ Date _____

Employee's Supervisor Signature _____ Date _____

NOTE: ALL SUPERVISORS ARE REQUIRED TO SUBMIT A ROOT CAUSE ANALYSIS FOR ALL INJURIES OR ILLNESSES.

Attachment C

Community Air Monitoring Plan

Submitted to:
National Grid
Staten Island, New York

Submitted by:
AECOM
New York, New York

Community Air Monitoring Plan

Former Clifton Manufactured Gas Plant (MGP) Site
Richmond County, New York
NYSDEC Site Code: 243023

January 2016

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1.0 Introduction

This document provides the Community Air Monitoring Plan (CAMP) that will be implemented during any subsurface activities covered under the Site Management Plan [(SMP); AECOM, January 2014] for the Former Clifton Manufactured Gas Plant Site located in the Staten Island, New York. This CAMP has been prepared by AECOM Environment (AECOM) on behalf of National Grid to present the methods and procedures that will be used to evaluate air quality in the immediate vicinity of subsurface activities and provide protection to potential off-site receptors.

For purposes of further discussion in this Site Management Plan, the term “site” will include the following properties:

- Portion of 40 Willow Avenue, Block 2842 Lot 50
- 25 Willow Avenue, Block 2841 Lot 91

The term off-site areas will include the following properties:

- 53 Lynhurst Avenue
- 89 Willow Avenue
- Block 2822 Lots 20, 21, 22, 23, 24, 26, and 30

The objectives of this CAMP are to:

- Ensure that the airborne concentrations of constituents of concern (COC) are minimized to protect human health and the environment
- Provide an early warning system so that potential emissions can be controlled on-site at the source
- Measure and document the concentrations of airborne COC to confirm compliance with regulatory limits

The community air monitoring will be performed around the local work zone perimeter, and will measure the concentrations of organic vapors and dust during all ground-intrusive activities (soil boring, well installations, excavations, utility work, and test pitting).

This CAMP is Attachment C of the site-specific Health and Safety Plan (HASP). The HASP, which is Appendix D of the SMP, is directed primarily toward protection of on-site workers within the designated work zones.

2.0 Constituents of concern and action levels

The Site areas potentially have residual subsurface contamination, dating from the Site's historical use as a Holder facility, remaining following the Site Characterization conducted in 2011. The constituents of concern are volatile and semi-volatile organic compounds (VOCs and SVOCs). The primary VOCs of concern are benzene, ethylbenzene, toluene, and xylene (BTEX compounds). VOCs are more volatile than SVOCs and are generally of greater concern when monitoring the air quality during subsurface activities.
Airborne dust is also a concern and must be monitored and controlled due to its ability to co-transport adsorbed constituents and because of its nuisance properties.

Odors, though not necessarily indicative of high constituent concentrations, could create a nuisance (especially when working within or in close proximity to existing buildings and building entrances) and will be monitored and controlled to the extent practicable.

State and federal regulatory agencies have provided action levels for many of these constituents. The action levels are the allowable airborne concentrations above which respiratory protection or other health and safety controls are required. For any subsurface work covered under the SMP, the following levels should not be exceeded for more than 15 consecutive minutes at the downwind perimeter of the project site:

- Benzene 1 part per million (ppm)
- Total VOCs 5 ppm
- Dust 100 micrograms per cubic meter ($\mu g/m^3$)

The action levels cited here are above (in addition to) the background ambient (upwind) concentration.

3.0 Air monitoring equipment and methods

Air quality monitoring will be performed for total VOCs, benzene, and dust as outlined below.
Two perimeter locations will be established each day and an air monitoring technician will check the instrumentation at each of these locations frequently during the work. Typically there will be monitoring locations at one upwind project site perimeter location and one downwind perimeter location. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. Field personnel will be prepared to monitor multiple locations in the event that there is little wind or if the wind direction changes frequently.

The monitoring instruments will be calibrated at the start of each workday, and again during the day if the performance of an instrument is in question.

3.1 Volatile organic compounds and benzene monitoring

3.1.1 Ambient air monitoring

VOC monitoring will be performed using three field photoionization detectors (PIDs) (RAE Systems MiniRAE or equivalent). The monitoring instruments will be checked by a technician every 15 minutes, and the real-time measurements recorded. The PIDs will be equipped with an audible alarm to indicate exceedance of the action level.

A 15-minute running average concentrations will be calculated, which can then be compared to the action levels. If real-time measurements of total VOCs indicate that the action level is exceeded, the benzene concentration will also be determined at that location using benzene-specific colorimetric tubes. The data will be downloaded at the end of each day, and monitoring records will be kept at the project site during the work in case there is an inquiry or complaint.

PID measurements will be made at one upwind and one downwind location around the work area. The locations of the instruments may be changed during the day to adapt to changing wind directions.

3.2 Particulate (dust) monitoring

Particulate (dust) monitoring will be performed during intrusive activity (drilling, excavation) at the project site. Two particulate monitors (TSI DustTrak or equivalent) will be used for continuous real-time dust monitoring. The monitoring instruments will be checked by a technician every 15 minutes, and the real-time measurements recorded. A 15-minute average concentration will be determined. The data will be downloaded at the end of each day, and monitoring records will be kept at the project site during the work in case there is an inquiry or complaint.

Measurements will be made at one upwind and one downwind location around the work area. The locations of the instruments may be changed during the day to adapt to changing wind directions. In addition, fugitive dust migration will be visually assessed during all work activities, and the observations recorded.

4.0 Emission control plan

4.1 Ambient air

Odor, vapor, and dust control will be required for this project due to the close proximity of commercial buildings and public roadways and sidewalks. Table 1 provides a response chart for the monitoring and control of vapor emissions. Table 2 provides a list of emergency contacts.

- If the ambient air concentration of total VOC levels at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm (or the benzene level exceeds 1 ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor levels readily decreases (per instantaneous readings) below 5 ppm (and the benzene level drops below 1 ppm) over background, work activities can resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm (or the benzene level persists over 1 ppm) over background but less

than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions until the concentrations drop below the action levels, 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 will be shutdown.

Project site perimeter particulate concentrations will also be monitored continuously. In addition, dust migration will be visually assessed during all work activities.

- If the downwind particulate level is 100 $\mu g/m^3$ greater than the background (upwind perimeter) level for a 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind particulate levels are greater than 150 $\mu g/m^3$ 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 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

Typical emission control measures may include:

- Apply water for dust suppression;
- Relocate operations, if applicable; and
- Reassess the existing control measures.

Table 1 Vapor Emission Response Chart

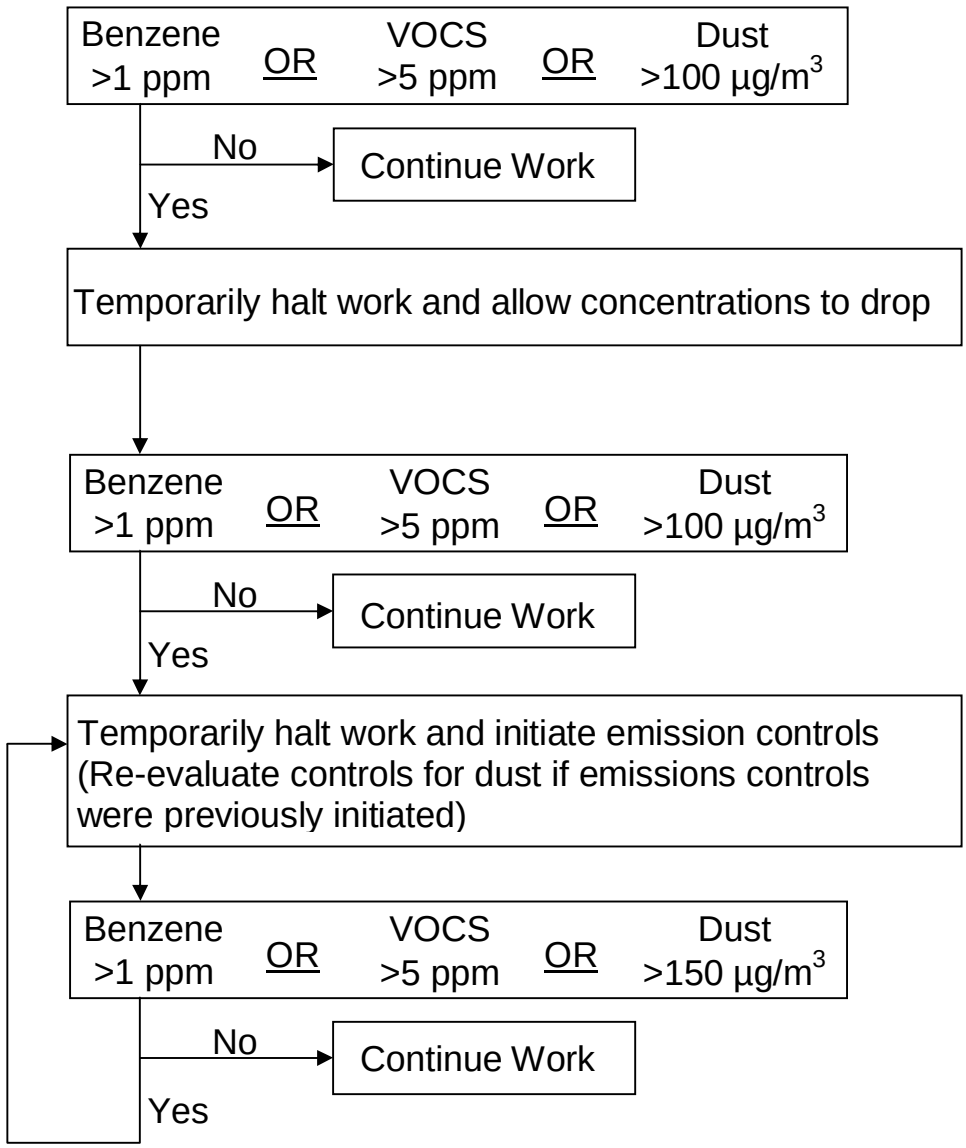

Table 2 Emergency Contacts and Telephone Numbers

Fire:	911	
Police:	911	
Ambulance:	911	
AECOM Environment Contacts	Shail Pandya	(718) 309-5643 cell (212) 798-8513 off
National Grid Contacts	Andrew Prophete	(516) 790-1654 cell (718)963-5412 off

5.0 Odor control procedures

This section outlines the procedures to be used to control odors that may be generated during the subsurface activities. The remainder of this section is intended to provide site managers, representatives of NYSDEC and New York State Department of Health (NYSDOH), and the public with information summarizing typical odor control options, and to provide some guidance for their implementation. A description of potential sources of odors and methods to be used for odor control is presented in the following sections.

5.1 Potential sources of odors

Generally, the residuals encountered at the Site areas are well defined. They are related to residual coal tar-like materials and petroleum, and principally contain VOCs, polynuclear aromatic hydrocarbons (PAHs), and a number of inorganic constituents, including metal-complexed cyanide compounds, and metals. Constituents of residual materials can produce odor emissions during subsurface activities when they are unearthed during excavations and soil borings/well installations. When this occurs, VOCs and light-end SVOCs can volatilize into the ambient air. Some Site residuals can cause distinctive odors that are similar to mothballs, roofing tar, or asphalt driveway sealer. However, the constituent concentrations generally associated with these odors are typically significantly less than levels that might pose a potential health risk. It is important to note that the CAMP will provide for continual monitoring of VOCs and dust during the fieldwork to monitor for any potential release of constituents which may pose a threat to health.

5.2 Odor monitoring

The field personnel will record observations of odors generated during the implementation of the subsurface work. When odors attributable to the uncovering of impacted media are generated in the work area during intrusive activities such as soil borings or excavation, observations will also be made at the down-wind limit of the Site, in order to assess the potential for off-site odors. The down-wind odor

monitoring will be performed in conjunction with the vapor and dust monitoring program described in this CAMP.

Upon detection of odors at the project site perimeter, site controls, starting in the work area, will be implemented. The site controls described in the following sections will be used to assist with odor mitigation to minimize, and to prevent where practicable, the off-site migration of odors. Due to the short distances between any work area at the project site and the property line or nearby potential receptors, site controls will be implemented proactively when odors are detected in the breathing zone at any work area.

5.3 General site controls

Several general excavation or drilling procedure site controls that will be implemented include:

- Every effort will be made to minimize the amount of time that impacted material is exposed to ambient air at the project site.
- For excavations, it may be possible to move some amount of soil around within the footprint of the excavation in order to minimize the amount of soil removal and subsequent stockpiling of impacted soil at the ground surface. The use of in-excavation stockpiling of excavated soil will be evaluated on a case-by-case basis, and will only be performed with the approval of the NYSDEC field representative, and will be completed only if it does not impede the collection of subsurface soils or the full delineation of the subsurface features being investigated.
- Drill cuttings from the soil borings will be containerized as soon as possible during completion of each soil boring.
- Loading of excavated debris or soil that has been found by the Site manager to be unsuitable material to return to excavation may generate odors. Every effort will be made to complete this work as quickly as possible and to keep these materials covered at all times.
- Meteorological conditions are also a factor in the generation and migration of odors. Some project site activities may be limited to times when specific meteorological conditions prevail, such as when winds are blowing away from a specific receptor.

5.4 Secondary site controls

If substantial odors still present an issue following implementation of the above procedures, secondary controls will be enacted. The field representative will work through the applicable list of secondary controls until the perimeter odor issues are resolved. The field representative will work closely with National Grid and NYSDEC during this task, if present. Final selection of controls will be dependent on field conditions encountered. Secondary controls include the following:

- For stockpiled impacted soil, temporary tarps or polyethylene covers will be used to control odors.
- The placement of portable barriers close to small active source areas (excavations) can elevate the discharge point of emissions to facilitate dispersion and minimize the effect on downwind receptors. The barriers can be constructed using materials such as plastic “Jersey barriers”, or fence poles and visual barrier fabric/plastic. The barriers are placed as temporary two or three-sided structures around active excavation or other intrusive areas, oriented such that the barriers are placed on the upwind and downwind sides of the source. If only one side of the source can be accessed, then the barrier should be placed on the downwind side.

- Two agents that can be sprayed over impacted soil have been determined to be effective in controlling emissions. They include odor suppressant solution (BioSolve™), and hydro-mulch. These agents may be used where tarps cannot be effectively deployed over the source material, or where tarps are ineffective in controlling odors:
  - BioSolve™ can provide immediate, localized control of odor emissions. Information regarding the preparation and use of BioSolve™ is provided in Appendix A.
  - Hydromulch - Although it is unlikely that it will be necessary, a modified hydromulch slurry may be used to cover inactive sources for extended periods of time (up to several days). The hydromulch, typically cellulose fibers (HydroSealR) is modified by mixing a tackifier (glue) with the mulch and water to form a slurry. It is applied using a standard hydroseed applicator to a thickness of ¼ inch. The material forms a sticky, cohesive, and somewhat flexible cover. Reapplication may be necessary if the applied layer becomes desiccated or begins to crack.

5.5 Record keeping and communication

Similar to readings recorded during the monitoring specified in the CAMP, all odor monitoring results will be recorded in the field log book or other air monitoring forms, and be available for review by the agencies upon request.

The field representative, in consultation with National Grid, will also provide information on odor monitoring and odor management to residents of the neighborhood should they inquire. In the event that odors persist after these efforts, work will be temporarily discontinued until a mutually agreeable solution with National Grid, NYSDEC, and NYSDOH staff can be worked out which allows the work to be completed while minimizing the off-site transport of nuisance odors.

6.0 Documentation and reporting

Data generated during perimeter air monitoring will be recorded in field logs and summarized daily in spreadsheets. The electronic measurements from the PIDs and dust meters will be downloaded each day, reviewed, and archived. Exceedances of the action levels, if any, and the actions to be taken to mitigate the situations, will be discussed immediately with the on-site representatives. Summaries of all air monitoring data will be provided to NYSDEC and NYSDOH in electronic format, as requested.

Appendix A

Vapor Suppression Information

BioSolve®
Hydrocarbon Mitigation Technology

...Is Making A Difference!

VAPOR SUPPRESSION / ODOR CONTROL

BioSolve® offers a relatively simple and cost effective method of suppressing Odors and VOC release from soils, during excavation, loading, stockpiling, etc. The following guidelines will apply to the most common situations encountered on site.

In most cases a 3% BSW solution (1 part **BioSolve®** concentrate to 33 parts water) will be adequate to keep vapor emissions within acceptable limits and control fugitive odor problems on contact. Although, some sites may only require a 2% solution, up to a 6% solution may be recommended on sites with elevated levels or particularly difficult/ mixed stream contaminants are present.

The **BioSolve®** solution should be applied evenly to the soil surface in sufficient quantity to saturate the surface area. As a general rule, use 1-3 litres of **BioSolve®** solution to 1 square metre of surface area. (1 gallon of **BioSolve®** per solution will cover approximately 4-sq. yd. of soil surface area) **BioSolve®** is a water-based surfactant that will apply like water.

BioSolve®, in its concentrated form, is a viscous liquid material that must be diluted with water. A fluorescent red tracing dye is present in the formula allowing **BioSolve®** to be detected during application. Once diluted, **BioSolve®** can be applied with virtually any equipment that can spray water. **BioSolve®** will not harm equipment or clog pipes. For large sites, applicators such as water truck, portable agricultural sprayers, foam inductors & pressure sprayers can be used. For smaller jobs, garden sprayers, water extinguishers or a garden hose with a fertiliser attachment on the nozzle can be used effectively. This characteristic makes **BioSolve®** very adaptable and much most convenient to use in almost any situation. **BioSolve®** is equally effective when used with all types of water (soft, hard, salt or potable).

On stockpiled soil or other soil that will be left undisturbed, a single application of **BioSolve®** to the exposed surfaces may last up to 10 to 14 days or more (depending on environmental conditions). **BioSolve®,** when applied, will form a "cap" of clean soil. If the soil is not disturbed, via weather, movement, etc. this "cap" will remain functional. During excavation, loading or other movement of the soil, it may be required to spray an additional amount of **BioSolve®** to the freshly exposed surface area to keep emissions at an acceptable level.

In case of an extremely high level of emissions, or if the soil is heavily contaminated, it may be necessary to increase the strength of the **BioSolve®** solution or apply more solution per square metre to reduce emissions adequately. It is important that the site be monitored regularly and that the **BioSolve®** solution be reapplied if and when necessary to insure that VOC emissions and odors remain under control.

BioSolve® is packaged and readily available in 55 gallon (208 liter) drums, 5 gallon (19 liter) pails and in 4X1 gallon (3.8 liter X 4) cases. Contact The Westford Chemical Corporation® Toll Free @ 1-800-225-3909, via e-mail at info@biosolve.com or your Local BioSolve distributor for pricing.

BioSolve® ***should only be used in accordance with all regulatory rules and regulations.***

This material is made available or use by professionals or persons having technical skill to be used at the own discretion and risk. These protocols are guidelines only and may need to be modified to site specific conditions. Nothing included herein is a warrantee or to be taken as a license to use **BioSolve** without the proper permits, approvals, etc. of the appropriate regulatory agencies, nor are the protocols provided as instructions for any specific application of **BioSolve**.

SOIL VAPOR SUPPRESSION UTILIZING BIOSOLVE

BioSolve is being utilized by numerous environmental consultants, response contractors, and fire departments to suppress VOC's & LEL's as well as problem odors. BioSolve encapsulates the source of the vapor rather than temporarily blanketing it like a foam or other physical barrier. Vapor reduction is so fast and effective that BioSolve is used to comply with the tough emission standards regulated by each State.

BioSolve offers a relatively simple and cost effective method of suppressing VOC vapor release from soils during excavation, loading, stockpiling… The following guidelines will apply to the most common situations encountered on site.

In most cases a 3% solution of BioSolve will be adequate to keep vapor emissions within acceptable limits. Dilute BioSolve concentrate with water at a ratio of 1 part BioSolve to 33 parts water to make a 3% solution.

The BioSolve solution should be applied evenly to the soil surface in sufficient quantity to dampen the surface well, (as a general rule, 1 gallon of BioSolve solution will cover approximately 4 sq. yd. of soil surface area). BioSolve is not a foam, it is a surfactant based product that will apply like water. The solution may be applied with a hand sprayer, high pressure power sprayer, water truck, etc., whichever method best suits the site and/or conditions.

NOTE: In the case of extremely high emission levels and/or very porous soil it may be necessary to increase the strength of the BioSolve solution (6%) or apply more per sq. yd. to reduce emissions adequately. On stockpiled soil or other soil that will be undisturbed, a single application of BioSolve to the exposed surfaces may last 10-14 days or more. During excavation, loading, or other movement of soil it may be necessary or required to spray each freshly exposed surface to keep emissions below acceptable

levels.It is important that the site be monitored regularly and the BioSolve solution be reapplied if/when necessary to insure that vapor emissions remain at or below acceptable standards.

MATERIAL SAFETY DATA SHEET

THE WESTFORD CHEMICAL CORPORATION®
P.O. Box 798
Westford, Massachusetts 01886 USA

Ref. No.: 2001
Date: 1/1/2002

Phone: (978) 392-0689
Phone: (508) 878-5895
Emergency Phone-24 Hours: 1-800-225-3909
Fax: (978) 692-3487
Web Site: http://www.BioSolve.com
E-Mail: info@BioSolve.com

SECTION I - IDENTITY

Name:	**BioSolve®**
CAS #:	138757-63-8
Formula:	Proprietary
Chemical Family:	Water Based, Biodegradable, Wetting Agents & Surfactants
HMIS Code:	Health 1, Fire 0, Reactivity 0
HMIS Key:	4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Insignificant

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SECTION II - HAZARDOUS INGREDIENTS

Massachusetts Right to Know Law or 29 C.F.R. (Code of Federal Regulations) 1910.1000 require listing of hazardous ingredients.

This product does not contain any hazardous ingredients as defined by CERCLA, Massachusetts Right to Know Law and California's Prop. 65.

SECTION III - PHYSICAL - CHEMICAL CHARACTERISTICS

Boiling Point	: 265°F	Specific Gravity	: 1.00 +/-.01
Melting Point	: 32°F	Vapor Pressure mm/Hg	: Not Applicable
Surface Tension- 6% Solution	: 29.1 Dyne/cm at 25°C	Vapor Density Air = 1	: Not Applicable
Reactivity with Water	: No	Viscosity - Concentrate	: 490 Centipoise
Evaporation Rate	: >1 as compared to Water	Viscosity - 6% Solution	: 15 Centipoise
Appearance	: Clear Liquid unless Dyed	Solubility in Water	: Complete
Odor	: Pleasant Fragrance	pH	: 9.1+/-.3
Pounds per Gallon	: 8.38		

SECTION IV - FIRE AND EXPLOSION DATA

Special Fire Fighting Procedures	: None	Flammable Limit	: None
Unusual Fire and Explosion Hazards	: None	Auto Ignite Temperature	: None
Solvent for Clean-Up	: Water	Fire Extinguisher Media	: Not Applicable
Flash Point	: None		

SECTION V - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be taken in Handling and Storage: Use good normal hygiene.
Precautions to be taken in case of Spill or Leak -

Small spills, in an undiluted form, contain. Soak up with absorbent materials.
Large spills, in an undiluted form, dike and contain. Remove with vacuum truck or pump to storage/salvage vessel. Soak up residue with absorbent materials.

Waste Disposal Procedures -

Dispose in an approved disposal area or in a manner which complies with all local, state, and federal regulations.

SECTION VI - HEALTH HAZARDS

Threshold Limit Values: Not applicable
Signs and Symptoms of Over Exposure-

Acute : Moderate eye irritation. Skin: Causes redness, edema, drying of skin.
Chronic: Pre-existing skin and eye disorders may be aggravated by contact with this product.

Medical Conditions Generally Aggravated by Exposure: Unknown
Carcinogen: No

Emergency First Aid Procedures -

Eyes: Flush thoroughly with water for 15 minutes. Get medical attention.
Skin: Remove contaminated clothing. Wash exposed areas with soap and water. Wash clothing before reuse. Get medical attention if irritation develops.
Ingestion: Get medical attention.
Inhalation: None considered necessary.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection	: Not necessary	Local Exhaust Required	: No
Ventilation Required	: Normal	Protective Clothing	: Gloves, safety glasses Wash clothing before reuse.

SECTION VIII - PHYSICAL HAZARDS

Stability	: Stable	Incompatible Substances	: None Known
Polymerization	: No	Hazardous Decomposition Products	: None Known

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SECTION IX - TRANSPORT & STORAGE

DOT Class	: Not Regulated/Non Hazardous		
Freeze Temperature	: 28°F	Storage	: 35°F-120°F
Freeze Harm	: None (thaw & stir)	Shelf Life	: Unlimited Unopened

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SECTION X - REGULATORY INFORMATION

The Information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application, which is not described on the Product label or in this Material Safety Data Sheet, is the sole responsibility of the user. This Material Safety Data Sheet was prepared to comply with the OSHA Hazardous Communication Regulation and Massachusetts Right to Know Law.

Appendix E

Annual Inspection and Certification Checklist

Annual Inspection Checklist and Certification
National Grid Former Clifton MGP Site
Clifton, New York

AECOM

Property: _____

Type	Inspection Task	Status	Condition	Date Completed	Initials	Remarks
Infrastructure	Building (s)					
	Building Slabs and Floor					
	Pavements					
	Underground Services					
	New Structures					
	Monitoring Wells					
	Barrier Walls					
	Treatment Systems					
Physical	Site Fences					
	Topography					
	Surface Drainage					
	Depressions					
	Vegetation					
	Ground Cover					
	Surface Soil					
Contamination	Odors					
	Staining					
	Sheens					
Property Owner/ Representative	New					
	Interview					

Soil Removal - Any soil removal activities will be detailed here and the SMP revised as needed.

AECOM

Property Owner Annual Certification
Site Management Plan
Former Clifton MGP Site
Staten Island, New York

Property: _____
Owner: _____

The this form is required by the Site Management Plan Section 5.2 Certification of Engineering and Institutional Controls. It is to be completed annually, after any significant weather event, and when requested by the NYSDEC and National Grid.

The property owner is required to provide notice to the NYSDEC and National Grid of changes in property use from Restricted Commercial/Industrial (60 days prior to change), proposed ground-intrusive activities (15 days prior to activity), discovered breaches/cracks/holes in concrete and pavement (within 48 hours of observation), and of any emergencies (fires, floods, etc.) that impact the ground surface (by noon the following day). See SMP Section 2.8.2 Notifications for additional details.

Owner, indicate Yes, No, or Not Applicable (NA) for each item with regard to the previous calendar year. If Yes, add a comment about item. Additional comments can be attached to this page.

Engineering Controls (ECs): Comments (If yes, list property and explain response):

Composite Cover System (CCS): (CCS is asphalt, concrete sidewalks, and building slabs over 6-inches of non-MGP impacted soil).

Were there any changes to the CCS in the past calendar year?	Yes ____	No ____	NA ____	
Were any new buildings and structures built?	Yes ____	No ____	NA ____	
Was there any utility construction?	Yes ____	No ____	NA ____	
Were any cracks or breaches of the CCS observed (e.g., in the pavement, concrete, foundat	Yes ____	No ____	NA ____	
Are there any vegetable gardens on the property(ies)?	Yes ____	No ____	NA ____	

Institutional Controls (ICs):

Property Use:

Has land use/zoning changed from "Restricted Commercial and/or Industrial"?	Yes ____	No ____	NA ____	
Is groundwater beneath the site used for any purpose?	Yes ____	No ____	NA ____	

Subsurface Work and Property Development:

Were there any changes to the Cover System for which NYSDEC and National Grid was not notified?	Yes ____	No ____	NA ____	
Were new buildings evaluated for vapor intrusion/indoor air quality?	Yes ____	No ____	NA ____	
Were disturbances to the subsurface performed in accordance with the Excavation Work Plan (Appendix C of the SMP)?	Yes ____	No ____	NA ____	
I certify that all information and statements in this certification form are accurate, complete and true.	Yes ____	No ____	NA ____	

Signature: _____ Date: _____

Print Name: _____ Title: _____

Owner has represented to National Grid that he or she has the authority to act on behalf of the Owner, and National Grid is relying on this representation.

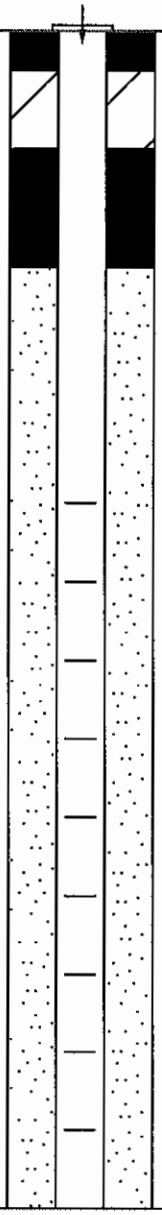
Appendix F

Monitoring and Recovery Well Boring and Construction Logs

Site Id: RW-22

Client: Keyspan Corporation			
Project Number: 982482-1	Project Name: Clifton Former MGP	Date Started: 05/21/04	Date Completed: 05/21/04
Remarks: Geology obtained from SB-95. RW-22 offset approximately 5' from SB-95. 2-5' PREPACKED SCREEN USED.		Ground Elevation: 9.85'	Datum: NAVD 88
		Contractor: Prosonic	Total Depth: 21.00'
		Drilling Method: Geoprobe	
		Logged By: L.Willey/K.Amos	Certified By: Lynn Willey

Split Spoon Sample Depth (ft.)	Blows Per 6 Inches	Recovery %	PID	Depth (ft.)	Soil Description: color, density, SOIL, admixture, moisture, other notes, ORIGIN.	Analyzed Sample Interval	Lithology	Vis. Signs of Contamination	Odors	Elevation (ft)	Well Construction
				10						0	MP. EL. 9.67



Legend: Physical Observations

None | Sheen | Stain | Heavy

Site Id: RW-22

Client: Keyspan Corporation	
Project Number: 982482-1	Project Name: Clifton Former MGP
Remarks: Geology obtained from SB-95. RW-22 offset approximately 5' from SB-95. 2-5' PREPACKED SCREEN USED.	

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Drilling Method: Geoprobe	
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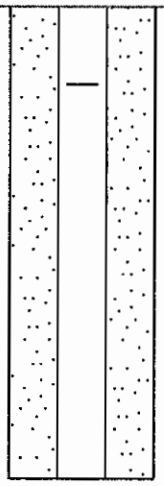
				20						10 20	

Legend: Physical Observations

None

Sheen

Stain

Heavy

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT NAME: Clifton Edgewater
CITY/STATE: Staten Island, New York
GEI PROJECT NUMBER: 061140-1-1003

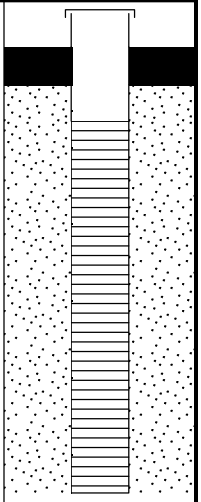
BORING LOG

CF-SB-140/CF-RW-23

GROUND SURFACE ELEVATION (FT): 9.27
LOCATION: 1 Edgewater Plaza
NORTHING: 650953.0556 **EASTING:** 611684.1666
TOTAL DEPTH (FT): 30.00
DRILLED BY: Zebra Environmental / Evan Moraits
DATUM VERT. / HORZ.: NAVD 88 / NAD83 NY East Zone
LOGGED BY: Jared Lewis and Melissa Felter
DATE START / END: 11/21/2006 - 11/21/2006
DRILLING DETAILS: Geoprobe / Geoprobe
WATER LEVEL DEPTHS (FT): ▽ 6.60

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	VISUAL IMPACTS	ODOR	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0									0 - 0.5 ASPHALT, HAND CLEARED. 0.5 - 5 WELL GRADED SAND (SW); ~80% sand, fine to coarse, ~15% gravel, ~5% fines; homogeneous, ~10% coal, max. size 3 in., dry, dark brown, FILL, clinker, HAND CLEARED.
5	S-1	5.0	27	54.2			PLO	CF-SB-140 (8.3-10)	5 - 6.6 WELL GRADED SAND (SW); ~75% sand, fine to coarse; homogeneous, ~15% coal and slag, ~5% fine to coarse gravel, ~5% fines, max. size 0.75 in., dry, black and gray, FILL, loose. 6.6 - 8.3 WELL GRADED SAND (SW); ~70% sand, fine to coarse; homogeneous, ~20% coal and slag, ~5% fine to coarse gravel, ~5% fines, max. size 0.5 in., wet, brown, FILL, loose.
10	S-2	5.0	60	52.9			PLO	CF-SB-140 (11.5-12.5)	8.3 - 10 WELL GRADED SAND (SW); ~85% sand, fine to medium; homogeneous, ~10% slag and coal, ~5% fines, max. size 0.5 in., moderate petroleum-like odor, wet, black, FILL, black stained, loose. 10 - 11 WELL GRADED SAND (SW); ~25% sand, fine to medium; homogeneous, ~70% coal and slag, ~5% fines, max. size 2 in., wet, dark brown and black, FILL, loose. 11 - 12.5 WELL GRADED SAND (SW); ~95% sand, fine to medium; homogeneous, ~5% fines, slight petroleum-like odor, wet, brown, slight spotty sheen, loose.
15	S-3	5.0	0						12.5 - 15 ORGANIC SOIL (OL); homogeneous, ~50% silt, ~50% peat, moist, brown, roots. 15 - 20 NO RECOVERY, REFUSAL AT 20.5', OFFSET TO CF-SB-140A.
20	S-4	5.0	0						20 - 25 NO RECOVERY.
25	S-5	5.0	35	40.1				CF-SB-140A (27.5-30)	25 - 30 SILT (ML); ~90% fines, low plasticity; homogeneous, ~5% fine to medium sand, ~5% fine to coarse gravel, max. size 1 in., moist, reddish brown, TILL, dense.
30									Bottom of borehole at 30.0 feet.

WELL CONSTRUCTION DETAILS



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CrLO= CREOSOTE LIKE ODOR
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MLO = MUSTY LIKE ODOR

ENVIRONMENTAL BORING LOG 1 EDGEWATER PLAZA 082808.GPJ GEI CONSULTANTS.GDT 8/28/08

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT NAME: Clifton Edgewater
CITY/STATE: Staten Island, New York
GEI PROJECT NUMBER: 061140-1-1003

BORING LOG

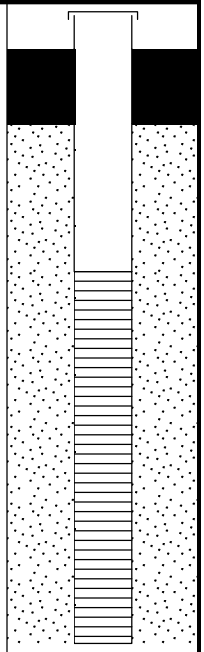
CF-SB-146/CF-RW-25

GROUND SURFACE ELEVATION (FT): 10.06
LOCATION: 1 Edgewater Plaza
NORTHING: 651092.5199 **EASTING:** 611828.4232
TOTAL DEPTH (FT): 25.00
DRILLED BY: Zebra Environmental
DATUM VERT. / HORZ.: NAVD 88 / NAD83 NY East Zone
LOGGED BY: Jared Lewis
DATE START / END: 11/21/2006 - 11/21/2006
DRILLING DETAILS: Geoprobe / Geoprobe
WATER LEVEL DEPTHS (FT): ▽ 8.90

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0							0 - 0.5 ASPHALT, HAND CLEARED. 0.5 - 1 CONCRETE, HAND CLEARED. 1 - 5 WELL GRADED SAND (SW); ~85% sand; homogeneous, ~10% gravel, ~5% fines, dry, dark brown, HAND CLEARED.
5	S-1	4.0	37	56.1			5 - 8.9 SILT (ML); ~85% fines; homogeneous, ~10% sand, ~5% gravel, moist, reddish brown, TILL, dense.
▽							
10	S-2	4.0	39	58.0		CF-SB-146 (12-13)	8.9 - 10.3 WELL GRADED SAND (SW); ~95% sand, fine to coarse; homogeneous, ~5% fines, wet, reddish brown, loose. 10.3 - 25 SILT (ML); ~70% fines; homogeneous, ~25% fine to coarse sand, ~5% fine to coarse gravel, max. size 1.5 in., moist, reddish brown, TILL, dense.
15	S-3	4.0	21	65.0			
20	S-4	4.0	33	57.4			
25	S-5	4.0	32	58.2		CF-SB-146 (23-25)	

Bottom of borehole at 25.0 feet.

WELL CONSTRUCTION DETAILS



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GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT NAME: Clifton Edgewater
CITY/STATE: Staten Island, New York
GEI PROJECT NUMBER: 061140-1-1003

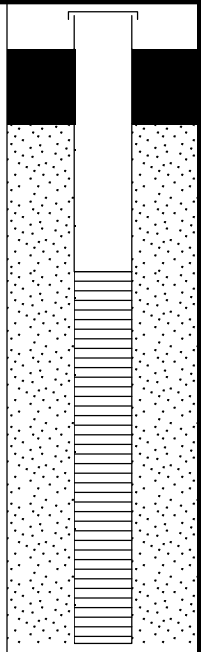
BORING LOG

CF-SB-147/CF-RW-26

GROUND SURFACE ELEVATION (FT): 9.66
LOCATION: 1 Edgewater Plaza
NORTHING: 650936.4529 **EASTING:** 611769.6123
TOTAL DEPTH (FT): 20.00
DRILLED BY: Zebra Environmental
DATUM VERT. / HORZ.: NAVD 88 / NAD83 NY East Zone
LOGGED BY: Jared Lewis
DATE START / END: 11/21/2006 - 11/21/2006
DRILLING DETAILS: Geoprobe / Geoprobe
WATER LEVEL DEPTHS (FT): ▽ 10.50

DEPTH FT.	SAMPLE INFO TYPE and NO.	PEN FT.	REC IN.	PID (ppm)	STRATA	ANALYZED SAMPLE ID	SOIL / BEDROCK DESCRIPTION
0							0 - 0.5 ASPHALT, HAND CLEARED. 0.5 - 4 WELL GRADED SAND (SW); ~85% sand; homogeneous, ~10% gravel, ~5% fines, dry, dark gray, FILL, HAND CLEARED.
5	S-1	4.0	32	52.1			4 - 6.5 WELL GRADED SAND (SW); ~85% sand; homogeneous, ~10% gravel, ~5% fines, dry, dark gray, FILL. 6.5 - 12 SANDY SILT (ML); ~70% fines; homogeneous, ~25% sand, ~5% gravel, dry to wet, reddish brown, TILL, wet at 10.5.
	S-2	4.0	7				
▽ 10				59.3		CF-SB-147 (10.5-12)	
	S-3	4.0	26	66.0			12 - 16 ORGANIC SOIL (OL); ~100% fines; homogeneous, ~45% peat, moist, very dark gray.
15	S-4	4.0	27			CF-SB-147 (16-18)	16 - 18 WELL GRADED SAND (SM); ~60% sand, fine to medium; homogeneous, ~40% fines, wet, dark gray, loose. 18 - 20 SILT (ML); ~95% fines; homogeneous, ~5% sand, wet, gray, dense.
20							Bottom of borehole at 20.0 feet.

WELL CONSTRUCTION DETAILS



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GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: OU-1 NAPL Recovery Pilot Test
CITY/STATE: Clifton, Staten Island, New York
GEI PROJECT NUMBER: 093100-1-1106

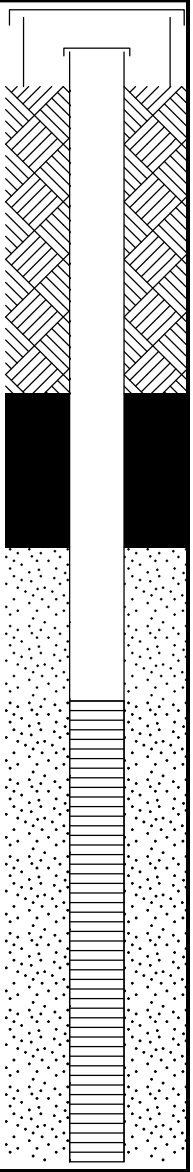
BORING LOG

CF-NRW-01(S)

GROUND SURFACE ELEVATION (FT): 14.18
LOCATION: 40 Willow Avenue (OU-1)
NORTHING: 650482.07 **EASTING:** 611376.29
TOTAL DEPTH (FT): 19.00
DRILLED BY: Boart Longyear / Adam Anderson
DATUM VERT. / HORZ.: NAVD 1988 / NAD 83
LOGGED BY: Krista Wolfe
DATE START / END: 12/18/2009 - 12/18/2009
DRILLING DETAILS: Resonant Sonic
WATER LEVEL DEPTHS (FT): ▽ 2.00 12/18/2009

DEPTH FT.	SAMPLE INFORMATION TYPE and NO.	PEN FT.	REC FT.	Blows (/6 in.)	PID (ppm)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
0									(0'- 1.75') CONCRETE CORE.
▽	S1	2.3	45	NA	99.6			NLO	(1.75'- 2.6') WIDELY GRADED GRAVEL WITH SAND (GW); ~85% gravel, subangular, ~15% sand, fine to coarse; max. size 3 in., slight naphthalene-like odor, wet, gray, FILL.
					38.5			NLO	(2.6'- 4') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, low plasticity, ~20% gravel, subrounded; max. size 2 in., slight naphthalene-like odor, damp, brown, FILL.
					42.4				
	S2	5.0	65	NA	12.5			NLO	(4'- 4.2') SILTY SAND WITH GRAVEL (SM); ~50% sand, fine to coarse, ~30% fines, low plasticity, ~20% gravel, subrounded; max. size 2 in., slight naphthalene-like odor, damp, gray, FILL.
					12.3				
5									(4.2'- 9') SILTY SAND (SM); ~70% sand, medium to coarse, ~20% fines, low plasticity, ~10% gravel, subrounded; max. size 1.5 in., damp, brown, FILL, Layer of wood fragments 6.5 ft to 6.75 ft.
	S3	5.0	54	NA	52.9				(9'- 12.8') SILTY SAND (SM); ~70% sand, medium to coarse, ~20% fines, low plasticity, ~10% gravel, subrounded; max. size 1.5 in., wet, brown, FILL, Boulder at 10.3 ft, small disk/wheel at bottom.
10									
					882			TLO	(12.8'- 14') SILTY SAND (SM); ~70% sand, medium to coarse, ~20% fines, low plasticity, ~10% gravel, subrounded; max. size 1 in., strong tar-like odor, wet, black, FILL, Large piece of metal at beginning. Heavily coated to saturated with tar, WOOD FRAGMENTS, heavily coated with tar at 13.2'.
					835				
	S4	5.0	36	NA	2075			TLO	
15									

WELL CONSTRUCTION DETAILS



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ENVIRONMENTAL BORING LOG CLIFTON NAPL RECOVERY LOG.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 7/7/10

GEI Consultants

GEI Consultants, Inc.
455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: OU-1 NAPL Recovery Pilot Test
CITY/STATE: Clifton, Staten Island, New York
GEI PROJECT NUMBER: 093100-1-1106

BORING LOG

CF-NRW-01(S)

DEPTH FT.	SAMPLE INFORMATION: TYPE and NO.	PEN FT.	REC FT.	Blows (/6 in.)	PID (ppm)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION	WELL CONSTRUCTION DETAILS
15					1654			TLO	(14'- 19') WIDELY GRADED GRAVEL WITH SILT AND SAND (GW-GM); ~60% gravel, subangular, ~30% sand, fine to coarse, ~10% fines, non plastic; max. size 3 in., strong tar-like odor, wet, black, FILL, ~20% of sample is metal, plastic, and wood. Heavily coated to saturated with tar.	

Refusal at 19.0 feet.
Bottom of borehole at 19.0 feet.
Well const.: 4" 0.010" slotted, 10' S. steel screen and S. steel riser.

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CLIENT: National Grid
PROJECT: OU-1 NAPL Recovery Pilot Test
CITY/STATE: Clifton, Staten Island, New York
GEI PROJECT NUMBER: 093100-1-1106

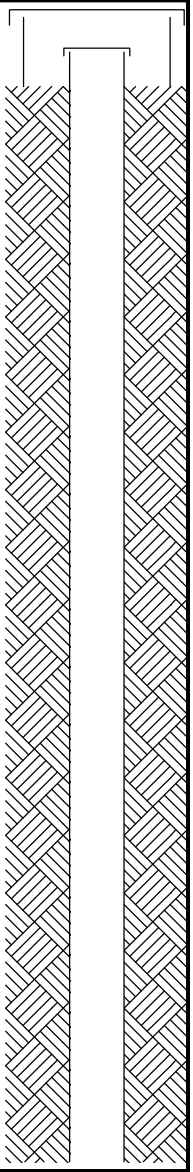
BORING LOG

CF-NRW-02(I)

GROUND SURFACE ELEVATION (FT): 14.27
LOCATION: 40 Willow Avenue (OU-1)
NORTHING: 650509.96 **EASTING:** 611421.66
TOTAL DEPTH (FT): 49.00
DRILLED BY: Boart Longyear / Adam Anderson
DATUM VERT. / HORZ.: NAVD 1988 / NAD 83
LOGGED BY: Krista Wolfe
DATE START / END: 12/18/2009 - 12/18/2009
DRILLING DETAILS: Resonant Sonic
WATER LEVEL DEPTHS (FT): ▽ 6.20 12/18/2009

DEPTH FT.	SAMPLE INFORMATION TYPE and NO.	PEN FT.	REC FT.	Blows (/6 in.)	PID (ppm)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION
0									(0'- 1.75') Concrete core.
	S1	2.3	19	NA	107.2				(1.75'- 4') WIDELY-GRADED SAND W/ GRAVEL (SW); ~50% sand, ~45% gravel, subrounded, ~5% fines; max. size 3 in., moist, brown, FILL.
	S2	5.0	47	NA	19.7				(4'- 4.42') WIDELY-GRADED SAND W/ GRAVEL (SW); ~50% sand, ~45% gravel, subrounded, ~5% fines; max. size 3 in., moist, brown.
5									(4.42'- 9') GRAVELLY-SILT W/ SAND (ML); ~65% fines, low plasticity, ~20% gravel, subrounded, ~15% sand; max. size 3 in., moist, reddish brown.
▽					6.0				
	S3	10.0	81	NA	156.9				(9'- 15.54') SILT (ML); ~90% fines, low plasticity, ~5% gravel, ~5% sand; max. size 0.5 in., dry, brown to gray, warm.
10					181.3				
15									

WELL CONSTRUCTION DETAILS



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ENVIRONMENTAL BORING LOG CLIFTON NAPL RECOVERY LOG.GPJ ATLANTIC GEI DATA TEMPLATE.GDT 7/7/10

GEI Consultants

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455 Winding Brook Road
Glastonbury, CT 06033
(860) 368-5300

CLIENT: National Grid
PROJECT: OU-1 NAPL Recovery Pilot Test
CITY/STATE: Clifton, Staten Island, New York
GEI PROJECT NUMBER: 093100-1-1106

BORING LOG

CF-NRW-02(I)

DEPTH FT.	SAMPLE INFORMATION TYPE and NO.	PEN FT.	REC FT.	Blows (/6 in.)	PID (ppm)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION	WELL CONSTRUCTION DETAILS
15					122.7			NLO	(15.54'- 18.4') SILT (ML); ~90% fines, low plasticity, ~5% gravel, ~5% sand; max. size 0.5 in., slight naphthalene-like odor, wet, brown to gray, warm.	
					156.7			NLO	(18.4'- 19') WIDELY-GRADED GRAVEL W/ SILT AND SAND (GW-GM); ~60% gravel, subangular, ~30% sand, ~10% fines; max. size 1.5 in., slight naphthalene-like odor, slight sheen throughout.	
	S4	10.0	54	NA	418			TLO	(19'- 24.19') GRAVELLY SILT W/ SAND (ML); ~65% fines, low plasticity, ~20% gravel, subrounded, ~15% sand; max. size 4 in., moderate tar-like odor, wet, brown, sheen throughout, lightly tar coated (23.44-24.19 ft bgs).	
20										
					302			TLO	(24.19'- 29') NARROWLY-GRADED SAND (SP-SM); ~85% sand, ~10% gravel, subrounded, ~5% fines; max. size 0.5 in., moderate tar-like odor, wet, gray to black, sheen throughout.	
25										
	S5	5.0	40	NA	2686			TLO	(29'- 34') GRAVELLY SILT W/ SAND (ML); ~65% fines, low plasticity, ~20% gravel, subrounded, ~15% sand; max. size 3 in., moderate tar-like odor, moist, brown, sheen 29-30ft bgs, light coating of tar 30.58 to 31 ft bgs.	
30										

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CITY/STATE: Clifton, Staten Island, New York
GEI PROJECT NUMBER: 093100-1-1106

BORING LOG

CF-NRW-02(I)

DEPTH FT.	SAMPLE INFORMATION TYPE and NO.	PEN FT.	REC FT.	Blows (/6 in.)	PID (ppm)	STRATA	VISUAL IMPACTS	ODOR	SOIL / BEDROCK DESCRIPTION	WELL CONSTRUCTION DETAILS
								TLO		
35	S6	5.0	13	NA	2400			TLO	(34'- 39') SILT W/ GRAVEL (ML); ~85% fines, low plasticity, ~10% gravel, subrounded, ~5% sand; max. size 1 in., moderate tar-like odor, reddish brown, tar blebs throughout.	
40	S7	5.0	43	NA	2529			TLO	(39'- 43.3') WIDELY-GRADED SAND W/ GRAVEL (SW); ~50% sand, ~45% gravel, subrounded, ~5% fines, non plastic; max. size 1 in., strong tar-like odor, brown, light tar coating (39 to 40.2) to heavy coating (40.2-43.3').	
					3403			TLO	(43.3'- 44') SILT W/ GRAVEL (ML); ~85% fines, low plasticity, ~10% gravel, ~5% sand; max. size 1 in., moderate tar-like odor, reddish brown.	
45	S8	5.0	59	NA	816			TLO	(44'- 49') SILT W/ GRAVEL (ML); ~85% fines, low plasticity, ~10% gravel, ~5% sand; max. size 1 in., slight tar-like odor, reddish brown, gray rock core 45.83-47.33 ft bgs, warm.	

Bottom of borehole at 49.0 feet.
Well const.: 4" 0.010" slotted, 10' S. steel screen, S. steel riser and 5' S steel. sump.

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AECOM	Client:	National Grid	Well ID: RW-200I
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/5/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.58
Measuring Point for Surveying & Water Levels — Top of Riser Pipe		
Ground Surface (G.S.)	0.0 bgs	9.2
Cement, Bentonite, Bentonite Slurry Grout, or Native Materials		
Riser Pipe:		
Length: 24 ft		
Inside Diameter (ID): 4 inches		
Type of Material: PVC		
94 % Cement		
5 % Bentonite		
____ % Native Materials		
Top of Bentonite	18 ft bgs	-8.8
Bentonite Seal Thickness: 4 ft (2 - 50 lb bags)		
Top of Sand	22 ft bgs	-12.8
Top of Screen	24 ft bgs	-14.80
▲ Stabilized Water Level		
Screen:		
Length: 10 ft		
Inside Diameter (ID): 4 inches		
Slot Size: 0.2		
Type of Material: Stainless Steel		
Type/Size of Sand: #0		
Sand Pack Thickness: 12 ft (15 - 50 lb bags)		
Bottom of Screen	34 ft bgs	-24.8
Bottom of Tail Pipe:	37 ft bgs	-27.8
Bottom of Borehole	37 ft bgs	-27.8

Note: 2 centralizers, 13 inches high, 11 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout from 35' to 37' bgs.

Borehole Diameter: 12 inches

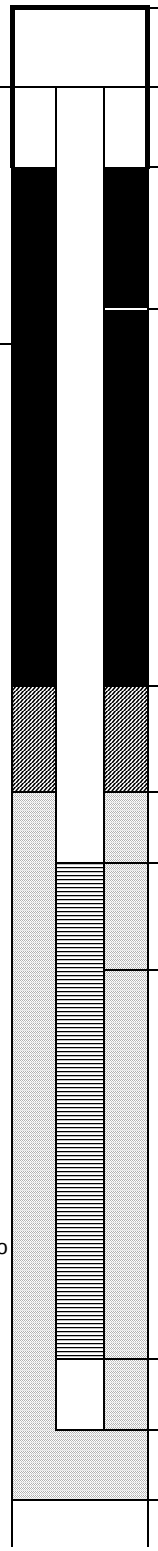
Approved: _____ Signature

4/5/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-200S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/8/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.57
Measuring Point for Surveying & Water Levels — Top of Riser Pipe		
Ground Surface (G.S.)	0.0 bgs	9.2
Cement, Bentonite, Bentonite Slurry Grout, or Native Materials		
Riser Pipe:		
Length: 10 ft		
Inside Diameter (ID): 4 inches		
Type of Material: PVC		
94 % Cement		
5 % Bentonite		
____ % Native Materials		
Top of Bentonite	5 ft bgs	4.2
Bentonite Seal Thickness: 3 ft (1.5 - 50 lb bags)		
Top of Sand	8 ft bgs	1.2
Top of Screen	10 ft bgs	-1.20
▲ Stabilized Water Level		
Screen:		
Length: 10 ft		
Inside Diameter (ID): 4 inches		
Slot Size: 0.2		
Type of Material: Stainless Steel		
Type/Size of Sand: #0		
Sand Pack Thickness: 12 ft (14 - 50 lb bags)		
Bottom of Screen	20 ft bgs	-11.2
Bottom of Tail Pipe:	23 ft bgs	-14.2
Bottom of Borehole	23 ft bgs	-14.2

Note: 2 centralizers, 13 inches high, 11 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout from 21' to 23' bgs.

Borehole Diameter: 12 inches

Approved: _____ Signature

4/8/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID: RW-201I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/1/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.37
Top of Riser Pipe		8.60
Ground Surface (G.S.)	0.0 bgs	8.9
Top of Bentonite	16.5 ft bgs	-7.6
Top of Sand	20.5 ft bgs	-11.6
Top of Screen	22.5 ft bgs	-13.60
▲ Stabilized Water Level		
Bottom of Screen	32.5 ft bgs	-23.6
Bottom of Tail Pipe:	37.5 ft bgs	-28.6
Bottom of Borehole	39 ft bgs	-31.1

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 22.5 ft bgs
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (1.5 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 6 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (8 - 50 lb bags)

Note: 2 centralizers, 16.5 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 40 inches up sump. 17.25 gal of grout.

Borehole Diameter: 12 inches

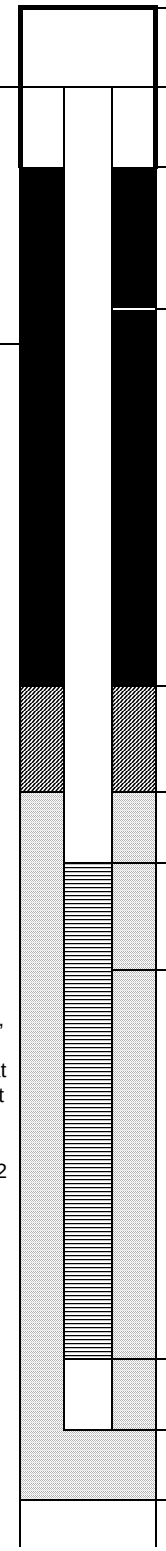
Approved: _____ Signature

4/1/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-201S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/19/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.57
Measuring Point for Surveying & Water Levels — Top of Riser Pipe		8.77
Ground Surface (G.S.)	0.0 bgs	9.2
Cement, Bentonite, Bentonite Slurry Grout, or Native Materials — Riser Pipe:		
Length: 14 ft bgs		
Inside Diameter (ID): 6 inches		
Type of Material: PVC		
94 % Cement		
5 % Bentonite		
____ % Native Materials		
Top of Bentonite	9 ft bgs	0.2
Bentonite Seal Thickness: 3 ft (1.5 - 50 lb bags)		
Top of Sand	12 ft bgs	-2.8
Top of Screen	14 ft bgs	-4.80
▲ Stabilized Water Level		
Screen:		
Length: 10 ft		
Inside Diameter (ID): 6 inches		
Slot Size: 0.2		
Type of Material: Stainless Steel		
Type/Size of Sand: #0		
Sand Pack Thickness: 12 ft (24 - 50 lb bags)		
Bottom of Screen	24 ft bgs	-14.8
Bottom of Tail Pipe:	29 ft bgs	-19.8
Bottom of Borehole	29 ft bgs	-19.8

Note: 2 centralizers, 16 inches high, 12 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 46 inches up sump. 17.25 gal of grout from 25' to 29' bgs.

Borehole Diameter: 12 inches

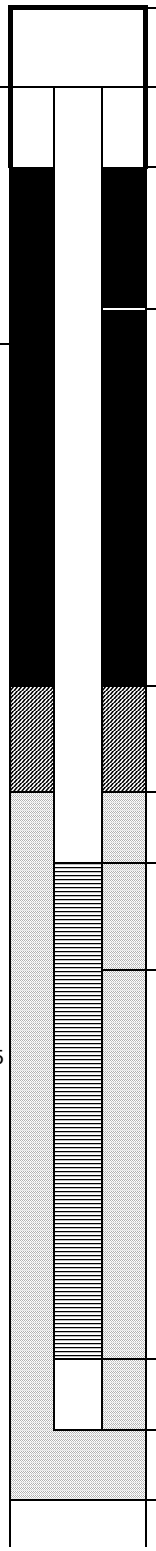
Approved: _____ Signature

4/19/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-202I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/29/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.85
Top of Riser Pipe		9.48
Ground Surface (G.S.)	0.0 bgs	9.85
Top of Bentonite	21 ft bgs	-11.15
Top of Sand	25 ft bgs	-15.15
Top of Screen	27 ft bgs	-17.15
▲ Stabilized Water Level		
Bottom of Screen	37 ft bgs	-27.15
Bottom of Tail Pipe:	42 ft bgs	-32.15
Bottom of Borehole	42 ft bgs	-32.15

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 27 ft bgs
- Inside Diameter (ID): 6 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 6 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (11 - 50 lb bags)

Note: 2 centralizers, 16.5 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 46 inches up sump. 17.25 gal of grout.

Borehole Diameter: 12 inches

Approved:

Signature

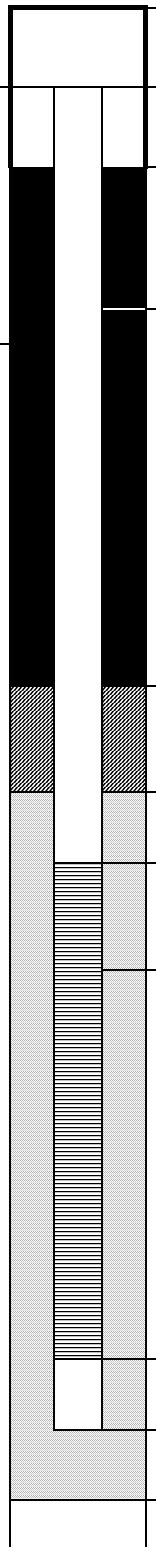
Date: 4/19/2013

Describe Measuring Point:

Top of Casing

AECOM	Client:	National Grid	**Well ID: RW-202S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/18/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.94
Measuring Point for Surveying & Water Levels — Top of Riser Pipe		9.64
Ground Surface (G.S.)	0.0 bgs	9.85
Cement, Bentonite, Bentonite Slurry Grout, or Native Materials — Riser Pipe:		
Length: 2 - 5 ft sections		
Inside Diameter (ID): 6 inches		
Type of Material: PVC		
94 % Cement		
5 % Bentonite		
____ % Native Materials		
Top of Bentonite	5 ft bgs	4.85
Bentonite Seal Thickness: 3 ft (1.5 - 50 lb bags)		
Top of Sand	8 ft bgs	1.85
Top of Screen	10 ft bgs	-0.15
▲ Stabilized Water Level		
Screen:		
Length: 2 - 5 ft sections		
Inside Diameter (ID): 6 inches		
Slot Size: 0.2		
Type of Material: Stainless Steel		
Type/Size of Sand: #0		
Sand Pack Thickness: 12 ft (13 - 50 lb bags)		
Bottom of Screen	20 ft bgs	-10.15
Bottom of Tail Pipe:	25 ft bgs	-15.15
Bottom of Borehole	25 ft bgs	-15.15

Note: 2 centralizers, 16 inches high, 12 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 46 inches up sump. 17.25 gal of grout.

Borehole Diameter: 12 inches

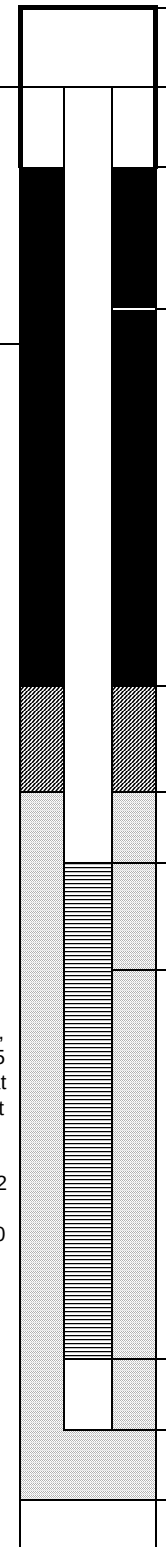
Approved: _____ Signature

4/18/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-203I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/4/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.14
Top of Riser Pipe		8.54
Ground Surface (G.S.)	0.0 bgs	9.3
Top of Bentonite	18 ft bgs	-8.7
Top of Sand	22 ft bgs	-12.7
Top of Screen	24 ft bgs	-14.70
▲ Stabilized Water Level		
Bottom of Screen	34 ft bgs	-24.7
Bottom of Tail Pipe:	37 ft bgs	-27.7
Bottom of Borehole	37 ft bgs	-27.7

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 24 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (16 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 12 inches

Approved:

Signature

Date: 4/4/2013

Describe Measuring Point:

Top of Casing

AECOM	Client:	National Grid	**Well ID: RW-203S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/3/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.16
Top of Riser Pipe		8.67
Ground Surface (G.S.)	0.0 bgs	9.3
Top of Bentonite	9 ft bgs	0.3
Top of Sand	12 ft bgs	-2.7
Top of Screen	14 ft bgs	-4.70
▲ Stabilized Water Level		
Bottom of Screen	24 ft bgs	-14.7
Bottom of Tail Pipe:	27 ft bgs	-17.7
Bottom of Borehole	27 ft bgs	-17.7

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 14 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 3 ft (1.5 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (17 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 12 inches

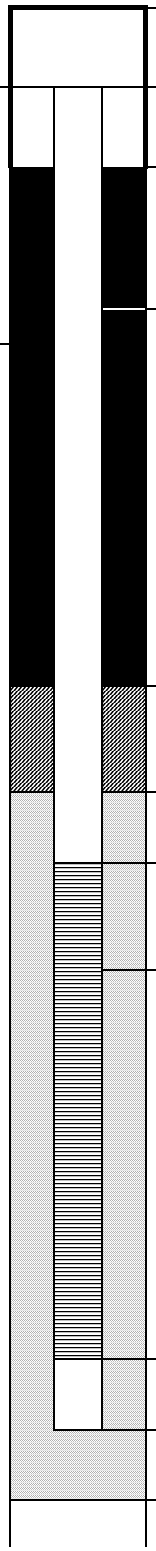
Approved: _____ Signature

4/3/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-204I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/28/2013
	Well Location:	Along Bay Street inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.35
Top of Riser Pipe		8.60
Ground Surface (G.S.)	0.0 bgs	9.12
Top of Bentonite	24 ft bgs	-14.88
Top of Sand	28 ft bgs	-18.88
Top of Screen	30 ft bgs	-20.88
▲ Stabilized Water Level		
Bottom of Screen	40 ft bgs	-30.88
Bottom of Tail Pipe:	43 ft bgs	-33.88
Bottom of Borehole	43 ft bgs	-33.88

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 30 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (14 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 12 inches

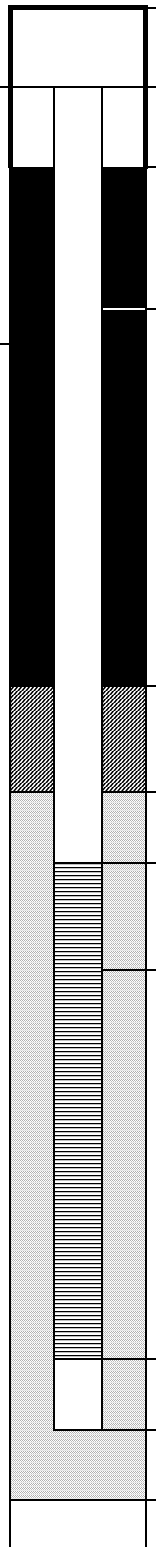
Approved: _____ Signature

3/28/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-205D**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/10/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.82
Top of Riser Pipe		8.18
Ground Surface (G.S.)	0.0 bgs	8.75
Top of Bentonite	58 ft bgs	-49.25
Top of Sand	62 ft bgs	-52.25
Top of Screen	64 ft bgs	-54.25
▲ Stabilized Water Level		
Bottom of Screen	74 ft bgs	-64.25
Bottom of Tail Pipe:	77 ft bgs	-67.25
Bottom of Borehole	77 ft bgs	-67.25

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 64 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (13 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 12 inches

Approved:

Signature

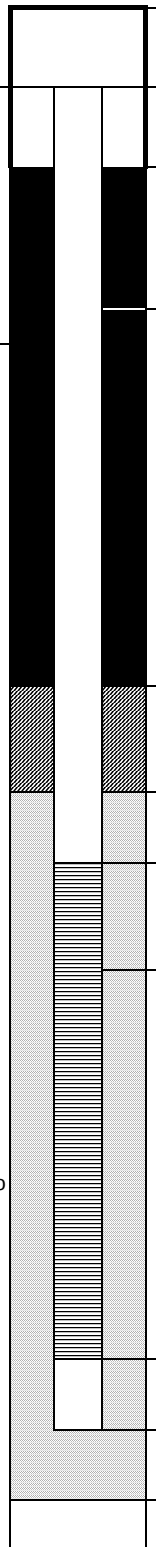
Date: 4/10/2013

Describe Measuring Point:

Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-206IA**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/22/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



		Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount		Flush Mount	9.05
Top of Riser Pipe			8.15
Ground Surface (G.S.)		0.0 bgs	8.6
Riser Pipe:			
Length	35 ft		
Inside Diameter (ID)	4 inches		
Type of Material	PVC		
Top of Bentonite		29 ft bgs	-20.4
Bentonite Seal Thickness	4 ft (2 - 50 lb bags)		
Top of Sand		33 ft bgs	-24.4
Top of Screen		35 ft bgs	-26.40
▲ Stabilized Water Level			
Screen:			
Length	10 ft		
Inside Diameter (ID)	4 inches		
Slot Size	0.2		
Type of Material	Stainless Steel		
Type/Size of Sand	#0		
Sand Pack Thickness	12 ft (11 - 50 lb bags)		
Bottom of Screen		45 ft bgs	-36.4
Bottom of Tail Pipe:		48 ft bgs	-39.4
Bottom of Borehole		58 ft bgs	-49.4

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

____ % Native Materials

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout from 46' to 48' bgs. Borehole collapsed to 42' bgs, was redrilled and reamed out. 1 ft of bentonite from 48' to 49'.

Borehole Diameter: 12 inches

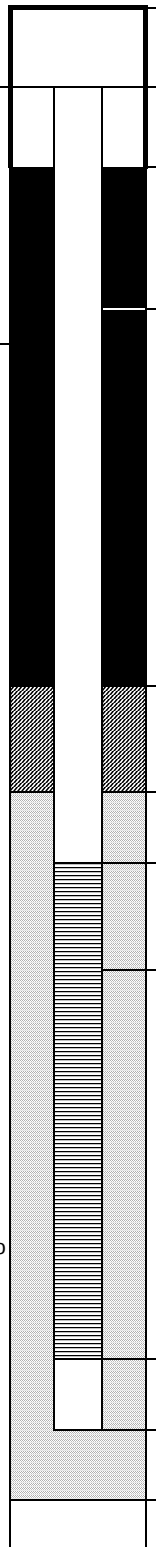
Approved: _____ Signature

3/22/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-206IB**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/26/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.13
Top of Riser Pipe		7.63
Ground Surface (G.S.)	0.0 bgs	8.55
Top of Bentonite	39 ft bgs	-30.45
Top of Sand	43 ft bgs	-34.45
Top of Screen	45 ft bgs	-36.45
▲ Stabilized Water Level		
Bottom of Screen	55 ft bgs	-46.45
Bottom of Tail Pipe:	58 ft bgs	-49.45
Bottom of Borehole	59 ft bgs	-49.45

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 45 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (15 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 15 gal of grout from 56' to 59' bgs.

Borehole Diameter: 12 inches

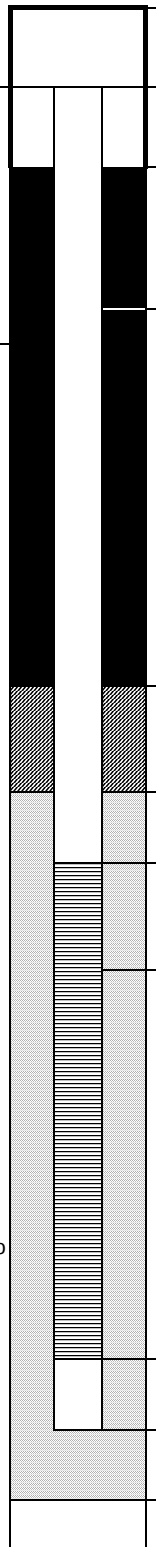
Approved: _____ Signature

3/26/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-206S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/27/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	9.02
Top of Riser Pipe		8.26
Ground Surface (G.S.)	0.0 bgs	8.6
Top of Bentonite	10 ft bgs	-1.4
Top of Sand	13 ft bgs	-4.4
Top of Screen	15 ft bgs	-6.40
▲ Stabilized Water Level		
Bottom of Screen	25 ft bgs	-16.4
Bottom of Tail Pipe:	28 ft bgs	-19.4
Bottom of Borehole	28 ft bgs	-19.4

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 15 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 3 ft (1.5 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (15 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout from 26' to 28' bgs.

Borehole Diameter: 12 inches

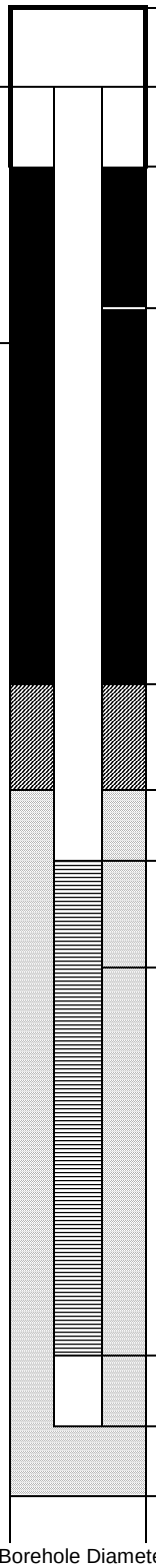
Approved: _____ Signature

3/27/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-207I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/28/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.77
Top of Riser Pipe		8.23
Ground Surface (G.S.)	0.0 bgs	8.5
Top of Bentonite	14 ft bgs	-5.5
Top of Sand	18 ft bgs	-9.5
Top of Screen	20 ft bgs	-11.50
▲ Stabilized Water Level		
Bottom of Screen	30 ft bgs	-21.5
Bottom of Tail Pipe:	33 ft bgs	-24.5
Bottom of Borehole	33 ft bgs	-24.5

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 14 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lb bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (20 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 8.5 gal of grout.

Borehole Diameter: 10.75 inches

Approved: _____ Signature

3/8/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-207S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/5/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.8
Top of Riser Pipe		8.15
Ground Surface (G.S.)	0.0 bgs	8.5
Top of Bentonite	5.5 ft bgs	3
Top of Sand	6.5 ft bgs	2
Top of Screen	10 ft bgs	-1.50
▲ Stabilized Water Level		
Bottom of Screen	20 ft bgs	-11.5
Bottom of Tail Pipe:	23 ft bgs	-14.5
Bottom of Borehole	23 ft bgs	-14.5

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 1 ft

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 13.5 ft (21 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 7.36 gal of grout.

Borehole Diameter: 10.25 inches

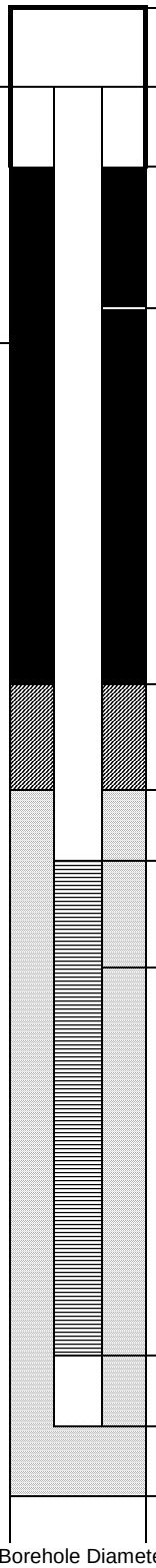
Approved: _____ Signature

3/5/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-208I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/12/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.52
Top of Riser Pipe		7.23
Ground Surface (G.S.)	0.0 bgs	8.27
Top of Bentonite	23 ft bgs	-14.73
Top of Sand	27 ft bgs	-18.73
Top of Screen	29 ft bgs	-20.73
▲ Stabilized Water Level		
Bottom of Screen	39 ft bgs	-30.73
Bottom of Tail Pipe:	42 ft bgs	-33.73
Bottom of Borehole	42 ft bgs	-33.73

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 29 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lbs bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (8 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 10 inches

Approved:

Signature

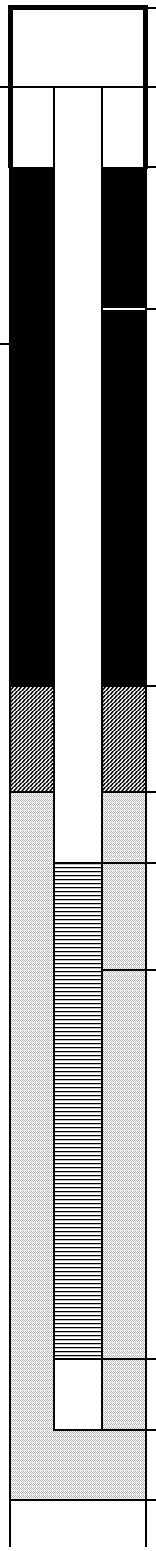
Date: 3/12/2013

Describe Measuring Point:

Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-208S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/13/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.53
Top of Riser Pipe		7.81
Ground Surface (G.S.)	0.0 bgs	8.27
Top of Bentonite	5 ft bgs	3.27
Top of Sand	8 ft bgs	0.27
Top of Screen	10 ft bgs	-1.73
▲ Stabilized Water Level		
Bottom of Screen	20 ft bgs	-11.73
Bottom of Tail Pipe:	23 ft bgs	-14.73
Bottom of Borehole	23 ft bgs	-14.73

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

____ % Native Materials

Riser Pipe:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 3 ft (2 - 50 lbs bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (8 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 12 inches

Approved:

Signature

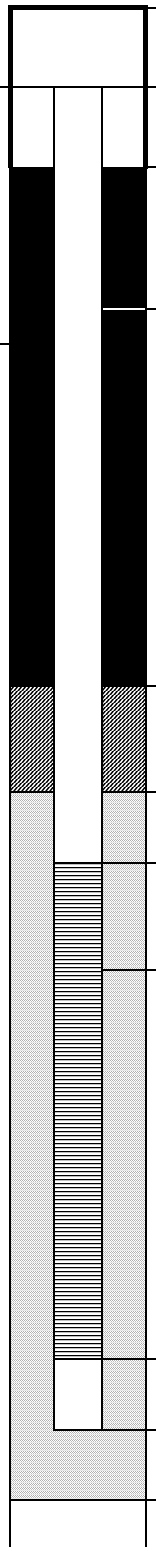
Date: 3/13/2013

Describe Measuring Point:

Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-209I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/14/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.28
Top of Riser Pipe		7.69
Ground Surface (G.S.)	0.0 bgs	8
Top of Bentonite	19 ft bgs	-11
Top of Sand	23 ft bgs	-15
Top of Screen	25 ft bgs	-17.00
▲ Stabilized Water Level		
Bottom of Screen	35 ft bgs	-27
Bottom of Tail Pipe:	40 ft bgs	-32
Bottom of Borehole	40 ft bgs	-32

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 25 ft
- Inside Diameter (ID): 6 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lbs bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 6 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (11 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 46 inches up sump. 17.25 gal of grout.

Borehole Diameter: 12 inches

Approved:

Signature

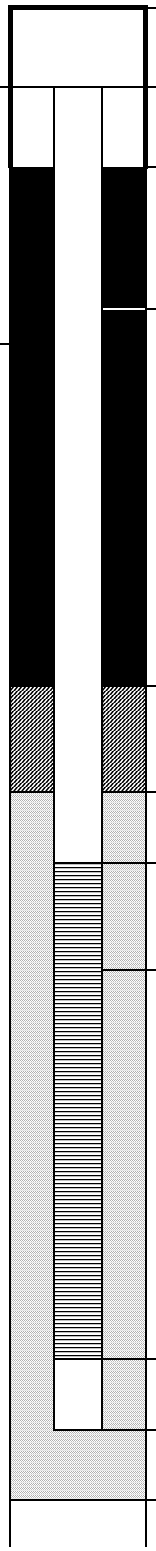
Date: 3/14/2013

Describe Measuring Point:

Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-209S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/15/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.48
Top of Riser Pipe		7.63
Ground Surface (G.S.)	0.0 bgs	8
Top of Bentonite	10 ft bgs	-2
Top of Sand	13 ft bgs	-5
Top of Screen	15 ft bgs	-7.00
▲ Stabilized Water Level		
Bottom of Screen	25 ft bgs	-17
Bottom of Tail Pipe:	30 ft bgs	-22
Bottom of Borehole	30 ft bgs	-22

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

____ % Native Materials

Riser Pipe:
- Length: 15 ft
- Inside Diameter (ID): 6 inches
- Type of Material: PVC

Bentonite Seal Thickness: 3 ft (2 - 50 lbs bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 6 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (11 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 46 inches up sump. 17.25 gal of grout.

Borehole Diameter: 12 inches

Approved:

Signature

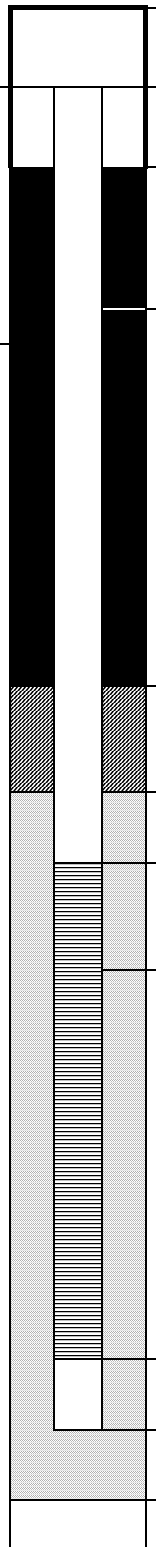
Date: 3/15/2013

Describe Measuring Point:

Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-210I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/18/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	7.93
Top of Riser Pipe		7.32
Ground Surface (G.S.)	0.0 bgs	7.6
Top of Bentonite	19 ft bgs	-11.4
Top of Sand	23 ft bgs	-15.4
Top of Screen	25 ft bgs	-17.40
▲ Stabilized Water Level		
Bottom of Screen	35 ft bgs	-27.4
Bottom of Tail Pipe:	38 ft bgs	-30.4
Bottom of Borehole	38 ft bgs	-30.4

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

____ % Native Materials

Riser Pipe:
- Length: 25 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 4 ft (2 - 50 lbs bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (10 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 12 inches

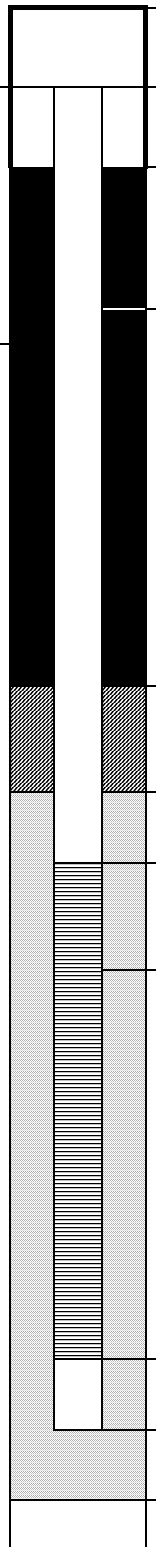
Approved: _____ Signature

3/18/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-210S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 3/19/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Jessica Elhen
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	7.85
Top of Riser Pipe		7.30
Ground Surface (G.S.)	0.0 bgs	7.6
Top of Bentonite	10 ft bgs	-2.4
Top of Sand	13 ft bgs	-5.4
Top of Screen	15 ft bgs	-7.40
▲ Stabilized Water Level		
Bottom of Screen	25 ft bgs	-17.4
Bottom of Tail Pipe:	28 ft bgs	-20.4
Bottom of Borehole	28 ft bgs	-20.4

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 15 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 3 ft (2 - 50 lbs bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (10 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 12 inches

Approved: _____ Signature

3/19/2013 Date

Describe Measuring Point: Top of Casing

AECOM	Client:	National Grid	**Well ID:** **RW-211I**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/4/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Sara Meissner
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.76
Top of Riser Pipe		7.23
Ground Surface (G.S.)	0.0 bgs	8.5
Top of Bentonite	25 ft bgs	-16.5
Top of Sand	28 ft bgs	-19.5
Top of Screen	30 ft bgs	-21.50
▲ Stabilized Water Level		
Bottom of Screen	40 ft bgs	-31.5
Bottom of Tail Pipe:	43 ft bgs	-34.5
Bottom of Borehole	43 ft bgs	-37.5

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

94 % Cement

5 % Bentonite

_____ % Native Materials

Riser Pipe:
- Length: 30 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

Bentonite Seal Thickness: 3 ft (2 - 50 lbs bags)

Screen:
- Length: 10 ft
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 12 ft (10 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Borehole Diameter: 12 inches

Approved:

Signature

Date: 4/4/2013

Describe Measuring Point:

Top of Casing

AECOM	Client:	National Grid	**Well ID: RW-211S**
	Project Number:	60137363-600	
	Site Location:	Clifton Former MGP	Date Installed: 4/8/2013
	Well Location:	Along Willow Ave inside barrier wall	Inspector: Sara Meissner
	Method:	Mud Rotary	Contractor: Moretrench

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Flush Mount	Flush Mount	8.74
Measuring Point for Surveying & Water Levels — Top of Riser Pipe		7.15
Ground Surface (G.S.)	0.0 bgs	8.5

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

Riser Pipe:
- Length: 6 ft
- Inside Diameter (ID): 4 inches
- Type of Material: PVC

_____ % Cement

100 % Bentonite

_____ % Native Materials

Top of Bentonite	4 ft bgs	4.5
Bentonite Seal Thickness: 4 ft (2 - 50 lbs bags)		
Top of Sand	4 ft bgs	4.5
Top of Screen	6 ft bgs	2.50
▲ Stabilized Water Level		

Screen:
- Length: 20 ft (2 - 10 ft sections)
- Inside Diameter (ID): 4 inches
- Slot Size: 0.2
- Type of Material: Stainless Steel

Type/Size of Sand: #0

Sand Pack Thickness: 22 ft (22 - 50 lb bags)

Note: 2 centralizers, 13 inches high, 11.5 inch diameter, 1 ft at top of screen, 1 ft at bottom of screen. Cement basket at bottom of screen, 22 inches long and 22 inches up sump. 10 gal of grout.

Bottom of Screen	26 ft bgs	-18.5
Bottom of Tail Pipe:	29 ft bgs	-21.5
Bottom of Borehole	29 ft bgs	-21.5

Borehole Diameter: 12 inches

Approved: _____ Signature

4/8/2013 Date

Describe Measuring Point: Top of Casing

Well Development Form

Project Number: 60137343.600
Project Name: Clifton Former MGP
Date: 4/11/13
Weather: 50's, cloudy, breezy

Well ID: RW-2025
Sample ID: —
Permit Number: —
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 6"
Inner Casing Material: PVC
Purge/Sample Method: Grundfos Pump
Pump Intake Setting* (feet): —
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet):
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 10'
Total Depth* (feet): 16' 7" BTOC (25')
Water Column (feet):
Casing Volume (gal):
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal):
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

Well Development Form

Project Number: 60137363 - 600
Project Name: Clifton Former MGP
Date: 4/11/13 + 4/12/13
Weather: 50s cloudy, breezy

Well ID: RW - 202I
Sample ID: —
Permit Number: —
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 6"
Inner Casing Material: PVC
Purge/Sample Method: Grunfos Pump
Pump Intake Setting* (feet): —
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 2' 3"
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 27'
Total Depth* (feet): 41' 10" BTOC
Water Column (feet): 39' 8"
Casing Volume (gal): 58.46 gall
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

	Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
4/11/13	1315	10 gpm	7 min		Initial DTW = 6' 2", after 1 minute was 11' 3"
					5 min = 36' 2", 6 min = 39' 6", 7 min = Dry
	1322		~70 gallons		well ran dry
	1337	—			DTW @ 39' 2" - not recharging
4/12/13	0830			9.5 BTOC	Surge + purge every 2 feet
	0846		0 min		
	0853	6.29 gpm	7 min	= 44 gal	
				29.4 BTOC	
	0855				
	0900	6 gpm	30 gal		Clear water / Dry @ bottom
					odors, no product
					Total gallons purged = 144 gallons

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal):
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names: Sara Meissner

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.
Below Top of Casing = BTOC

Well Development Form

Project Number:	60137363 - 600	Well ID:	RW-2015
Project Name:	Clifton former MGP	Sample ID:	
Date:	4/11/13	Permit Number:	
Weather:	~50°F, cloudy, breezy	Well Condition:	New - Good

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	6"	Initial Depth to Water* (feet):	4' 8"
Inner Casing Material:	PVC	Product Thickness (feet):	NA
Purge/Sample Method:	Grundfos Pump	Depth to Top of Screen* (feet):	14'
Pump Intake Setting* (feet):		Total Depth* (feet):	
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	
Before Cap Removal:	NA	Casing Volume (gal):	
After Cap Removal:	NA	DTW After Pump Installed:	

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):		End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

Below Top of Casing = BTOC

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/11/13
Weather: ~50°F, cloudy, breezy

Well ID: RW-201I
Sample ID: NA
Permit Number: NA
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 6"
Inner Casing Material: PVC
Purge/Sample Method: Grundfos pump
Pump Intake Setting* (feet):
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 3.0' bgs
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 24'
Total Depth* (feet): 38' 4" ← Driller measured
Water Column (feet): 35.33
Casing Volume (gal): 51.89 gal
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
				38' 4" btoc = 3' btoc
825				Begin surging well 2' intervals
910			3'	* Pump not working properly
930			3'	- Trying again
940		150	28'	Stopped to let well recover product has been seen, to present on water probe
950		+45		Start took 20 seconds to fill 5 gal bucket
1023	10	+0	6.00'	Start pump
1025	10	+20	20.00	water NAPL mixture
1027	10	+20	25.00	water NAPL mixture
1029	10	+20	31.00	Stop pump
				Final DTB = 38' 2"

3 mins to evacuate the well

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~255 gal purged
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings): Final DTB = 38' 2"

Note: water quality measurments were not recorded due to possible DNAPL in wells.

btoc = below top of casing.

Well Development Form

Project Number:	60137363 - 600	Well ID:	RW-2005
Project Name:	Clifton Former MGP	Sample ID:	—
Date:	4/12/13	Permit Number:	—
Weather:	55, torrential rain	Well Condition:	Good - new

PRE-PURGE INFORMATION

Protective Casing Diameter (Inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (Inch):	4"	Initial Depth to Water* (feet):	2.5 ft
Inner Casing Material:	PVC	Product Thickness (feet):	NA
Purge/Sample Method:	Grundfos Pump	Depth to Top of Screen* (feet):	10'
Pump Intake Setting* (feet):	—	Total Depth* (feet):	19.6'
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	14.1'
Before Cap Removal:	NA	Casing Volume (gal):	9.20 gal
After Cap Removal:	NA	DTW After Pump Installed:	

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
1125			2.5	Surge well every 2' for 10' of screen
1137			2.5	Begin purging
1140	10 gpm	30 gal	Dry	Stopped purging
1210			8'	Surged well again
1224			8'	Purged well start
1226	10 gpm	20 gal	Dry	Stopped purging
1320			8'	Surged well
1325			8'	Began purging
1327	12.5 gpm	25 gal	Dry	Stopped
				Total gallons purged = 75 gallons
				Water was clear
				Slight sheen and odor

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):		End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

Well Development Form

Project Number:	60137363 - 600	Well ID:	RW . 20 . I
Project Name:	Former Clifton MGP	Sample ID:	—
Date:	4/12/13	Permit Number:	—
Weather:	50°, torrential rain, wind	Well Condition:	Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	4"	Initial Depth to Water* (feet):	2.6 ft
Inner Casing Material:	PVC	Product Thickness (feet):	NA
Purge/Sample Method:	Grundfos Pump	Depth to Top of Screen* (feet):	24 ft
Pump Intake Setting* (feet):	—	Total Depth* (feet):	36.3 ft
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	33.7
Before Cap Removal:	NA	Casing Volume (gal):	21.99 gal
After Cap Removal:	NA	DTW After Pump Installed:	

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
1055			2.6 ft	
1110				Surged well every 2' for 10' of screen
1132			2.6 ft	Began purging
1136	7.5 gpm	30 gal	36.3	Stopped purging
1210			22 ft	Surged well again
1233			22	Began purging
1238	8.3 gpm	25 gal	Dry	Stopped purging
1340			12'	Began purging
1343	10 gpm	30 gal	Dry	Stopped
				Total gallons purged = 85 gallons
				- ran clear, slight odor

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):		End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

Well Development Form

Project Number:	60137363 - 600	Well ID:	RW - 203 S
Project Name:	Clifton Former MGP	Sample ID:	—
Date:	4/12/13	Permit Number:	—
Weather:	~50s, cloudy, breezy	Well Condition:	Good - Nein

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	4"	Initial Depth to Water* (feet):	4'9"
Inner Casing Material:	PVC	Product Thickness (feet):	NA
Purge/Sample Method:	Grundfos Pump	Depth to Top of Screen* (feet):	14'
Pump Intake Setting* (feet):		Total Depth* (feet):	28'7" BTOC
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	24'7"
Before Cap Removal:	NA	Casing Volume (gal):	36.28 gal
After Cap Removal:	NA	DTW After Pump Installed:	

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
0920			4.9 ft	Began surging well
0923				Stopped surging every 2' to 10'
0924			4.9'	Began purging well
0927	10 gpm	30 gal	28.7'	Stopped purging well
0948			12'	Began surging again
0951	10 gpm	30 gal	28.7'	Stopped surging again
1042			15'	Began purging
1045	10 gpm	30 gal	Dry	Stopped purging
				Ran clear at end, no silt, no product
				but strong odor
				Total gallons purged = 90 gallons

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):		End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

Below Top of casing = BTOC

Well Development Form

Project Number:	60137363 - 600	Well ID:	RW - 203I
Project Name:	Clifton Former MGP	Sample ID:	—
Date:	4/12/13	Permit Number:	—
Weather:	~50's, cloudy, breezy	Well Condition:	Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	6"	Initial Depth to Water* (feet):	4' 3"
Inner Casing Material:	PVC	Product Thickness (feet):	NA
Purge/Sample Method:	Grundfos Pump	Depth to Top of Screen* (feet):	[redacted]
Pump Intake Setting* (feet):		Total Depth* (feet):	38 1/6" BTOC
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	34' 5"
Before Cap Removal:	NA	Casing Volume (gal):	50.67 gal
After Cap Removal:	NA	DTW After Pump Installed:	

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
0903				Surged every 2' ft of screen, 10'
0910			3' 4"	of screen
0914				Began Purging
0920	5.83/ gpm	35 gal	38.4	Stopped Purging
1015			9.6	Surging again every 2' to 10' of screen
1039	11.67	35 gal	9.6	Began Purging (3 min)
1042			Dry	Stopped Purging
				Total gallons purged = 70 gallon
				Was clear, 0 silt free
				Strong odor, no product

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):		End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

Below Top of Casing = BTOC

Well Development Form

Project Number: 60137363.600
Project Name: Clifton former MGP
Date: 4/15/13
Weather: ~55°F, partly cloudy, breezy

Well ID: RW-211 I
Sample ID:
Permit Number:
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC/Stainless steel
Purge/Sample Method: grundfos Pump
Pump Intake Setting* (feet): 39' bgs
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet): NA
Initial Depth to Water* (feet): .85'
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 30' bgs
Total Depth* (feet): 42'2"
Water Column (feet): 41.31
Casing Volume (gal): 26.97
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

	Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
4/15/13	1355			.85	Surging well 15x per 2'
	1402			.85	installing pump
	1407	~7	0	.85	pumping well, silty, strong flo
	1408	~7	7		little silt, strong flo
	1409	~7	14		clear, strong flo, little NAPL on water
	1410	~7	21		little silt, strong flo, little NAPL on water
	1412	~7	35		well ran dry, little silt till flo end, strong flo, little NAPL on water
	1413			33.8	tar blebs on probe tip
	1415			33.2	
	1422			32.0	
4/16/13	0720			1.0	Begin surging well
	726	~7	0		finish surging, installing pump, begin pumping
	727	~7	7		~~clear~~, strong flo, silty, sheen on water
	728	~7	14		clear, strong flo, sheen, little NAPL on water
	732	~7	42		silty, strong flo, clear, little NAPL on water, well ran dry
	734			36.3	
	736			36.0	
	807			33.8	
	841			32.0	
	856			31.4	
	938			30.6	
	1045			26.25	
	1101			19.6	surging well
	1107				installing pump
	1110	~7	0	19.6	Begin pumping well, silty
	1111	~7	7		less silty, strong flo, sheen, few NAPL blobs
	1112	~7	14		very little silt, strong flo, sheen, little NAPL on water
	1114	~7	28		silty @ end, well ran dry, flo, sheen, product on water
	1115			37.5	
	1125			33.0	

see back

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~126
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb after development *

21
28
35
42
126

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/15/13
Weather: ~56°F, Cloudy, light breeze

Well ID: RW-206 IA
Sample ID:
Permit Number:
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC / Stainless Steel
Purge/Sample Method: Grundfos pump
Pump Intake Setting* (feet): 44' bgs
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 1" btoc
Product Thickness (feet):
Depth to Top of Screen* (feet): 35' bgs
Total Depth* (feet): 48'8" btoc
Water Column (feet): 48'7"
Casing Volume (gal): 31.71 gal
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
800			8.1	Begin surging well 10-15 x per 2' section of screen
804				Finished surging, installing pump.
806	~7			Begin pumping, very silty
808	"			Clear, no flo, no visual impacts.
810	~7	~35		Stop pump well ran dry.
812				couldn't get dtw
816			42.2	
825			39.5	
836			38.2	
852			35.9	
900			35.4	
914			35.0	
925			34.5	
948			34.5	
1011			33.9	
1050			32.5	Surging well
1130			31.3	
1136	~7	0	31.3	pumping well, silty.
1137	~7	7		clear, mod flo
1139	~7	21		clear, mod flo, well went dry, sheen on water
1141			45.3	
1200			40.4	
1213			39.5	
1240			38.5	
1309			37.8	
1339			37.5	
1425			36.75	
4/16/13 732			14.20	
737			14.20	Begin surging well
743				installing pump

see back

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~84
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

Well Development Form

Project Number:	60137363-600	Well ID:	RW-206IB
Project Name:	Clifton Former MGP	Sample ID:	—
Date:	4/15/13	Permit Number:	—
Weather:	~50°F, cloudy, light breeze	Well Condition:	Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (Inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	4"	Initial Depth to Water* (feet):	0.0' btoc
Inner Casing Material:	PVC/Stainless Steel	Product Thickness (feet):	NA
Purge/Sample Method:	grundfos pump	Depth to Top of Screen* (feet):	45' bgs
Pump Intake Setting* (feet):	0 ~54' bgs	Total Depth* (feet):	* 53'5" btoc / 58'8" btoc
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	58'8"
Before Cap Removal:	NA	Casing Volume (gal):	38.29
After Cap Removal:	NA	DTW After Pump Installed:	

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
856				Begin surging well 15x per 2' screen
902				finish surging well / installing pump
904	~7	0	0.0	Begin pumping, silty water strong flo, sheen
906	~7	14		clear, strong flo, sheen, little free product
908	~7	28		clear, strong flo, sheen, little free product
911	~7	49		well ran dry, clear water till end, strong flo, sheen
913			51.3	product on probe tip.
926			51.0	
947			48.2	
1012			47.4	
1051			47.4	
1130			46.9	
1142			40.8	
1145				surging well
1150				finish surging, installing pump.
1152	~7	0		pumping well, little silt, strong flo, little free product on water
1155	~7	21		well ran dry, little silt, strong flo, little free product on water.
1157			53.6	product on probe tip
1213			52.0	
1241			51.5	product on probe tip.
1310			51.1	
1338			50.9	
1425			50.5	
4/16/13 → 0721			30.6	
750			30.6	Begin surging well
758				installing pump in well
759	~7	0		Begin pumping, clear
800	~7	7		silty strong flo
801	~7	14		little silt, strong flo, sheen, little NAPL on water
803	~7	28		well ran dry, clear from 802-803, strong flo, sheen & little NAPL on water

see back

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):	~98 gal	End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

*flushing out well 58'8" after flush out btoc.

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/15/13
Weather: ~50°F, cloudy, light breeze

Well ID: RW-2065
Sample ID:
Permit Number:
Well Condition: New - Good

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC / Stainless steel
Purge/Sample Method: Grundfos pump
Pump Intake Setting* (feet):
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 17" btoc
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 15' bgs
Total Depth* (feet): 28.0' btoc
Water Column (feet): 26.42
Casing Volume (gal): 17.25 gal
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
740	—	—	—	Begin surging well 10-15x per 2' section of screen
745				Finish surging well
751	~7	0	4.7	Start pump - very silty, strong flo, no visual impacts
753	"	14	15.25	Clear, strong flo
755	"	28	~~8.~~	well ran dry, silty again. Stopped pump.
757	~~7~~		18.7	
800	~~7~~		12.3	
803	~~7~~		9.3	
812	~~7~~		4.4	
813	—	—	—	surging well
821	~7	7		Begin pumping, silty strong flo
822	~7	14		Clear, strong flo
823	~7	21		silty up again well running dry
824	~7	28		well ran dry again
826			17.3	
835			7.4	
841			4.4	Surging well
845				Finish surging well, installing pump
846	~7	0		Pumping well, water is silty
848	~7	14		Clear water, strong flo, no visible product
850	~7	28		well ran dry, silty water, sheen on water
851			20.3	
900			9.1	
914			3.9	Surging well
917				installing pump
918	~7	0		Pumping well, little silty, strong flo
919	~7	7		Clear, sheen, strong flo
921	~7	21		well ran dry, clear to end of pumping strong flo, sheen.

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): 105 gal
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

flo after development 28' btoc

Well Development Form

Project Number:	60137363.600	Well ID:	RW-20SD
Project Name:	Clifton Former MGP	Sample ID:	
Date:	4/15/13	Permit Number:	
Weather:	~50F, cloudy, light breeze	Well Condition:	Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	4"	Initial Depth to Water* (feet):	1" btoc
Inner Casing Material:	PVC/Stainless Steel	Product Thickness (feet):	NA
Purge/Sample Method:	Grundfos pump	Depth to Top of Screen* (feet):	64' bgs
Pump Intake Setting* (feet):	74' bgs	Total Depth* (feet):	78'9" btoc
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	78.67
Before Cap Removal:	NA	Casing Volume (gal):	51.35
After Cap Removal:	NA	DTW After Pump Installed:	

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
947				Surging well 15x/2' screen
955				finish surging well, installing pump
959	~7	0	1"	Begin pumping well, clear, strong flo
1000	~7	7		Silty, strong flo
1001	~7	14		clear, strong flo
1003	~7	28		clear, strong flo
1008	~7	63		well ran dry, clear till the end, strong flo
1010			71.10	
1020			69.3	tar blebs on probe tip.
1048			58.0	
1105				Surging well
1123				finish surging, installing pump
1124	~7	0		pumping well, silty, strong flo, sheen, little free product on water
1125	~7	7		clear, strong flo, sheen, little free product on water
1129	~7	35		well ran dry, clear till end, strong flo, sheen, little free product on water
1132			70.7	
1143			69.1	
1159			67.2	
1211			65.25	
1237			56.7	
1243			56.7	Surging well
1250			52.1	finish surging well, installing pump
1256	~7	0		pumping well, silty
1257	~7	7		clear, strong flo, little free product on water
1300	~7	28		well ran dry, clear till the end, strong flo, little free product on water.
1303			71.3	

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):	~126 gal	End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb after development = 47'10" - 10" cut off of top of riser.

Well Development Form

Project Number: 60137362-600
Project Name: Clifton former MGP
Date: 4/16/13
Weather: ~55°F, partly cloudy, light breeze

Well ID: RW-207I
Sample ID:
Permit Number:
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC/stainless steel
Purge/Sample Method: grundfos pump
Pump Intake Setting* (feet): 29' bgs
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 4' btoc
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 20' bgs
Total Depth* (feet): 32'7" btoc
Water Column (feet): 32'3"
Casing Volume (gal): 21.05 gal
DTW After Pump Installed: NA

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
837				Begin surging well 15x per 2' of screen
841				finish surging well
847	~7	0	0.0	installing pump, begin pumping, little silt
848	~7	7		little silt, mod flow, sheen
849	~7	14		clear, slight flow, sheen, little NAPL on water
852	~7	~35		well ran dry, clear till the end, slight flow, sheen, little NAPL on water
854			24.7	
900			19.7	
942			7.6	
955				Begin surging well
1000			7.6	installing pump
1001	~7	0		Begin pumping well, little silt, sheen, flow
1002	~7	7		clear, sheen, flow
1004	~7	21		clear, sheen, flow, little NAPL on water
1005	~7	~28		well ran dry, little silt @ end, flow, sheen, little NAPL on water
1008			25.1	
1104			7.25	
1201			6.00	
1135				Surging well
1143	~7	0		pumping well, clear, flow
1148	~7	21		clear, strong flow, sheen, very little NAPL on water
1150	~7	~35		clear till end, well ran dry, sheen, flow, little NAPL on water
1152			29.0	
1200			22.7	

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~98 gal
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtw after development = 33.0 btoc

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/16/13
Weather: ~55°F, partly cloudy, light breeze

Well ID: RW-211S
Sample ID:
Permit Number:
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC / stainless steel
Purge/Sample Method: grundfos pump
Pump Intake Setting* (feet): 25' bgs
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 0.0'
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 6' bgs
Total Depth* (feet): 28'6" btoc ?
Water Column (feet): 28'6"
Casing Volume (gal): 18.60 gal
DTW After Pump Installed: NA

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
815			0.0	Surging well 15x per 2' of screen
824			0.0	finish surging, installing pump
825	~7		0.0	Begin pumping, silty, strong flo & sheen
826	~7			silty, strong flo, sheen, little NAPL on water
829	~7			little silty, strong flo, sheen, little NAPL on water
830	~7	~35		well ran dry, very silty @ end, sheen, flo, little NAPL on water
832			22.2	
840			12.6	
856			9.7	
939			4.8	
943				Surging well
950				finish surging well, installing pump
951	~7	0	4.8	Begin pumping, silty, strong flo, sheen
952	~7	7		silty, strong flo, sheen, few NAPL blebs
954	~7	21		less silty, strong flo, sheen, little NAPL on water
956	~7	35		even less silty, strong flo, sheen, little NAPL on water
958	~7	~49		clear @ end, well ran dry, sheen, flo, little NAPL on water
1007			14.8	
1104			4.55	
1118				Begin surging well
1125	~7	0	4.55	Begin pumping well, silty flo, sheen, little NAPL on water
1126	~7	7		less silty, flo, sheen, little NAPL on water
1130	~7	35		~~ov~~ clear, flo, sheen, little NAPL on water
1132	~7	~49		well ran clear, little end, well went dry, sheen, flo, little NAPL on water
1134			21.1	
1154			10.8	

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~133 gal
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):
* This well has 20' screened interval 6-26' bgs

Note: water quality measurments were not recorded due to possible DNAPL in wells.
dtb after development = 28' btoc

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/16/13
Weather: ~55

Well ID: RW-207S
Sample ID:
Permit Number:
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC/Stainless Steel
Purge/Sample Method: grundfos pump
Pump Intake Setting* (feet): 19' bgs
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 0.0
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 10' bgs
Total Depth* (feet): 23'5"
Water Column (feet): 23'5"
Casing Volume (gal): 15.29
DTW After Pump Installed: NA

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
842			0.0	Begin surging well 15x per 2' of screen
846				finish surging well
905				installing pump
905	~7	0	0.0	Begin pumping silty mud flo, sheen
906	~7	7		silty sheen, flo, few NAPL blebs
908	~7	21		less silty sheen, flo, few NAPL blebs
910	~7	35		more silty sheen, flo, few NAPL blebs
912	~7	49		silty sheen, strong flo, little NAPL on water
913	~7	~56		silty, well ran dry, sheen, strong flo, little NAPL on water,
914			19.7	
915			18.7	
941			10.5	
1045			3.0	Begin surging well
1052	~7	0		installing pump, begin pumping, silty,
1053	~7	7		less silty, flo, sheen
1055	~7	21		little silt, flo, sheen, little NAPL on water (trace)
1059	~7	~49		well ran dry, silty till end, sheen, flo, trace NAPL on water.
1102			19.2	
1122			12.0	
1153			5.6	
1156				surging well
1200	~7	0	5.6	Begin pumping well, silty
1201	~7	7		little silt, flo, sheen
1203	~7	21		little silt, flo, sheen, ~~very little NAPL on water~~ few NAPL blebs
1206	~7	~42		well ran dry, little silt till end, sheen, flo, few NAPL blebs
1207			19.3	
1224			14.0	
1245			8.0	
1247				Begin surging well
1252				installing pump

see back

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~175 gal
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb after development =

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/16/13
Weather: ~60°F, partly cloudy, light breeze

Well ID: RW-208I
Sample ID:
Permit Number:
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC/stainless steel
Purge/Sample Method: grundfos pump
Pump Intake Setting* (feet):
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 1.8' btoc
Product Thickness (feet): ~6' on tape
Depth to Top of Screen* (feet): 30' bgs
Total Depth* (feet): 43'4"
Water Column (feet): 41.53
Casing Volume (gal): 27.11
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
1354			1.8	Surging well 15x per 2' of screen
1358	~7	0	1.8	Begin pumping well, silty water, tlo, product weak, mixture
1400	~7	14		" " " " " "
1402	~7	28		silty water, little product, strong tlo
1405	~7	49		~~silty water~~, pure product
1406	~7	~56		pumping pure product, stopped pump
1410			5.0	
1425			4.0	

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~56
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):
Stopped pumping due to pure NAPL

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb after development = 43'4"

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/16/13
Weather: ~60°F, partly cloudy, light breeze

Well ID: RW-208S
Sample ID: ——
Permit Number: ——
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (Inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC/Stainless Steel
Purge/Sample Method: grundfos pump
Pump Intake Setting* (feet):
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 2.0' btoc
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 18' bgs
Total Depth* (feet): 22'4" btoc
Water Column (feet): 20.33
Casing Volume (gal): 13.27
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
1320			2.0	surging well 15x per 2' of screen
1329				installing pump
1330	~7	0		Begin pumping, silty, tlo, sheen
1331	~7	7		less silty, tlo, sheen, little NAPL on water
1332	~7	14		clear, tlo, sheen, NAPL on water (little)
1335	~7	35		clear, tlo, sheen, little NAPL on water
1338	~7	~56		" " " " "
1340	~7	~70		" " " " " stopped pump
1340			3.0	surging well
1345	~7	0		finished surging, begin pumping, silty, tlo
1346	~7	7		clear, tlo, silty, little NAPL on water
1349	~7	28		clear, tlo, sheen, little NAPL on water
1350	~7	~35		" " " " " stopped pump
1351			3.0	

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~105 gal
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.
tlo after development = 22'6" btoc

Well Development Form

Project Number:	60137363-600	Well ID:	RW-209I
Project Name:	Clifton former MGP	Sample ID:	—
Date:	4/17/13	Permit Number:	—
Weather:	~60°F, cloudy, breezy	Well Condition:	Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	6"	Initial Depth to Water* (feet):	1.0' btoc
Inner Casing Material:	PVC/Stainless steel	Product Thickness (feet):	NA
Purge/Sample Method:	grundfos pump	Depth to Top of Screen* (feet):	25
Pump Intake Setting* (feet):	34'	Total Depth* (feet):	42'10" based bottom btoc
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	41.83
Before Cap Removal:	NA	Casing Volume (gal):	61.44
After Cap Removal:	NA	DTW After Pump Installed:	NA

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
745			1.0	Surging well 15x per 2' of screen
755			1.0	installing pump
756	~7	0	1.0	Begin pumping, silty, flo, sheen, few NAPL blobs
758	~7	14		less silty, flo, sheen, few NAPL blobs
800	~7	28		very little silt, flo, sheen, few NAPL blobs
801	~7	35		clear, flo, sheen, few NAPL blobs
805	~7	63		" " " "
808	~7	84		" " " "
809	~7	91		" " " " stop pump
810			37.65	
814			22.05	
823			11.90	
827				Surging well
831			7.5	installing pump
834	~7	0		Begin pumping, silty, strong flo
837	~7	21		less silty, flo, sheen, few NAPL blobs
839	~7	35		clear, flo, sheen, few NAPL blobs
842	~7	56		" " " " "
844	~7	70		little silt, flo, sheen, few NAPL blobs
847	~7	91		" " " " "
848	~7	98		well ran dry, little silt, fill end, sheen, flo, few NAPL blobs
849			28.3	
852			22.9	
908			14.9	
917				Surging well
923			7.6	finish surging well, installing pump
924	~7	0		Begin pumping, silty, strong flo
926	~7	14		less silty, flo, sheen, few NAPL blobs
927	~7	21		even less silty, sheen, flo, few NAPL blobs
929	~7	35		clear, flo, sheen, few NAPL blobs.

see back

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):	~273 gal	End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb after development = 41'6" soft

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/17/13
Weather: ~60°F, cloudy, breezy

Well ID: RW-209S
Sample ID:
Permit Number:
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (Inch): NA
Inner Casing Diameter (Inch): 6"
Inner Casing Material: PVC/Stainless Steel
Purge/Sample Method: Grundfos pump
Pump Intake Setting* (feet): 24'
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 0.0' btoc
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 15' bgs
Total Depth* (feet): 29'6" after btoc
Water Column (feet): 29'6"
Casing Volume (gal): 43.33
DTW After Pump Installed: NA

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
810			0.0	surging well 15x per 2' of screen.
815			0.0	installing pump
816	~7	0		Begin pumping! silty, tlo
818	~7	14		less silty, strong tlo, sheen few NAPL blebs
819	~7	21		clear, strong tlo, sheen few NAPL blebs
820	~7	28		little silt, strong tlo, sheen, few NAPL blebs
823	~7	~49		little silt till end, tlo, sheen, few NAPL blebs
824			28.0	
826			27.1	
831			25.5	
850			23.3	
909			22.4	tar blebs on probe tip
940			20.55	" " "
1030			18.0	
1104			17.4	
1119			16.8	
1143			15.5	
1209			14.1	
1210				Begin surging well
1216	~7	0		Pumping well, little silt, strong tlo, sheen
1218	~7	14		clear, tlo, sheen
1220	~7	28		clear, tlo, sheen
1223	~7	49		clear till end, well ran dry, tlo, sheen
1224			28.6	
1242			26.1	tar blebs on probe tip
1333			20.6	
1357			18.7	
1415			17.3	
4/18/13 → 715			0.8	Begin surging well
732	~7	0		Pumping well, little silt, strong tlo

see back

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~175 gal
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb after development = 29'6" btoc - hard bottom

Well Development Form

Project Number:	60137363-600	Well ID:	RW-210 I
Project Name:	Clifton former MGP	Sample ID:	—
Date:	4/17/13	Permit Number:	—
Weather:	~60°F, cloudy, breezy	Well Condition:	Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	4"	Initial Depth to Water* (feet):	0.0' btoc
Inner Casing Material:	PVC/Stainless Steel	Product Thickness (feet):	NA
Purge/Sample Method:	grundfos pump	Depth to Top of Screen* (feet):	25
Pump Intake Setting* (feet):		Total Depth* (feet):	38.0' bgs
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	38.0'
Before Cap Removal:	NA	Casing Volume (gal):	24.81
After Cap Removal:	NA	DTW After Pump Installed:	NA

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
945			0.0	Surging well 15x per 2' of screen
950				Installing pump
951	~7	0		Begin pumping well, little silt, strong flo
952	~7	7		very little silt, strong flo, sheen, few NAPL blobs
953	~7	14		clear, flo, sheen, few NAPL blobs
955	~7	~28		clear, flo, sheen, few NAPL blobs, well ran dry.
957			33.9	
1002			32.6	
1035			16.8	
1047				Surging well
1055	~7	0		Pumping well, silty, flo
1056	~7	7		little silt, flo, sheen
1057	~7	14		clear, flo, sheen
1058	~7	~21		well ran dry, clear till the end, sheen, flo
1100			33.4	
1117			27.1	
1146			16.5	Begin surging well
1152	~7	0		Pumping well, little silt, strong flo
1155	~7	21		clear, flo, sheen
1156	~7	~28		clear, well ran dry, flo, sheen
1157			33.3	
1206			30.4	

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):	~77 gal	End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb after development = 38.4 btoc

Well Development Form

Project Number:	60137363-600	Well ID:	RW-210S
Project Name:	Clifton former MGP	Sample ID:	
Date:	4/17/13	Permit Number:	
Weather:	46°F, cloudy, breezy	Well Condition:	Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):	NA	Depth to Product* (feet)	NA
Inner Casing Diameter (inch):	4"	Initial Depth to Water* (feet):	~~30.1~~ 4"
Inner Casing Material:	PVC/stainless steel	Product Thickness (feet):	NA
Purge/Sample Method:	grundfos pump	Depth to Top of Screen* (feet):	15
Pump Intake Setting* (feet):		Total Depth* (feet):	28'4" btoc
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	28'
Before Cap Removal:	NA	Casing Volume (gal):	18.28
After Cap Removal:	NA	DTW After Pump Installed:	NA

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
952			0.33	Surging well 15X per 2' of screen
955				installing pump
956	~7	0		Begin pumping, silty, flo, sheen
957	~7	7		clear, sheen, flo
959	~7	~21		well ran dry, clear till end, sheen, flo
1001			25.6	
1036		4.4	~~25.6~~	
1040				Surging well
1048	~7	0		Pumping well, little silt, flo
1050	~7	14		clear, flo, sheen
1051	~7	~21		clear ran dry, flo, sheen
1058 ~~1102~~			23.9	
1102			18.6	
1116			7.5	
1145			2.9	
1158				Surging well
1200	~7	0		Begin pumping well, little silt, flo, sheen
1201	~7	7		clear, flo, sheen
1202	~7	~14		clear, ran dry, silty @ end, flo, sheen
1204			24.9	
1220			9.2	
1228				Surging well
1232	~7	0		Pumping well, little silt, strong flo
1233	~7	7		clear, flo, sheen
1235	~7	21		clear till the end, flo, sheen
1236			25.6	
1240			22.6	

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):	~77 gal	End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb after development = 28'4"

Well Development Form

Project Number: 60137363-600
Project Name: Clifton former MGP
Date: 4/18/17
Weather: ~60°F, mostly cloudy, breezy

Well ID: RW-204 I
Sample ID: —
Permit Number: —
Well Condition: Good - New

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): NA
Inner Casing Diameter (inch): 4"
Inner Casing Material: PVC/Stainless Steel
Purge/Sample Method: grundfos pump
Pump Intake Setting* (feet): 39' bgs
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: NA
After Cap Removal: NA

Depth to Product* (feet) NA
Initial Depth to Water* (feet): 1.9
Product Thickness (feet): NA
Depth to Top of Screen* (feet): 30' bgs
Total Depth* (feet): 43' 7½" btoc
Water Column (feet): 41.73
Casing Volume (gal): 27.24
DTW After Pump Installed: NA

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
937			1.9	Begin surging well 15x per 2' of screen
945				Installing pump
946	~5	0		Begin pumping, little silt, strong flo
948	~5	10		silty, strong flo
950	~5	20		clear, strong flo
952	~5	30		clear, flo
953	~5	35		little silt, strong flo
954	~5	40		little silt, strong flo, well ran dry
956			37.0	
958			35.8	
1000			34.9	
1043			25.2	
1256			7.8	
1310				Begin surging well
1316				Installing pump
1318	~5	0		Begin pumping, little silt, strong flo
1319	~5	5		clear, flo
1321	~5	15		clear, flo
1323	~5	20		little silt, flo
1325	~5	35		well ran dry, little silt till the end, flo
1326			38.0	
1330			35.8	
1357			30.7	
1405			27.6	
4/19/17 730			2'4½"	Begin surging well
742				Installing pump
744	~7	0		Begin pumping, clear, strong flo
745	~7	7		silty, strong flo
746	~7	14		clear, flo
748	~7	28		clear, flo

see back

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal): ~138 gal
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

dtb btoc after development = 43½"

Well Development Form

Project Number: C
Project Name: Clifton MGP
Date: 4/23/13
Weather: 45 sunny

Well ID: RW202S
Sample ID:
Permit Number:
Well Condition:

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):
Inner Casing Diameter (inch):
Inner Casing Material:
Purge/Sample Method:
Pump Intake Setting* (feet):
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal:
After Cap Removal:

Depth to Product* (feet)
Initial Depth to Water* (feet):
Product Thickness (feet):
Depth to Top of Screen* (feet):
Total Depth* (feet):
Water Column (feet):
Casing Volume (gal):
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
7:45			3.5"	
				Started surging well
8:05				10 times for 2' screen
8:06				install pump
				started pumping, silty water
				slight odor, getting clear
8:09				lower down pump
8:11	7.33	44	Dry	Stopped pumping
				6 min 44 gallons - Full bucket/Drum - Dry
8:11				Draining the Drum water
8:22			21	No sheen or product
8:38			19	moving slow - so RW-201S
9:03			18	
10:35			17.3	
11:45			15.2	
12:15			10.6	May be effect of other well
13:35			8.35	24' total depth - 1ft of sand at bottom
13:36				started surging
13:40				stopped surging, installing pump
13:41				Start purging, silty
13:42				lower pump 5' in 20 gallon, didn't clear
13:45	~9	35	Dry	Didn't clear & Dry 6 min 35 gallon
				They are going to flush & pump out
				44 gallon silty water
				little clear, another 44 gallon clear
				again little silty, again clear about 20 gallons
				Pumping again - 5 gallon dirty, 35 gallon clean
14:05	Flushing	~100	Dry	26' to bottom 25.18

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal):
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

0.65 gallon / Lf DTW = 3.5 total 23 → column = 19.5'
∴ 19.5 × 0.65 = 12.67 gal 3 well Vol = 38 gal

Well Development Form

Project Number:		Well ID:	RW 201S
Project Name:	Clifton	Sample ID:	
Date:	4/29/13	Permit Number:	
Weather:	Sunny 45	Well Condition:	

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):		Depth to Product* (feet)	
Inner Casing Diameter (inch):		Initial Depth to Water* (feet):	
Inner Casing Material:		Product Thickness (feet):	
Purge/Sample Method:		Depth to Top of Screen* (feet):	
Pump Intake Setting* (feet):		Total Depth* (feet):	
PID/FID Reading of Well Headspace (ppm)		Water Column (feet):	
Before Cap Removal:		Casing Volume (gal):	
After Cap Removal:		DTW After Pump Installed:	

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
8:21			3' 11"	TOC = 29.5 from ground
8:43	~8			Started surging on RW-201S Recovery
8:48				was slow, 10' thru 5 / 12 ft of screen
				Stopped surging
8:51				Installed pump
				silty water
8:55				3 min - 30 gal
		1		Clear water, odor, no sheen
8:57		44		5:14 - 44 gallon
				Pump the drum as it's full, still
8:58				pumping well
8:59				Lowered pump - silty water - no sheen
9:00				25 gallons, clearing up a little, but still silty
9:01		35	Dry	No sheen or product
			25'	
9:30			19	
10:30			10.67	Started surging at 10:32
10:36				Done surging
10:37	8.33			Installing pump, started pumping
10:40				Silty water
10:41		41		Cleared up a little
				lowering pump, odor
10:43		6	Dry	Dry, 6 min 50 gallon
11:45			12.75	
11:50				Start surging for 3rd time
11:54				Stopped surging
11:55				Installed pump, started pump, little silt, odor
12:00	8	40		Almost clear, lowering pump 5 min - 40 gal
12:03		15	Dry	Total depth 29.11 - Checked w/ Trevor, OK
		174		

Start Purge Date/Time:		Pre-Sample Depth to Water* (feet):	
End Purge Date/Time:		Start Sample Date/Time:	
Total Colume Purged (gal):		End Sample Date/Time:	
Depth to Water After Purge* (feet):		Sampler Names:	

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

4 to 29.5 = 25.5 ft water 0.65 g/Lf

Well Development Form

Project Number:
Project Name: Clifton MGP
Date: 4/23/13
Weather: 43 cloudy

Well ID: RW-202S
Sample ID:
Permit Number:
Well Condition:

PRE-PURGE INFORMATION

Protective Casing Diameter (inch):
Inner Casing Diameter (inch):
Inner Casing Material:
Purge/Sample Method:
Pump Intake Setting* (feet):
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal:
After Cap Removal:

Depth to Product* (feet)
Initial Depth to Water* (feet):
Product Thickness (feet):
Depth to Top of Screen* (feet):
Total Depth* (feet):
Water Column (feet):
Casing Volume (gal):
DTW After Pump Installed:

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	Depth to Water (ft)	Comments
7:30			6.9	Hard bottom, 25.9
7:32				Started Surging +/o times / 2 ft screen
7:34				Purging, clear water than yesterday
				some silt, dark water
7:44	8	40	DRY	lowered pump, clear, 5 min
7:58			22.5	
8:20			21	
9:15			17.5	
10:45			16.2	
				They started Started surging
13:10			8.2	Surging for 5 min, bottom 26 ft
13:15	~8	38		4.50 min, clear when comes in.
to 13:20				but turbid in the drum, maybe
				from before
				Hard Bottom

Start Purge Date/Time:
End Purge Date/Time:
Total Colume Purged (gal):
Depth to Water After Purge* (feet):

Pre-Sample Depth to Water* (feet):
Start Sample Date/Time:
End Sample Date/Time:
Sampler Names:

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

Note: water quality measurments were not recorded due to possible DNAPL in wells.

Appendix G

Field Sampling Plan (Electronic Format)

Prepared for:

National Grid
Richmond County, New York

Field Sampling and Analytical Plan

Former Clifton Manufactured Gas Plant (MGP) Site
Richmond County, New York
NYSDEC Site Code: 243023

AECOM
January 2016

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1.0 Introduction

This Field Sampling and Analytical Plan (FSAP) presents the methods and procedures to be used for performing any ground intrusive, maintenance, and monitoring activities covered under the Site Management Plan [(SMP); AECOM, 2014] for the Former Clifton MGP Site (site).

1.1 Project Description

This document is required as an element of the remedial program at the site under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by the NYS Department of Environmental Conservation (NYSDEC). A predecessor company to National Grid owned and operated the former Manufactured Gas Plant until 1957. A predecessor company to National Grid executed an Order on Consent with the NYSDEC (Index #D2-0001-98-04, Site #2-43-023) in 1998 to investigate and remediate the site (NYSDEC, 1998a). The site and surrounding off-site areas were remediated in accordance with the Order on Consent. The locations of the site and surrounding off-site areas are shown on Figures 1-1 and 1-2 of the SMP.

This Order on Consent required the Remedial Party, National Grid, to investigate and remediate contaminated media at the site and surrounding off-site areas. The site is separated into two properties of land, portion of 40 Willow Avenue and 25 Willow Avenue. For purposes of further discussion in this Site Management Plan, the term “site” will include the following properties:

- Portion of 40 Willow Avenue, Block 2842 Lot 50 (OU-1)
- 25 Willow Avenue, Block 2841 Lot 91 (OU-2)

The term off-site areas will include the following properties:

- 53 Lynhurst Avenue (adjacent property to the south of 40 Willow Avenue, OU-1)
- 89 Willow Avenue (adjacent property to the west of 25 Willow Avenue, OU-2)
- The City of New York sidewalks and roads (east and south of 25 Willow Avenue, OU-2)

Block 2822 Lots 21, 22, 23, 24, and 26 (east of 25 Willow Avenue and Bay Street, OU-2)

After completion of the remedial work described in the various Remedial Action/Remedial Design Work Plans, some contamination remains in the subsurface at the site and the off-site areas (only in portions defined above), which is hereafter referred to as ‘remaining contamination.” This FSAP was developed as an appendix (Appendix G) to the SMP which was prepared to manage remaining contamination at the Site in perpetuity or until extinguishment of the Environmental Easement in accord with NYS Environmental Conservation Law (ECL) Article 71, Title 36.

This document was prepared by AECOM, on behalf of National Grid, in accord with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation [(DER-10); DEC, 2010] and the guidelines provided by NYSDEC.

1.2 Scope of Work

The scope of work at the Site covered under this FSAP includes.

- Underground utility work

- Surface/shallow subsurface soil sampling and analysis
- Soil boring advancement, subsurface soil sampling and analysis
- Excavation
- Monitoring well installation and development
- Groundwater sampling and analysis
- Indoor air and ambient air sampling and analysis
- Investigation-derived waste management
- Community air monitoring
- Data validation evaluation, and reporting

This FSAP will be modified for specialized work including:

- Sheet Pile Installation
- Confined Space Activities
- Groundwater Dewatering, Treatment, and Discharge

Any modification to the FSAP will require approval in writing from the NYSDEC. The property owner or its representative must notify National Grid of any scheduled ground intrusive work at least 15 days prior to the start of field activity.

2.0 General Field Guidelines

2.1 Site Hazards

Potential Site surface hazards, such as sharp objects, overhead power lines, energized areas, vehicular traffic, and building hazards will be identified prior to initiation of the fieldwork. Generally, potential hazards at the project site will be identified during a project site reconnaissance by the project team on the first day of any field activity. Additional safety measures to be undertaken for the work performed during the investigation are addressed in the Health and Safety Plan [(HASP), Appendix D of the SMP].

2.2 Underground Utilities

Underground utilities, including electric lines, gas lines, water lines, storm and sanitary sewers, and communication lines will be identified prior to initiation of any subsurface work. Underground utility location will be accomplished as follows:

- All work areas will be flagged or marked out with white paint.
- Dig Safely of New York (800) 272-4480 will be contacted to initiate the locating activities. New York State law requires that Dig Safely of New York be notified at least two working days, and not more than 10 working days, before subsurface work is conducted.
- Companies with subsurface utilities present will locate and mark out all subsurface utility lines.

- Geophysical methods may be used to further evaluate the potential presence of underground utilities in the area of each proposed investigation location.
- Subsurface investigation locations may be hand cleared to five feet below ground surface (bgs) prior to advancing borings with mechanized equipment.

2.3 Field Log Books

All field activities will be carefully documented in field log books. Entries will be of sufficient detail that a complete daily record of significant events, observations, and measurements is developed. The field log book will provide a legal record of the activities conducted at the site. Accordingly:

- Field books will be assigned a unique identification number.
- Field books will be bound with consecutively numbered pages.
- Field books will be controlled by the Site Manager while fieldwork is in progress.
- Entries will be written with waterproof ink.
- Entries will be signed and dated at the conclusion of each day of fieldwork.
- Erroneous entries made while fieldwork is in progress will be corrected by the field person that made the entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing the correction.
- Corrections necessary after departing the field will be made by the person who entered the original information. Corrections will be made by drawing a line through the error, entering the correct information, and initialing and dating the time of the correction.

At a minimum, daily field book entries will include the following information:

- Location of field activity;
- Date and time of entry;
- Names and titles of field team members on site and site contacts;
- Names, titles of any site visitors, as well as the date and time entering and leaving the site;
- Weather information, for example: temperature, cloud coverage, wind speed, and direction;
- Purpose of field activity;
- A detailed description of the fieldwork conducted;
- Sample media (soil, sediment, groundwater, etc.);
- Sample collection method;
- Number and volume of sample(s) taken;
- Description of sampling point(s);
- Volume of groundwater removed before sampling;
- Preservatives used;
- Analytical parameters;
- Date and time of collection;

- Sample identification number(s);
- Sample distribution (e.g., laboratory);
- Field observations;
- All field measurements made, such as volatile organic compounds (VOCs) using a PID, pH, temperature, conductivity, water level, etc.;
- References for all maps and photographs of the sampling site(s); and
- Information pertaining to sample documentation such as:
  - Bottle lot numbers;
  - Dates and method of sample shipments;
  - Chain-of-custody (COC) record numbers; and
  - Federal Express air bill number.

3.0 Field Equipment Decontamination and Management of Investigation-Derived Residuals

3.1 Decontamination Area

A temporary decontamination area lined with polyethylene sheeting will be constructed on the project site for use during decontamination of the drilling and test pitting equipment. Water collected from the decontamination of activities will be collected in 55-gallon drums or a bulk tank and managed as described in Section 3.3.

3.2 Equipment Decontamination

The following procedures will be used to decontaminate equipment used during any activities.

- All equipment including the backhoe bucket; drilling rig; augers; bits; rods; tools; split-spoon samplers; and tremie pipes will be cleaned with a high-pressure, hot water pressure washing unit between locations and following completion of activities.
- Tools, drill rods, and augers will be placed on polyethylene plastic sheets following pressure washing. Direct contact with the ground will be avoided.
- All earth moving equipment, the back of the drill rig and all tools, augers, and rods will be decontaminated at the completion of the work and prior to leaving the project site.

3.2.1 Sampling Equipment Decontamination

Suggested Materials:

- Potable water;
- Phosphate-free detergent (such as Alconox™);
- Distilled water;
- Aluminum foil;
- Plastic/polyethylene sheeting;

- Plastic buckets and brushes; and
- Personal protective equipment (PPE) in accordance with the HASP.

Procedures:

- Prior to sampling, all non-dedicated sampling equipment (bowls, spoons, interface probes, etc.) will be washed with potable water and a phosphate-free detergent (such as Alconox™). Decontamination may take place at the sampling location as long as all liquids are contained in pails, buckets, etc.
- The sampling equipment will then be rinsed with potable water followed by a de-ionized water rinse.
- Between rinses, equipment will be placed on polyethylene sheets or aluminum foil, if necessary. At no time will washed equipment be placed directly on the ground.
- Equipment will be wrapped in polyethylene plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location.

3.3 Management of Investigation-Derived Residuals

3.3.1 Decontamination Fluids

Hot water pressure wash and decontamination fluids will be collected in 55-gallon drums or a bulk tank. The storage drums or tank will be labeled as “pending analysis – investigation-derived residual decon water” and temporarily stored in a plastic-lined containment area pending characterization and proper disposal.

3.3.2 Drill Cuttings

Drill cuttings will be contained in 55-gallon drums. The drums will be labeled as “pending analysis – investigation-derived residual – soil from drill cuttings” and temporarily stored in a plastic-lined containment area pending characterization and proper disposal.

3.3.3 Development and Purge Water

All development and purge water will be contained in 55-gallon drums or a bulk tank. The drums or tank will be labeled as “pending analysis - investigation derived residual development and purge water” and temporarily stored in a plastic-lined containment area pending characterization and proper disposal.

3.3.4 Personal Protective Equipment

All PPE will be placed in 55-gallon drums or a lined cardboard yard box for proper disposal.

3.3.5 Dedicated Sampling Equipment

All dedicated groundwater sampling equipment will be placed in 55-gallon drums for disposal.

4.0 Soil Sampling and Well Installation Procedures

4.1 Introduction

Surface and subsurface activities to be conducted at the Site may consist of utility work; excavation; the advancement of soil borings; collection of soil samples; groundwater monitoring, soil vapor intrusion sampling, and the installation of monitoring wells. These activities will require the use of the following equipment and material:

- Field book;
- Project plans;
- PPE in accordance with the HASP;
- Stakes, flagging and marking paint;
- Plastic bags for soil screening samples;
- Stainless steel or disposable bowls and spoons/spatulas;
- Tape measure;
- Decontamination supplies;
- Water level indicator;
- Electronic oil/water interface probe
- Clear polyethylene disposable bailers (NAPL confirmation in wells);
- Polyethylene disposable bailers (well development);
- Polypropylene rope (well development);
- Waterra™ pump or other purge pump (well development);
- Submersible electric pump (well development);
- Stainless steel or glass beakers (well development);
- Turbidity meter (well development);
- Temperature, conductivity, pH meter (well development).
- PID with a 10.2 or 10.6 eV lamp;
- Camera;
- Clear tape, duct tape;
- Laboratory sample bottles;
- Coolers and ice; and
- Shipping supplies.

Procedures for these activities are described in the following sections.

4.2 Excavation

Excavation activities will be dictated by the Contractor hired to conduct the work and will follow the Excavation Work Plan included as Appendix C of the SMP [AECOM, 2012]. During field activities, personnel will stand upwind of the excavation area to the extent possible. Air monitoring and odor

mitigation (if necessary) will be conducted in accordance with the Community Air Monitoring Project (CAMP) and HASP. Excavation materials will be photographed and logged for future reference. Material removed from the excavation will be placed on polyethylene sheeting. The location and size of the excavation will be measured and described in the field logbook.

Visually clean soils, such as surface soils, will be segregated from soils that may be impacted. The visually clean soils may be placed back in the excavation with prior approval of the NYSDEC. At a minimum, the top 2 feet of backfilled soil will be visually clean. The excavation will be backfilled as soon as possible after completion and in general prior to the cessation of activities at the end of the day. If excavation resulted in removal of any residual MGP contamination, a demarcation layer as detailed in Appendix C of the SMP [AECOM, 2012] will be placed over the surface prior to backfilling. Following restoration of the excavation, the excavation will be staked/marked to facilitate subsequent location by surveying crews.

4.2.1 Soil Borings

Soil borings, if any, may be advanced and sampled with a combination of either rotosonic drilling methods equipped with 4-inch diameter sampling cores or hollow-stem augers (HSAs) equipped with 2-inch or 3-inch diameter split-spoon samplers. In some instances, a direct-push (Geoprobe™) drilling rig equipped with 4-foot long, 2-inch diameter Macro-Core™ samplers may be used if there are access limitations. All drilling equipment will be decontaminated between each boring in accordance with methods specified in Section 3.2.

All locations will be properly abandoned following the collection of samples. Boreholes for the direct-push borings will be filled with bentonite chips. All rotosonic or auger soil borings not used for the construction of monitoring wells will be tremie grouted to the ground surface following the completion of the soil sampling to prevent cross-contamination of permeable zones. The borings will be filled using a cement/bentonite grout mixture with the following specifications:

- Bentonite will be powdered sodium montmorillonite furnished in moisture resistant sacks without additives.
- Cement shall be a low-alkaline Portland cement, Type I in conformance with ASTM C-150 and without additives.
- The cement/bentonite grout mixture shall be to the following proportion:
  - Three sacks (94 pounds) of Type I Portland cement;
  - 14 pounds of granular bentonite (5% mix); and
  - 25 gallons of water.

The cement will be mechanically mixed, above ground, with water from a potable water source. Bentonite will be added to ensure a lump-free consistency. The mixture will be pumped through a tremie pipe as the drill is being withdrawn.

4.2.2 Geologic Logging Methods

The field geologist will log borehole geology and headspace measurements, and any other observations (e.g., odors, non aqueous phase liquid (NAPL), soil staining, etc.), in the field book and the Drilling Record shown in Figure 4-1, or similar form. Soil samples retrieved from the borehole/test pit will be visually described for: 1) percent recovery, 2) soil type, 3) color, 4) moisture content, 5)

texture, 6) grain size and shape, 7) consistency, 8) visible evidence of staining or other hydrocarbon-related impacts, and 9) any other relevant observations. The descriptions will be in accordance with the Unified Soil Classification System (USCS) and the American Society for Testing and Materials (ASTM) guidelines. Descriptions will also follow National Grid's internal field description guidance [KeySpan, 2005] included in Appendix G SOPs of the SMP [AECOM, 2012].

Immediately after describing the core/test pit wall, a representative soil sample will be placed in a re-sealable plastic (e.g., "ziplock") bag filled approximately half full. The bag will be labeled with the boring number and interval sampled. After allowing the bagged soil to warm the tip of the sample probe attached to the PID will be inserted into the bag to measure the headspace for organic vapors. Soil remaining after completion of sample description, collection, and field screening will be disposed of properly.

4.2.3 Collection of Samples

The number and frequency of samples to be collected from each boring and the associated analytical parameters will be based on the field activity. The sample locations, descriptions, and depths will be recorded on the borelogs in the field book.

Samples for laboratory analyses will be collected directly from the sampling spoon (test pits), acetate liners, split-spoons, or core barrel and placed into appropriate containers (for VOC analyses); homogenized (for non-VOC analyses); and compacted to minimize headspace and pore space. Soil used for headspace analysis will not be used for laboratory VOC analysis. The sampling equipment will be decontaminated between samples in accordance with procedures described in Section 3. Soil remaining after completion of sample description, collection, and field screening will be disposed of properly.

The sample containers will be labeled, placed in a laboratory-supplied cooler, and packed with ice. The coolers will then be shipped to the laboratory for analysis. COC procedures will be followed as outlined in Appendix H Quality Assurance Project Plan (QAPP) of the SMP. If there is a delay of sample shipment due to insufficient samples to warrant overnight delivery, the samples will be stored in a cool, secure place with sufficient ice to maintain a temperature of 4˚ C.

4.3 Monitoring Well Installation and Development

The following methods will be used for drilling, installing, and developing the monitoring wells;

4.3.1 Overburden Monitoring Well Installation

Figure 4-2 illustrates the construction details for a typical overburden monitoring well. Specific details regarding the depth and anticipated screened interval of proposed monitoring wells is provided in the SMP. In general, monitoring wells will be installed according to the following specifications:

- The monitoring well borings will be advanced with either 4.25-inch inner diameter (ID) hollow-stem augers or 4-inch ID flush casing.
- Wells will be constructed with 2-inch ID, threaded, flush-joint, Schedule 40 PVC casings and screens.
- Screens will be 10-feet long with 0.01-inch slot openings (or 0.02-inch, if NAPL present) with a 2-foot DNAPL sump at the base. Alternative screen lengths up to 20 feet long may be used at the discretion of the field geologist and with the approval of DEC, based on site conditions.

- The annulus around the screens will be backfilled with clean silica sand having appropriate size (e.g., Morie No. 1) to a minimum height of 2 feet above the top of the screen. Auger flights or casing will be withdrawn as sand is poured in a manner that will minimize hole collapse and bridging.
- A bentonite chip seal with a minimum thickness of 2 feet will be placed above the sand pack. The bentonite seal will be hydrated with clean, potable water before placement of grout above the seal layer.
- The remainder of the annular space will be filled with cement-bentonite grout to ground surface. The grout will be allowed to set for a minimum of 24 hours before wells are developed.
- Each monitoring well will be a flush-mounted installation with a locking cap.
- The concrete seal or pad will be sloped to channel water away from the well, and be deep enough to remain stable during freezing and thawing of the ground.
- The top of the PVC well casing and ground surface will be marked and surveyed to 0.01 foot, and the elevation will be determined relative to a fixed benchmark or datum.
- The measuring point on all wells will be on the innermost PVC casing.
- Monitoring well construction details will be recorded in the field book and on the Construction Log shown in Appendix H of the SMP.
- If commercially available nested wells are considered to sample multiple aquifer depth zones in the same borehole, they will be discussed with DEC prior to installation.

4.3.2 Monitoring Well Development

- After a minimum of 24 hours after installation, the monitoring wells will be developed by surging and pumping. Surging will be performed periodically, across the lengths of screen in 2-foot increments prior to, at interim periods of pumping, and immediately before the final pumping. Pumping methods may include using a centrifugal, submersible, or peristaltic pump and dedicated polyethylene tubing, using a Waterra™ positive displacement pump and dedicated polyethylene tubing, or other methods at the discretion of the field geologist.
- Water levels will be measured in each well to the nearest 0.01 foot prior to development.
- The wells will be developed until the water in the well is reasonably free of visible sediment (50 NTU if possible or until pH, temperature, and specific conductivity stabilize). A portable nephelometer will be used to make the turbidity measurement.
- Development water will be contained in and properly disposed of.

Following development, wells will be allowed to recover for at least 14 days before groundwater is purged and sampled. All monitoring well development will be performed or overseen by a field geologist and recorded in the field book.

5.0 Groundwater Sampling Procedures

5.1 Introduction

Procedures for obtaining samples of groundwater are described in this section. Groundwater samples will be collected using low-flow, low-stress purge and sampling methods.

Procedures for conducting aquifer conductivity testing are also described in this section. Aquifer conductivity testing will be done by using slug or pneumatic testing methods.

5.2 Groundwater Sampling

The number and frequency of the samples that will be collected for laboratory analysis from each well and the analytical parameters are listed in Table 3-1 in the SMP [AECOM, 2014].

The following method will be used to collect groundwater samples from monitoring wells:

5.2.1 Required Equipment and Supplies

- Field book
- Project plans
- PPE in accordance with the HASP
- Electronic oil/water interface probe
- Disposable polyethylene bailers and low-flow sampling pump
- Polypropylene rope
- Temperature, conductivity, and pH meter
- Turbidity meter
- Flow-through cell
- Decontamination supplies
- Peristaltic or submersible pump capable of achieving low-flow rates (i.e., 0.5 liters per minute or less)
- Plastic tubing
- Plastic sheeting
- PID
- Clear tape, duct tape
- Coolers and ice
- Laboratory sample bottles
- Federal Express labels

5.2.2 Groundwater Sampling Method

5.2.2.1 Purging

- Prior to sampling, the static water level and thickness of any light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL) will be measured to the nearest 0.01 foot from the surveyed well elevation mark on the top of the PVC casing with a decontaminated oil/water interface probe. NAPL thickness will be confirmed using a clear bailer or a weighted string. The measurement will be recorded in the field book.
- The probe will be decontaminated between uses.
- Groundwater from the well will be purged until field parameters stabilize, up to three well volumes are removed, or 1 hour of continuous purging is performed. Field parameters are considered to be stable when three consecutive readings are within the stabilization criteria for that parameter. The stabilization criteria are as follows: 10% or below 10 NTUs for turbidity, 3% for conductivity and temperature, 0.1 unit for pH, and 10 mV for ORP. Purging will be conducted using the low-flow sampling technique specified by the United States Environmental Protection Agency (USEPA) Region 1 in its guidance document entitled “Low-Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells”.
- The flow rate measurement will be approximately 0.5 liter per minute or less.
- If a well goes dry before the required volumes are removed, it will be allowed to recover, purged a second time until dry or the required parameters are met, and sampled when it recovers sufficiently, in accordance with low-flow sampling protocol.
- Purge water will be managed and disposed of properly.
- Peristaltic pumps will not be used to collect VOC samples.

5.2.2.2 Sampling

- Samples will be collected using dedicated 1/4- or 3/8-inch polyethylene tubing and/or bailers.
- Prior to filling the sample bottles, the temperature, pH, conductivity, dissolved oxygen, and oxidation reduction potential (ORP) will be measured within a flow-through cell. Turbidity will be measured with a hand-held turbidity meter. All measurements will be recorded in the field book.
- Three 40-ml VOA vials with Teflon™ lined septa and hydrochloric acid as a preservative will be filled for analysis of VOCs. The VOA vials will be filled to ensure that no bubbles are in the sample. Two 1-liter amber glass sample bottles for SVOC analysis and two 1-liter amber glass bottles for PCB analysis will then be filled followed by a 500 milliliter (mL) plastic bottle preserved with nitric acid for the total metals analysis. An opaque, 500 mL plastic bottle, with sodium hydroxide added for preservative to achieve a pH of >12 will then be filled for the analysis of total cyanide.
- The sample containers will be labeled, placed in a laboratory-supplied cooler, and packed on ice (to maintain a temperature of 4ºC). The cooler will be shipped overnight or delivered to the laboratory for analysis.
- COC procedures will be followed as outlined in the QAPP (Appendix H of the SMP).

- Well sampling data will be recorded on the Groundwater Sampling Record shown in Figure 5-1, or similar form.

6.0 Indoor Air Sampling

An indoor air evaluation will be performed at the Site to establish post remedy conditions. The work will be performed in accordance with *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* [DOH, 2006] and the USEPA document entitled *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, Office of Solid Waste and Emergency Response* [USEPA, 2002]. Methods will also be consistent with National Grid's Draft Standard Operating Procedure for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State. A draft Indoor Air Sampling Plan will be submitted to DEC for approval outlining the locations and frequency of the samples.

A pre-sampling survey and a product inventory will be conducted on the day of sampling. The surveys and inventories will be completed in accordance with the NYDOH guidance. The chemical inventory check will be performed at each location to document current conditions with the regard to the storage of chemicals. The previous surveys will be reviewed and any changes in conditions from the previous sampling will be noted. As with previous surveys, a screening for total volatiles will be conducted with a ppbRAE. An ambient air sample will be collected concurrently with the indoor air samples for each property.

The methods to be used for the collection of the indoor air samples and the ambient air sample are summarized as follows:

- The indoor air sample will be collected from a minimum of two-feet above the floor surface.
- The ambient air sample will be collected at a location determined to be upwind at time of sampling.
- The indoor air and ambient air samples will be collected as an integrated (not grab) sample. A laboratory-provided flow controller fixed to a negative pressure vessel (a batch certified clean 6-liter Summa™ canister) will be used to collect the integrated sample. The controller will be a fixed-rate flow controller and the approximate length of the sample time will be set by the laboratory. The flow controllers are fitted with an internal filter to prevent particulates from entering the Summa™ Canister.
- The sample time for the canisters will be set to 8 hours. The collection of the samples in 6-liter canisters over an approximate 8-hour interval will ensure that the samples are collected at the rate specified by the NYSDOH (less than 0.2 liters per minute).
- The sample tubing will be attached to the sampling canister with Swagelok™ fittings.
- Prior to sampling, the initial vacuum in each canister will be checked prior to use to ensure mechanical integrity of the canister. The initial vacuum should be approximately 30 inches mercury (in. Hg).
- To start sampling, the canister ball valve is opened and the initial time and vacuum is recorded.
- The final vacuum should be between 10 and 4 in. Hg, with a target of 5 in. of Hg. The initial and final vacuum in each canister will be recorded on the laboratory chain-of-custody form to be returned to the laboratory with the samples. The gauges provided with the canisters are accurate only for "indication of change", and are not sufficiently accurate to provide gauge-to-gauge comparisons. The final vacuum will also be measured in the laboratory.

- Following collection of the sample, the canister will be sealed by closing the ball valve and fitting on the canister inlet. The inlet will then be capped with a laboratory-provided threaded end cap.
- Following collection of the sample, the PID will be used to obtain a final reading from the probe assembly or tubing for the concentration of total organic vapors.
- Quality assurance and quality control samples will include one field duplicate, one trip blank, a laboratory blank and laboratory quality control samples as required by the analytical method.
- The site name, sample identification, canister number, canister certification number, sampler's name, sample times and date will be recorded on a tag that is attached to each canister.
- The indoor air samples will be shipped overnight to a NY ELAP-certified laboratory for analysis.

The field sampling team will record all information regarding the sampling on field forms. Copies of the field forms that will be used are included as Figures 6-2 and 6-3. Information that will be recorded will include the following: sample identification, date and times of sample collection, identity of the field personnel, sampling methods and equipment, purge volumes and rates, tracer test results, and any other relevant observations made during the sampling. A NYSDOH indoor air quality questionnaire and building inventory form will also be filled out prior to indoor air sampling (Figure 6-4).

7.0 Air Monitoring

7.1 Introduction

Two types of air monitoring will be performed during the site investigation: 1) work zone monitoring for protection of the workers performing the site investigation, and 2) community air monitoring at the perimeter of the work site for protection of the local community.

7.2 Breathing Zone Air Monitoring During Subsurface Work and Sampling

Monitoring of air in the breathing zone within the work site will be conducted periodically during all subsurface work and sampling activities.

- An organic vapor meter (OVM) equipped with a PID will be used to monitor for VOCs or other organic vapors in the breathing zone and borehole, and to screen the samples.
- Additional air monitoring may be required as specified in the HASP (Appendix D of the SMP)..

The PID readings will be recorded in the field book and on the boring log during drilling activities. The procedure for the PID operation and calibration is included in the HASP. Note that equipment calibration will be performed as often as needed to account for changing conditions or instrument readings. The minimum frequency of calibration is specified in the HASP; more frequent calibration will be performed if spurious readings are observed or there are other problems with the instruments.

7.3 Community Air Monitoring

Community air monitoring requires real-time monitoring for VOCs, particulates (i.e., dust), and MGP-related odors at the downwind perimeter of each designated work area when certain activities are in progress at impacted sites. The community air monitoring 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 for community air monitoring require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, community air monitoring helps to confirm that work activities do not spread contamination off site through the air.

The procedures and action levels for community air monitoring are presented in the CAMP and in the HASP.

8.0 Field Instruments and Calibration

All field analytical equipment will be calibrated immediately prior to each day's use and more frequently if required. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. All instrument calibrations will be documented in the project field book and in an instrument calibration log. Records of all instrument calibration will be maintained by the Field Team Leader. Copies of all of the instrument manuals will be maintained on site by the Field Team Leader. All changes to instrumentation will be noted in the field log book.
The following field instruments will be used during the investigation:

- PID
- Particulate monitors
- Multi-parameter meter (pH, specific conductivity, dissolved oxygen, oxidation reduction, and temperature meter)
- Turbidity meter

8.1 Portable Photo-Ionization Detector (PID)

- The photo-ionization detector will be equipped with either a 10.2 or 10.6 eV lamp. In this configuration, the PID is capable of ionizing and detecting compounds that account for over 70% of the VOCs on the USEPA Target Compound List.
- Calibration must be performed at the beginning of each day of use with a standard calibration gas having a concentration of 100 parts per million of isobutylene. If the unit experiences abnormal perturbation or erratic readings, more frequent or additional calibration will be required.
- All calibration data must be recorded in the project field notebooks.
- A battery check must be completed at the beginning and end of each working day.
- All changes to the PID will be noted in the field notes (such as lamp or filter cleaning or replacement or change of instrument).

8.2 Multi-Parameter Meter

- Calibration of the meter (YSI or equivalent) must be performed at the start of each day of use, and after very high or low readings as required by this Plan, according to manufacturer's instructions.
- National Institute of Standards and Technology - traceable standard calibration solutions will be used (where applicable). At least one backup meter will also be present on-site in the event of a malfunction.
- The calibration data must be recorded in the project field book each time it is performed.

8.3 Turbidity Meter

The turbidity meter must be checked at the start of each day of use according to manufacturer's instructions.

9.0 Analytical Program

9.1 Environmental Sample Analyses

The laboratory samples for each media and the chemical analyses to be performed are summarized in Table 3-1 of the SMP.

9.1.1 Soil Analyses

The majority of the soil samples will be analyzed for the following parameters:

- VOC compounds by USEPA Method 8260B;
- Semi-volatile organic compounds (SVOCs) by USEPA Method 8270C;

A subset (approximately 20%) of the total number of soil samples will be analyzed for an expanded list of the following parameters:

- Full TCL VOCs by USEPA Method 8260B;
- Full TCL SVOCs by USEPA Method 8270C;
- TAL Metals by USEPA Method 6000-7000 Series;
- Free Cyanide with extraction by USEPA Method 9013A and analysis by ASTM Method D4282-02 (microdiffusion);
- TCL Pesticides by USEPA Method 8081A;
- TCL Herbicides by USEPA Method 8151A; and
- PCBs (as Aroclors) by USEPA Method 8082.

9.1.2 Groundwater Analyses

Similar to soils, the majority of groundwater samples will be analyzed for the following parameters:

- VOC compounds by USEPA Method 8260B;
- SVOC compounds by USEPA Method 8270C.

A subset (approximately 20%) of the total number of groundwater samples will be analyzed for an expanded list of the following parameters:

- Full TCL VOCs by USEPA Method 8260B;
- Full TCL SVOCs by USEPA Method 8270C;
- TAL Metals by USEPA Method 6000-7000 Series;
- Total Cyanide by USEPA Method 9012;
- TCL Pesticides by USEPA Method 8081A;

- TCL Herbicides by USEPA Method 8151A; and
- PCBs (as Aroclors) by USEPA Method 8082.

9.1.3 Indoor Air/Ambient Air Analyses

The indoor air and ambient air samples will be analyzed for VOCs by USEPA Method TO-15 (including naphthalene). The indoor air samples will also be analyzed for helium by ASTM Method ASTM D-1945. In addition to the standard TO-15 list of compounds, several additional compounds will be analyzed for, including: 1,2,3-trimethyl benzene, 1-methylnaphthalene, 2-methylnaphthalene, tetramethylbenzene, indene, indane, thiophene , 2-methylpentane, isopentane, and 2,3-dimethylpentane.

9.1.4 Waste Characterization/Profiling

Sufficient samples (a minimum of two) will be collected during the investigation and analyzed for full RCRA Hazardous Characteristics testing to determine if materials exhibiting hazardous characteristics may be present at the site and to support waste disposal profiling purposes. The analyses to be performed may include, but not be limited to, the following, depending on the medium and the selected disposal facility:

- Total Metals by USEPA Method 6010B (Mercury 7470A);
- Total Petroleum Hydrocarbons (DRO and GRO) by USEPA Method 8015 modified;
- PCBs by USEPA Method 8082;
- TCLP ZHE Extraction by USEPA Method 1311;
- TCLP VOC by USEPA Method 8260B;
- TCLP SVOC by USEPA Method 8270C;
- TCLP RCRA Metals by USEPA Method 6010B (Mercury 7470A);
- Corrosivity by USEPA Method 9045C;
- Ignitability/Flashpoint by USEPA Method 1010A;
- Reactive Cyanide and Reactive Sulfide by USEPA SW-846 Chapter 7, Sections 7.3.3.2 and 7.3.4.2; and
- Total Organic Halogens – USEPA Method 9020B.

9.2 Field Quality Control Samples

Field quality control samples will be collected and analyzed to document the accuracy and precision of the samples. The quality control samples are described as follows:

- Trip Blank: One trip blank will accompany each shipment of samples for VOC analysis sent to the laboratory. The trip blank will be analyzed to test for any contaminants introduced while samples are being stored or transported to the laboratory. The trip blanks will be analyzed for volatiles only.
- Field Equipment Blanks: The purpose of the equipment blank is to detect any contamination from sampling equipment, cross-contamination from previously sampled locations, and

contamination caused by conditions at sampling locations (e.g., airborne contaminants). One equipment blank will be collected for every 20 samples per medium collected during sampling with non-disposable sampling equipment. The samples will be collected by pouring analyte-free water, prepared in the laboratory, over decontaminated sampling equipment and collecting it in sample jars. The blanks will be collected in the vicinity of a sample location. This field blank will be analyzed for VOCs, SVOCs, PCBs, total or free cyanide (depending if the blank is from groundwater or soil sampling equipment), and TAL metals.

- Field Duplicates: Field duplicates are collected to determine the precision of the soil samples collected. This is achieved by homogenizing soil (for non-VOC analyses) and splitting it evenly between separate sample jars. Duplicate samples will be collected and analyzed for VOC, SVOCs, PCBs, total or free cyanide (depending if the duplicate sample is from groundwater or soil), and TAL metals. The minimum required number of field duplicates is one for every 20 samples.
- Matrix Spikes, and Matrix Spike Duplicates: These samples are laboratory quality control samples and will be completed as part of the laboratory analytical batch quality control. These samples will be collected in the same manner as the field duplicates. Both the matrix spike and matrix spike duplicate will be collected at the same sample location.

9.3 Sample Location Numbering System

- Surface soil samples will be numbered consecutively beginning with SS19 (if applicable).
- Subsurface soil borings will be numbered consecutively beginning with SB240 (soil borings) or SHMW1 (monitoring well borings). Individual samples will also be designated with a depth code (see below).
- Monitoring wells will be numbered consecutively beginning with SHMW1.

9.4 Sample Identification

Each sample will be given a unique alphanumeric identifier in accordance with the following classification system:

Table 9-1 Sample Identification

LL*	NN*	N-N	LL
Sample Type	Sample Number	Depth Code	QC Identifier

Sample Type:	GW – Boring Groundwater Grab SB – Soil Boring SS – Surface Soil AMB – Ambient Air	MW – Monitoring Well SV – Soil Vapor IA – Indoor Air
Sample Number:	Number referenced to a sample location map.	
Depth Code:	Depth in feet of sample interval (0-0.5, 2-4, 10-12, etc.)	
QC Identifier:	TB – Trip Blank	MS – Matrix Spike

	EB – Equipment Blank	MSD–Matrix Spike Duplicate
		MB – Matrix Blank

* L = Letter
* N = Number

Field duplicate samples will be assigned identifiers that do not allow the laboratory to distinguish them as field duplicates. Each sample container will be labeled prior to packing for shipment. The sample identifier, site name, date and time of sampling, and analytical parameters will be written on the label in waterproof ink and recorded in the field book.

9.5 Chain-of-Custody

- A Chain-of-Custody (COC) record (Figure 9-1 or similar) will accompany the sample containers during selection and preparation at the laboratory, during shipment to the field, and during return shipment to the laboratory.
- The COC will include the sample identities of each sample container and the analytical parameters for each, and will list the field personnel that collected the samples, preservation method, the project name and number, the name of the analytical laboratory that will receive the samples, and the method of sample shipment.
- If samples are split and sent to different laboratories, such as to a specialty laboratory for fingerprint analysis, a copy of the COC record will be sent with each sample shipment.
- The COC will be completed by field personnel as samples are collected and packed for shipment.
- Erroneous markings will be crossed-out with a single line and initialed by the author.
- The REMARKS space will be used to indicate if the sample is a matrix spike, matrix spike duplicate, or matrix duplicate.
- Trip and field blanks will be listed on separate rows.
- After the samples have been collected and sample information has been listed on the COC form, the method of shipment, the shipping cooler identification number(s), and the shipper airbill number will be entered on the COC.
- Finally, a member of the sampling team will write his/her signature, the date, and time on the first RELINQUISHED BY space.
- One copy of the COC will be retained by sampling personnel. The other copy and the original will be sealed in a plastic bag and taped inside the lid of the shipping cooler.
- Sample shipments will be refrigerated at 4˚C, typically by packing with bagged ice, to preserve the samples during shipment.
- After the shipping cooler is closed, custody seals provided by the laboratory will be affixed to the latch and across the front and back of the cooler lid, and signed by the person relinquishing the samples to the shipper.
- The seal will be covered with clear tape, and the cooler lid will be secured by wrapping with packing tape.
- The cooler will be relinquished to the shipper, typically an overnight carrier.

- The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the samples will not be analyzed until directed to do so.
- The samples must be delivered to the laboratory within 48 hours of collection.

9.6 Sample Documentation

The field team leader will retain a copy of the COC, and, in addition, the field team leader will ensure that the following information about each sample is recorded in the field book:

- Sample identifier;
- Identification of sampled media (e.g., soil, sediment, groundwater);
- Sample location with respect to known reference point;
- Physical description of sample location;
- Field measurements, (e.g., pH, temperature, conductivity, and water levels);
- Date and time of collection;
- Sample collection method;
- Volume of groundwater purged before sampling;
- Number of sample containers;
- Analytical parameters;
- Preservatives used; and
- Shipping information:
  - Dates and method of sample shipments;
  - COC Record numbers;
  - Federal Express Air Bill numbers; and
  - Sample recipient (e.g., laboratory name).

Figures

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Figure 4-1

Boring/Well ID:_____

Page _____ of _____

Project Name:	Drilling Company:	Surface Comp:
Project Number:	Drilling Method:	Grout (bgs):
Date Pre-Cleared:	Rig Type:	Filter Pack (bgs):
Date Started Drilling:	Casing ID:	Riser (bgs):
Date Finished Drilling:	Water Level While Drilling (bgs):	Well Screen (bgs):
Logged By:	Total Depth of Boring (bgs):	Sump (bgs):

(Note: bgs = below ground surface)

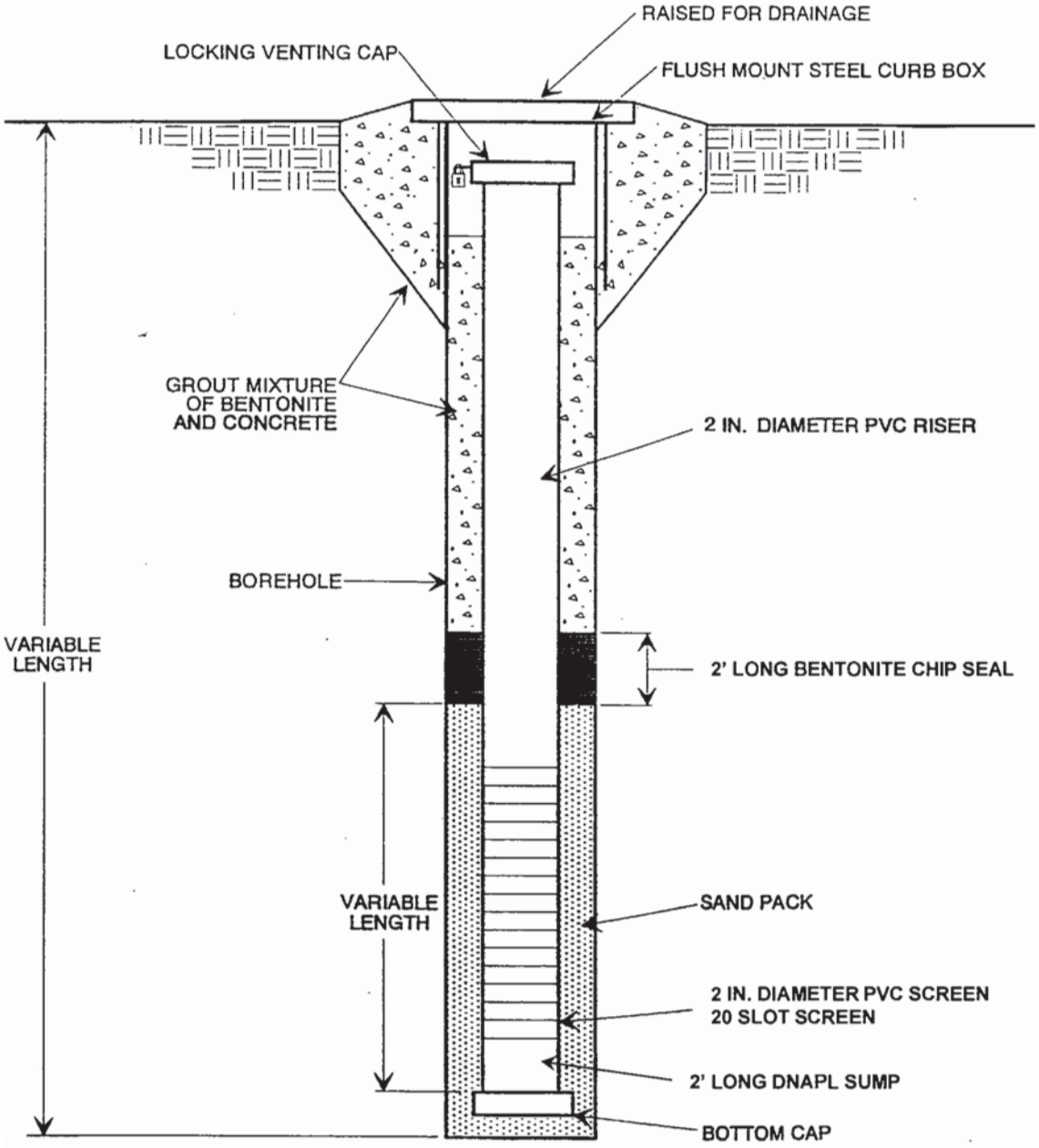
Depth Range	Blow per 6 Inch	Re-covery ft/ft	PID	Lab Sample ID	USCS	Geologic Description Method:_____

Lithology:	
1.)	5.)
2.)	6.)
3.)	7.)
4.)	8.)

Comments:

Figure 4-2

TYPICAL MONITORING WELL CROSS SECTION



NOT TO SCALE

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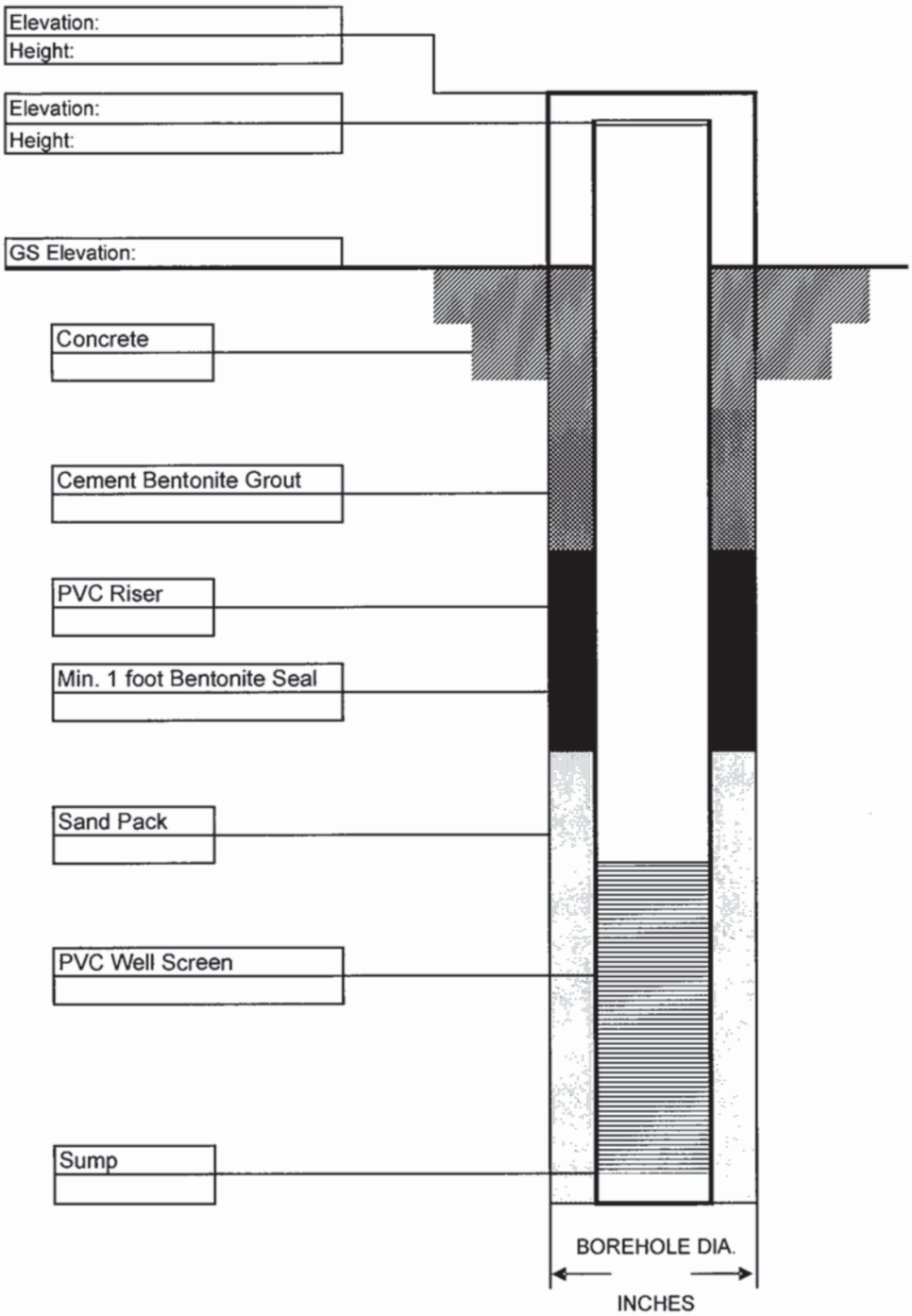
Figure 4-3

WELL CONSTRUCTION LOG

WELL NO.:	FACILITY/SITE NAME:
PROJ. NO.:	CLIENT:
INSPECTOR:	DRILLING CONTACTOR:
DATE START:	DATE END:
LOCATION:	DRILLING METHOD:



PROTECTIVE CASING
Material:
Diameter:
Depth BGS:
Water Tight Seal:
Flushmount:
Weep hole:

GUARD POSTS
Material:
No. & Size:

SURFACE PAD
Composition:
Size:

RISER PIPE
Material:
Schedule:
Joint Type:
O-ring:
Diameter:

GROUT
Amt cement:
Amt bentonite:
Amt water:
Tremied:
Interval:

SEAL
Material:
Type:
Amount Used:
Interval:

FILTER PACK
Material:
Brand Name:
Amount Used:
Grain Size Dist.:
Interval:
Tremied:

SCREEN
Material:
Diameter:
Slot Size & Type:
Interval BGS:

SUMP
Interval BGS:
Bottom Cap:

BACKFILL PLUG
Material:
Setup/Hydration Time:

Figure 5-1

LOW-STRESS GROUND WATER SAMPLING FORM

Project Number: _____
Project Name: _____
Date: _____
Weather: _____

Well ID: _____
Sample ID: _____
Permit Number: _____
Well Condition: _____

PRE-PURGE INFORMATION

Protective Casing Diameter (inch): _____
Inner Casing Diameter (inch): _____
Inner Casing Material: _____
Purge/Sample Method: _____
Pump Intake Setting* (feet): _____
PID/FID Reading of Well Headspace (ppm)
Before Cap Removal: _____
After Cap Removal: _____

Depth to Product* (feet): _____
Initial Depth to Water* (feet): _____
Product Thickness (feet): _____
Depth to Top of Screen* (feet): _____
Total Depth* (feet): _____
Water Column (feet): _____
Casing Volume (gal): _____
DTW After Pump Installed: _____

PURGING/SAMPLING INFORMATION

Time	Rate (gpm)	Gallons Purged	pH (SI Units)	Conductivity (µohms/cm)	Temp (°C)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP (mv)	Depth to Water (ft)	Comments

Start Purge Date/Time: _____
End Purge Date/Time: _____
Total Volume Purged (gal): _____
Depth to Water After Purge* (feet): _____

Pre-Sample Depth to Water* (feet): _____
Start Sample Date/Time: _____
End Sample Date/Time: _____
Sampler Names: _____

Observations During Sampling (e.g. slow recharge, turbidity, odor, sheen, PID/FID readings):

_____
_____
_____

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Figure 5-1

LOW-STRESS GROUND WATER SAMPLING FORM

Sampling Sequence:

Analysis	Method	Container	Number of Bottles	Preservative	Comments
Volatile Organics					
Base/neutrals					
TPH					
Total Metals					
Dissolved Metals					
Cyanide					
Sulfate and Chloride					
Nitrate and Ammonia					
Preserved Inorganics					
Non-Preserved Inorg					
Bacteria					

Complete those analyses that apply.

Stabilization Ranges
Dissolved Oxygen: +/- 10%
Turbidity: +/- 10%
Specific Conductance: +/- 3%
Temperature: +/-3 %
pH: +/- 0.1 unit
Redox Potential: +/- 10mv

* = Measured from top of inner casing
DTW - Depth to Water
Thermo Environmental Instruments Model 580s OVM w/ 10.2 ev bulb
Water Levels Measured with an Electronic Water Level Meter
Field parameter meter calibration results are recorded in the field book.

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Figure 5-2

Well ID:

HYDRAULIC CONDUCTIVITY TEST LOG

Client: _____ Date: _____ Time: Start _____ am/pm
Project No: _____ Finish _____ am/pm
Site Location: _____
Weather Conds: _____ Tester (s): _____

1. WELL INFORMATION

a. Ref. Point Elev. _____
b. Static Depth to GW _____
c. Time of GW reading _____
d. Static GW Elev.(Ho) _____ (a-b)
e. Total Well Depth _____
f. Gravel Pack Diameter _____
g. Water Column Height _____ (e-b)
h. Casing Diameter _____
i. Screen Length _____
j. Geology of Screened Interval _____

2. SLUG INFORMATION (see back for volume calculation)

a. Slug Length _____
b. Slug Diameter _____

3. DATA COLLECTION

a. Method of Data Collection: Manual _____ (see back) Electronic _____

b.Transducer Information
Make _____
Model _____
Serial Number _____
Offset _____
Linearity _____
Scale _____
Coefficient _____
Diameter/Length _____

c. Data Logging Information
Make _____
Model _____
Serial Number _____
Mode _____ (linear or logarithmic)
Ref. Point (designation) _____ (TOC, Ground Surface, actual el
Ref. Point value (if elev.) _____
Positive numbers indicate increase or decrease in water level (circle one)

4. HYDRAULIC TEST INFORMATION

Start Time	Test Type (rising, falling)	Electronic File Name	Comments	End Time

5. MANUAL WATER LEVEL READINGS (as needed for control)

Time	Location	Depth to Water	Time	Location	Depth to Water

Signature _____ Date _____

Q:\mw97\sops\7720\hydraulicconductivitytestlog.xls, page 1

Figure 5-2

6. EXPECTED WATER LEVEL DISPLACEMENT CALCULATION (optional)

a. Diameter of Slug (in) _____
b. Length of Slug (ft) _____
c. Volume/Linear ft of Slug (gal/ft from chart) _____
d. Volume of Slug (gal) _____ (b*c)
e. Diameter of Well (in) _____
f. Volume/Linear ft of Well (gal/ft from chart) _____
g. Expected Change in Water Level _____ (d/f)

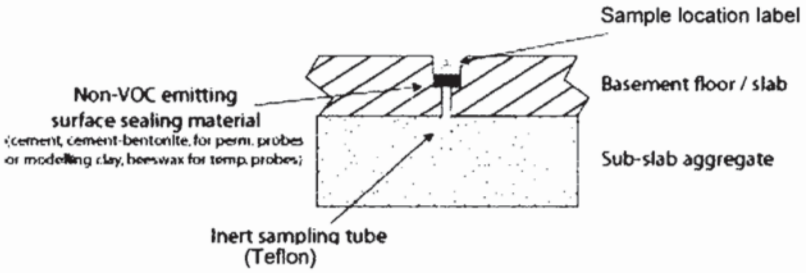
Volume / Linear Ft. of Pipe		
Diam. (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178

Note: Water column height (1-g from front page) should be greater than transducer length plus length of slug, unless well geometry prohibits.

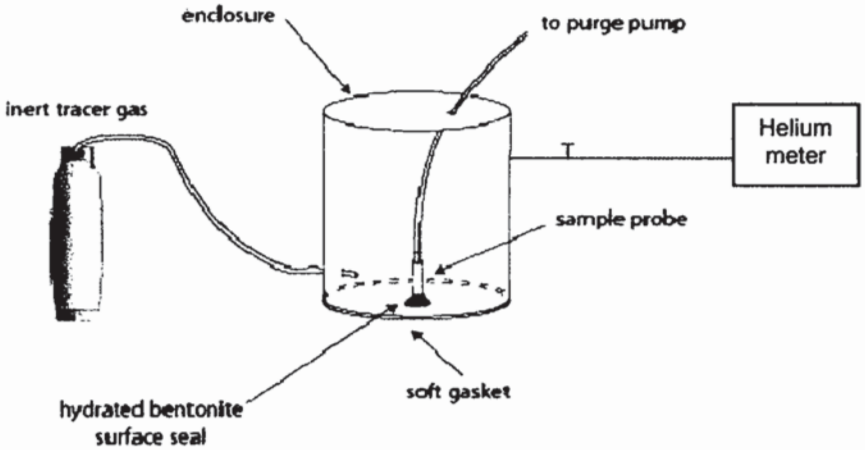
7. MANUAL WATER LEVEL MEASUREMENTS

Time (HH:MM)	Elapsed Time (min)	Depth to Water from TOC (ft)	Head, h (TOC - water depth)	h/Ho	Comments
	0			1	

q:\mw97\sops\7720\hydraulicconductivitytestlog.xls, page 2



TYPICAL SUB-SLAB SAMPLING PROBE SET UP



TYPICAL HELIUM TRACER TEST SET UP

AECOM

			TYPICAL HELIUM TRACER AND SUB-SLAB
DATE. 9/5/06	DRWN. MLR		FIGURE 6-1

File: H:\186001\186005057.dwg Layout: FIGURE 2-2 User: ustenberg Plotted: Sep 19, 2005 4:00pm Xref's: 186000001

FIGURE 6-2

Soil Gas Sampling Log Sheet
Sample ID_____

Client:_____
Project Name:_____
Project Number:_____
Date:_____
Sampler:_____

Location:_____
Canister Number:_____
Core Diameter:_____ Core Material:_____
Core Length:_____
Magnehelic Measurement: (Positive number indicates higher pressure in Core)_____
Depth of Hand Auguring:_____
Soil Type:_____
Method of Probe Advancement:_____
Depth of Probe Advancement:_____ Length Probe is Retracted:_____

Time of Purging	PID Reading	Time of Purging	PID Reading
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Starting Time:_____ Starting Pressure:_____
Finish Time:_____ Final Pressure:_____

Room Dimensions: Length:_____ Width:_____ Height:_____

Comments:

Indoor Air/Ambient Air Sample
Sample ID_____

Location:_____
Sample ID:_____
Canister Number:_____
Starting Time:_____ Starting Pressure:_____
Finish Time:_____ Final Pressure:_____

Comments:

General Weather Conditions:_____
Chemical Inventory:

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FIGURE 6-3

FIELD SAMPLING DATA SHEET
(One Sample Per Data Sheet)

GENERAL:

PROJECT: _____ DATE(S) SAMPLED: _____

SITE: _____

LOCATION: _____ OPERATOR: _____

PID INSTRUMENT MODEL NO.: _____ CALIBRATED BY: _____
CGI INSTRUMENT MODEL NO.: _____ CALIBRATED BY: _____

TIME	CGI READING (%)	PID READING (ppm)	DRAGER TUBE (ppm)	LOCATION
1)				
2)				
3)				
4)				
5)				
6)				
7)				
8)				
9)				
10)				

CANISTER #	LOCATION	TIME

DATE/TIME	AMBIENT TEMPERATURE°	BAROMETRIC PRESSURE mm Hg	RELATIVE HUMIDITY %	COMMENTS

Data from meteorological station*

Figure 6-4

OSR-3

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH ASSESSMENT
BUREAU OF TOXIC SUBSTANCE ASSESSMENT

INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date Prepared _____

Preparer's Affiliation _____ Phone No. _____

1. **OCCUPANT**

Name: _____

Address: _____

County: _____

Home Phone No._____ Office Phone No _____

2. **OWNER OR LANDLORD:**
(If different than occupant)

Name: _____

Address: _____

_____

Phone No. _____

A. <u>Building Construction Characteristics</u>

Type (circle appropriate responses): Single Family Multiple Dwelling Commercial Public School

Ranch	2-Family
Raised Ranch	Duplex
Split Level	Apartment House _____ Units
Colonial	Number of floors _____
Mobile Home	Other specify _____

Residence Age _____ General Description of Building Construction Materials _____

Is the building insulated? Yes / No How air tight is the building?_____

_____

_____

Figure 6-4

OSR-3 (continued)

B. <u>Basement construction characteristics (circle all that apply):</u>

1. Full basement, crawlspace, slab on grade, other _____
2. Basement floor: concrete, dirt, other _____
3. Concrete floor: unsealed, painted, covered, with _____
4. Foundation walls: poured concrete, block, laid up stone, other _____
5. The basement is: wet, damp, dry___ Sump present? y / n _____ Water in sump? y / n_____
6. The basement is: finished, unfinished _____
7. Identify potential soil vapor entry points (e.g., cracks, utility ports, etc.)

   _____

8. Describe how air tight the basement is _____

   _____

C. <u>HVAC (circle all that apply):</u>

1. The type of heating system(s) used in this residence is/are:

Hot Air Circulation	Heat Pump
Hot Water Radiation	Unvented Kerosene Heater
Steam Radiation	Wood stove
Electric Baseboard	Other (specify)_____

2. The type(s) of fuel(s) used is/are: Natural Gas, Fuel Oil, Electric, Wood, Coal Solar

   Other (specify)_____

3. Is the heating system's power plant located in the basement or another area? _____
4. Is there air-conditioning? Yes / No Central Air or Window Units?

   Specify the location _____

5. Are there air distribution ducts present? Yes / No
6. Describe the supply and cold air return duct work in the basement including whether there is a cold air return, the tightness of duct joints

   _____

   _____

Figure 6-4

OSR-3 (continued)

D. <u>Potential Indoor Sources of Pollution</u>

1. Has the house ever had a fire? Yes / No
2. Is there an attached garage? Yes / No
3. Is a vehicle normally parked in the garage? Yes / No
4. Is there a kerosene heater present? Yes / No
5. Is there a workshop, hobby or craft area in the residence? Yes / No
6. An inventory of all products used or stored in the home should be performed. Any products that contain volatile organic compounds or chemicals similar to the target compounds should be listed. The attached product inventory form should be used for this purpose.
7. Is there a kitchen exhaust fan? Yes / No Where is it vented? _____
8. Has the house ever been fumigated? If yes describe date, type and location of treatment.

_____

E. <u>Water and Sewage (Circle the appropriate response)</u>

Source of Water

Public Water Drilled Well Driven Well Dug Well Other (Specify)_____

Water Well Specifications:

Well Diameter _____ Grouted or Ungrouted _____

Well Depth _____ Type of Storage Tank _____

Depth to Bedrock _____ Size of Storage Tank _____

Feet of Casing _____ Describe type(s) of Treatment _____

_____

Water Quality:

Taste and/or odor problems? y / n If so, describe _____

How long has the taste and/or odor been present? _____

Sewage Disposal: Public Sewer Septic Tank Leach Field Other (Specify) _____

Distance from well to septic system_____Type of septic tank additive _____

OSR-3 (continued)

F. <u>Plan View</u>

Draw a plan view sketch for each floor of the residence and if applicable, indicate air sampling locations, possible indoor air pollution sources and PID meter readings.

OSR-3 (continued)

G. <u>Potential Outdoor Sources of Pollution</u>

Draw a sketch of the area surrounding the residence being sampled. If applicable, provide information on the spill location (if known), potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system if applicable, and a qualifying statement to help locate the site on a topographical map.

Figure 6-4

Household Products Inventory

Occupant / residence _____

Investigator: _____ Date: _____

Product description (dispenser, size, manufacturer …)	**VOC Ingredients**

Chain of Custody Record № 0476

AECOM

FIGURE 9-1

Project Name:	Project Number:
Send Report To:	Sampler (Print Name):
Address:	Sampler (Print Name):
	Shipment Method:
	Airbill Number:
Phone:	Laboratory Receiving:
Fax:	

Analysis Requested

Page ____ of ____

Purchase Order #: _____

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers												Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By Laboratory):

QA/QC Level		Turnaround		Sample Receipt	
				Total # Containers Received?	
Level I	☐	Routine	☐	COC Seals Present?	
Level II	☐	24 Hour	☐	COC Seals Intact?	
Level III	☐	1 Week	☐	Received Containers Intact?	
Other	☐	Other _____		Temperature?	

White: Lab Copy Yellow: PM Copy Pink: Field Copy Gold: PM/QA/QC Copy

Attachment A SOPs

January 2016

Standard Operating Procedures

(AECOM and National Grid)

AECOM Standard Operating Procedures

Standard Operating Procedure 223-1
"Hydrocarbon Baildown Test (DNAPL)"

"Hydrocarbon Baildown Test (DNAPL)"

Procedure Number: 223-1

Revision No.: 3

Revision Date: 4/29/12

Prepared By: Andrew Kirkman Date: 1/22/10

Approved By: Trevre Andrews Date: 6/1/13
Technical Reviewer

Approved By: Trevre Andrews Date: 6/1/13
QA Reviewer

Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
Initials: _____ Date: _____
Initials: _____ Date: _____

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1.0 Purpose and Applicability

The AECOM Corporation, (AECOM) SOP 223-1 describes the procedures for conducting the Hydrocarbon Baildown Test (DNAPL). This test can be performed on most wells that have oil (also referred to as free-phase hydrocarbon, free-product, oil, liquid hydrocarbon, or dense non-aqueous phase liquid [DNAPL]) sinking below the groundwater. The test is conducted by removing oil from a test well and borehole with a pump or bailer and measuring the recovery rate. The recovery data, along with the volume of oil removed, can be used to estimate the oil transmissivity and recoverability. Typically this test is completed on wells exhibiting greater than 0.5 feet of thickness. If the thickness is less than 0.5 feet consider running a manual skimming test which is detailed in AECOM SOP 235-1. Because the gauging accuracy and precision could limit a baildown test at location with small thicknesses (i.e., < 0.5 feet) the manual skimming test may provide more accurate estimates of transmissivity for use in recovery estimates. Additionally if DNAPL fully recovers within 30 minutes of purging then a manual skimming test may also be appropriate.

Specific project requirements as described in an approved Work Plan, Sampling Plan, Quality Assurance Project Plan, Job Hazard Analysis (JHA) or Site-Specific Health & Safety Plan (HASP) will take precedence over the procedures described in this document.

2.0 Responsibilities

The field staff performing the tests are responsible for contacting the project sampling leader if there are any uncertainties about the test procedure or unusual observations in the field. The project sampling leader has the responsibility to oversee and ensure that the tests are performed in accordance with the project specific sampling program and AECOM SOP 223-1.

3.0 Health and Safety

This section presents the generic hazards associated with conducting baildown tests and is intended to provide general guidance in preparing site-specific health and safety documents. The site-specific HASP and JHA address additional requirements and will take precedence over this document. Note that baildown testing usually requires modified Level D personal protection (i.e., tyveks and chemically resistant gloves) unless there is a potential for exposure to airborne site contaminants.

Health and safety hazards include but are not limited to the following:

- Slip, trips, and falls over obstacles and berms near well locations. Review terrain hazards prior to conducting these operations. Ensure there is a safe means of access/egress to the wellhead.
- Dermal exposure to oil. Ensure that proper personal protective equipment (PPE) is used to mitigate the impact of splashes of oil to skin and/or eyes.
- Exposure to site contaminants. Take all precautions necessary to prevent fire/explosion and/or exposure to airborne vapors from product in the well.
- Ergonomics. Use appropriate ergonomic techniques when inserting or retrieving equipment for the wells to preclude injury to the arms, shoulders or back.
- Cold Weather – Besides the obvious PPE required for cold weather work, cold weather conditions can interfere with the collection of DNAPL samples comprised of viscous liquids (like many manufactured gas plant tars).

4.0 Supporting Materials

Following is a list of field equipment needed to perform a standard AECOM baildown test:

- Equipment to evacuate oil within the borehole and casing:
  - Peristaltic pump and tubing
  - Bailer and rope
  - Vacuum Truck
  - Other purging device
- Decontamination solutions and equipment, including poly sheeting to protect the ground surface
- Measuring devices include:
  - Electric interface probe, weighted tape, dye paste (e.g., Kolor Cut)
  - Pressure transducer (in addition to interface probe)
- Time piece (e.g., watch or other device)

- Bucket for water and oil collection that is graduated to measure within 10% of total estimated recovery volume. (unit conversion: 1 gallon = 3.825 liters = 0.134 cubic feet)
    - A container that can measure 0.1 gallons (~400 ml) for an expected 1 gallon (~4000 ml) of recovered oil
    - A container that can measure 1 gallons (~4000 ml) for an expected 10 gallons (40000 ml) of recovered oil
- Drum or other storage device that can be adequately labeled in accordance with work plan and/or HASP to store any oil recovered
- Project field book for recording field observations

4.1 Removal Equipment

All removal methods are complicated particularly by the properties associated with DNAPLs which typically include higher visocities, densities above 1 g/cc, and increased fouling nature (e.g., generally harder to clean and manage once in contact with field equipment). Because of this multiple removal methods may need to be attempted in order to identify the most efficient removal method and additional field time should be budgeted for managing a given DNAPLs properties.

If hydrogeologic conditions allow it is preferable to remove oil with a peristaltic pump or air driven diaphragm pump. Peristaltic pumps are intrinsically safe down-hole and the oil never comes in contact with the pump up-hole. Additionally the depth of the tubing can be controlled to minimize the volume of recovered water. This allows for a more accurate measurement of the volume of removed oil versus water.

Typically these pumps have a maximum working depth of 27 feet at sea level. If the depth to fluid is too great then a peristaltic pump cannot be used. Bailing or other removal methods can be used as long as they are safe to use. Whale pumps or other down-hole electrical pumps used with oil are not acceptable practices. Bailers and vacuum trucks can be used, but do generate some water. The removal of the water generally introduces minimal error into the test as long as the time it takes for the potentiometric surface to recover is small relative to the length of the entire test. For example, if one gallon of oil and one gallon of water were removed during evacuation and the potentiometric surface recovered in 5 minutes where as the oil recovered over a week, then the error introduced into the test will be minimal.

In some cases the removal equipment available will not be able to remove oil at a high enough rate to completely purge the well. If this occurs during the test, data collection

methods for the test will need to be modified slightly. This situation is discussed in section 5.2 (test modifications).

4.2 Measuring Devices

Typically the air/water, water/oil interfaces and total well depth will be gauged using an oil/water interface probe. Currently the best available oil/water interface probes utilize optical and electrical resistivity principles. Additionally the current technology allows for probes to be relatively small (5/8-inch) in diameter. The optical and electrical resistivity principles increase the ability to measure fluid interfaces and the small probe diameter causes less displacement to fluids in the well.

As noted above depending on the properties of the DNAPL being tested DNAPL may coat the optical and electrical probe interfaces and cause the probe to malfunction. This DNAPL coating needs to be removed by one of the following two methods. First raise the probe just above the water/DNAPL interface into the water column and move it rapidly up and down in an attempt to expose the optical and electric sensors. This method will have succeeded once the probe indicates it is detecting water. If this method fails to give a water reading the probe will need to be brought to the surface and cleaned to remove the DNAPL coating.

Additional measuring devices or methods may need to be utilized to determine the thickness of DNAPL accumulating in wells. Regardless of these difficulties at a minimum a probe capable of determining the depth to the air/water interface must be used to gauge the air/water interface level in the well.

If the interface probe is not capable of determining the water/DNAPL interface the coating of DNAPL present on the interface probe (or weighted tape) can be used to determine DNAPL thickness. This procedure can be performed using either the interface probe or a weighted measuring device. The procedure for measuring the DNAPL thickness using this method is as follows:

1. After determining the depth to bottom of the well with confidence the interface probe (or weighted tape) should be thoroughly cleaned to remove as much of the DNAPL coating from previous gauging as possible.

2. Using a probe that has been cleaned, lower the probe slowly to so that the tip just touches the total depth of the well and the total depth measurement is aligned with the top of the measuring point on the casing. It is important to suspend the tape and not allow “slack” to create exaggerated coatings on the measuring device.

3. The probe should then be brought to the surface and the point at which DNAPL appears to coat the tape will be approximated as the DNAPL thickness in the well. Blebs and stringers may also be present on the probe or the measuring tape which do not indicated DNAPL thickness, rather residual DNAPL present in the well

either suspended in the fluid column or smeared along the walls of the casing or the well screen. Note these observations in the attached field form as "X foot of coating observed, blebs and stringers observed at X and X depth". The presence of blebs and stringers need not be noted on every measurement unless they represent some pattern of DNAPL discharge into a well from discrete zone of DNAPL discharge (e.g., if the tape consistently has a stringer noted at the same depth it may be one of the sources causing DNAPL to accumulate in a well).

4. This process can be repeated as additional measurements are required.

DNAPL thickness estimates can be used to know where to "look" for the water/DNAPL interface when using a oil/water interface probe. This allows the field personal to lower the interface probe without completely submerging the probe in DNAPL and allowing the interface probe sensor to continue to function. By knowing where to look for the water/DNAPL interface the probe can be lowered to the approximate depth and then moved up and down to try and get a water DNAPL interface reading.

With any type of DNAPL, and particularly for DNAPLs where coatings are difficult to distinguish a dye paste such as Kolor Cut may be used to increase the contrast of where hydrocarbons are present and where they are not and to what degree of presence (e.g., stingers, blebs, or well thickness).

5.0 Methods and Procedures

The following assumptions are necessary for performing a successful test:

- The thickness and volume of oil in the well is not affected by the volume of the measuring device inserted into the layer of oil
- The volume of removed oil can be accurately measured as previously described

The following well construction information needs to be obtained prior to initiating the baildown tests:

- Borehole diameter of well to be tested
- Casing and screen diameter
- Top of screen relative to top of casing
- Bottom of screen interval
- Total well depth
- Sump Dimensions (if any is present)

Baildown tests are used to evaluate the transmissivity of oil in the subsurface. In general, oil thickness left in a well over time may skew test results slightly and if the testing is not time critical then it may be useful to occasionally evacuated oil from the well prior to the baildown test in order for the oil to stay in natural communication with the formation. Additionally prior to the test the well being tested must be fully recharged; this will ensure the starting oil thickness, oil head, and potentiometric surface head are all representative of formation conditions. At the start of the baildown test after the initial gauging measurements have been conducted, the entire volume of oil existing within the casing and borehole of the well should be removed. Generally this is a volume calculation that accounts for void space in the well construction as it varies vertically and should account for the presence of a sump. The following equations can be used to approximate the volume of oil within the well casing and borehole (i.e., the effective oil well volume).

$$V_b = 0.285 * b_b \pi \left(r_b^2 - r_c^2 \right)$$
$$V_c = b_c \pi r_c^2$$
$$V_t = V_c + V_b$$

Where:

V_t = Total effective oil well volume

V_b = Volume of oil in the borehole

V_c = Volume of oil in the casing

b_b = oil thickness existing within borehole over specified radiis

b_c = Gauged oil thickness

r_c = well casing radius

r_b = well borehole radius

If a sump is present or oil thickness is present over the top of the screen this calculation needs to be completed for the oil thickness present over all intervals where well construction radii vary and summed together. (i.e., if a well has a 2 foot sump, a 10 foot screen, and 15 feet of DNAPL thickness three separate calculations must be made, one that accounts for the thickness in the sump with the sump radius, one that accounts for the thickness over the screened interval with the screen and borehole radius, and one for the

portion of the DNAPL thickness above the top of screen where sandpack is not present, with the addition of all three of these volumes equating to the total effective well volume). The factor 0.285 accounts for the estimated storage coefficient of the borehole. The factor likely overestimates borehole storage. A lower estimate of this factor would be 0.15. The estimated storage coefficient accounts for borehole porosity and oil saturation. The volume of oil removed should be within the calculated range of volumes using the provided storage coefficients. For unconfined conditions the borehole typically holds the majority of the stored oil volume. If only the casing volume is removed then the borehole will contribute the majority of the recharge and the formation recharge will be very small. These results would not yield the recharge rate of the formation and often yields unusable results. Depending on the well it may take 1 to 4 hours to remove the required volume of oil. This is acceptable because the baildown test often takes days to complete, therefore removal is instantaneous relative to the test length. This methodology will work for most wells and the scope of work should plan for gauging to be conducted over days or even weeks. If the recharge is high (i.e. the well recovers in an hour or less) section 5.2 contains test modifications that should be considered.

After the first test is completed a repeat of the test will often result in improved data quality. If four hours have passed and less than the effective oil well volume has been removed monitor the well for fluid levels as described below but be prepared to repeat the test after the results have been analyzed. Any tests with anomalous data can at least be used to improve the time schedule or other methodology for a repeat test.

Following the removal of oil it is important to take enough oil thickness measurements, appropriately spaced over time, for an adequate test that can yield meaningful analyses of oil transmissivity. The rate of change for oil thickness recovery typically follows a logarithmic pattern so measurements will be closely spaced in the early phases of the test and progressively farther apart as the test proceeds. Complete recovery may take several weeks or months. However, because the recovery rate will likely drop as the well recovers measurements can be collected on a pseudo-logarithmic time scale (i.e., the well may only have to be gauged weekly or monthly eventually). Immediately after the oil has been removed from the well fluid levels should be collected every time the oil thickness changes by less than 5 to 10 percent from the static thickness (e.g. if the initial oil thickness is 1 foot measurements should be collected every time the oil thickness changes 0.05 to 0.1 feet). The maximum practical time for collecting gauging measurements is 1 minute intervals. After the first 100 minutes of a test the data should be reviewed and a schedule based on the collected data set should be generated by the field staff. For example if over the past 100 minutes the well has recovered less than 5 percent of its initial thickness then the next measurement would be 100 minutes from now at the very least and 200 minutes would be a good estimate to obtain a reading which represents a change in thickness between 5 and 10 percent of the static thickness. An example of measurement intervals is provided in Figure 2 and Figure 3. Following 4 hours into the test the data will be reviewed and the

appropriate time line will be generated based on the actual recovery of each well that attempts to measure the fluid levels after oil thickness has changed 5 to 10 percent of the static thicknesses. If previous knowledge of the recovery behavior for a given well is available then the provided timescale can be modified based on those data. The test data should be faxed, phoned or e-mailed into the office for analysis on a daily basis for review, if possible.

Plan on obtaining test measurements until the oil thickness has stabilized to its static thickness. This will provide a more complete insight into the oil distribution in the formation and confirm the static fluid levels. A typical indication of the oil thickness stabilizing is when the oil thickness reaches a plateau for about a half of a log cycle (e.g, if oil thickness is stable from 1000 to 3000 minutes (1/2 log cycle) the test would be finished). This should be documented with 3 measurements over that half log cycle. Plotting the recovered oil thickness versus the log of time will help to forecast future events and help to provide data supporting when the test is complete.

During the test, accurate measurements of the depths to water and DNAPL are critical. Every effort should be made to ensure that these readings are consistent and reliable. Don't just write the numbers down - study them and decide whether they make sense. Oil thickness should be increasing (or remaining the same) from one measurement to the next, not decreasing. Depth to the water/oil interface should be decreasing (or remaining the same). Re-measure and report any readings that seem anomalous and then make notes regarding the methodology taken to confirm or revise anomalous data.

5.1 Conducting a Baildown Test

Conducting a baildown test is as follows:

1. Measure and record the time, the static depth to water, the static depth to DNAPL, and record the well casing diameter.

2. Calculate the volume of oil existing within the borehole and within the casing.

3. Because of the measurement frequency needed over the first 8 hours, plan to start the baildown portion of the test early in the work day and on a day when you will be able to return frequently to the well.

4. To start the test, remove all of the oil that exists within the well casing and borehole while minimizing the groundwater recovered. Record the start and finish time of oil removal. Record the total volume of oil and water removed. If large volumes (over 5 gallons) of oil are removed or removal occurs of a long period of time (over 30 minutes) record several interim measurements of volume removed and time. Try not to disturb the static groundwater level. Methods of oil removal may include those previously discussed. If possible use transparent

tubing or piping to indicate which fluid, oil or water is being removed and make adjustments to the level of removal as necessary.

5. Remove oil until the fluid being removed appears to be clear (i.e., it appears that you are no longer removing oil). It is important to try to remove all the standing oil in the test well, including the borehole volume. In some cases you may need to remove more than one effective DNAPL well volume to reduce the thickness of DNAPL to as close to zero as possible. The time required for oil removal only needs to be small relative to the entire length of time for the entire baildown test. As a general rule it is acceptable to remove oil until the calculated effective oil well volume has been recovered or for 4 hours, whichever comes first.

6. Begin recording the time and measuring the depth to the air/water and water/DNAPL interfaces immediately after removing the DNAPL. If the measured DNAPL thickness appears to be decreasing at any point in the test, re-measure and/or check the proper functioning of the interface probe or weighted tape – oil thickness should not decrease with time. 7. The goal of the baildown test is to collect a measurement for every change in oil thickness from static of 1 percent in the first 100 minutes and every change in oil thickness from static of 5 to 10 percent in the remainder of the test. The following frequencies are provided as an initial recommendation and should be adjusted based on field observation when enough time is available for the field staff to either call in or review the data themselves:

   - First elapsed 10 minutes of test: every 1 minute (10 measurements)
   - 10 to 20 minutes: every 2 minutes (5 measurements)
   - 20 minutes to 40 minutes: every 5 minutes (4 measurements)
   - 40 minutes to 2 hours: every 10 minutes (8 measurements)
   - 2 hours to 4 hours: every 30 minutes (4 measurements)
   - 4 hours till end of first day every 1 hour
   - Second day 2 to 3 times
   - 1 measurement per day, for 5 days
   - 1 measurement per week for 5 weeks until the oil thickness has stabilized

The actual time and date of each measurement should be recorded especially when it may deviate from the initial schedule. If the change in DNAPL thickness between each event is less than the percentages listed above then the frequency of measurements should be decreased. However, if the change in DNAPL thickness is greater the percentages listed above then measurement frequency should be increased. The maximum practical measurement frequency is 1 minute. It is not necessary to increase the frequency beyond this.

5.2 Test Modifications

In some cases the oil in a well will recharge faster than it can be removed by available methods (e.g., the well recovers fully in 30 minutes or limited oil thickness (< 0.5 feet) introduces significant gauging error to baildown test analysis. It is still useful to run the test and collected recovery data even if this is the case. To run a test on a wells with these conditions, a manual skimming type test should be conducted. The procedures for the manual skimming test are defined in Standard Operating Procedure 235-1, "Hydrocarbon Manual Skimming Test (DNAPL)".

Additionally pressure transducers may be utilized to perform these tests if it is not possible to adhere to a long term gauging schedule or if DNAPL recovers to quickly to perform manual measurements. If pressure transducers are to be utilized the following procedure should be followed in addition to all the steps outlined included section 5.1 including the collection of as many manual measurements as possible. Two pressure transducers are required to determine both the air/water and water/DNAPL interfaces. Additionally a fluid analysis must be performed to determine the density of the DNAPL present. If density data is not available the density of the DNAPL can be estimated using the data provided by the pressure transducers.

1. Prior to starting the baildown test by after initial gauging of fluid levels is performed the transducers should be set and rigidly fixed using a clamp (e.g., zip tie or hose clamp) in the following positions

    a. The upper transducers should be set in below the lowest estimated air/water interface elevation (e.g., if there are tidal or seasonal fluctuations at the site the upper pressure transducers should be set at least 3 feet below the tidal or seasonal low).

    b. The lower transducer should be set approximately 0.1 feet off the bottom of the well.

2. Transducers should be set to record at a frequency equal to or greater than that identified in section 5.1. Modern transducers are generally capable of recording at intervals of 1 minute or less

3. The upper transducer will record the water pressure above the transducer. The lower transducer will record the water and DNAPL pressure above the transducer. Combining the static manual gauging measurements of the fluid interfaces with the pressures recorded on the pressure transducers can be used to calculate the density of the DNAPL and the depths of the transducers. Fluid interfaces can then be calculated as the test goes forward based of the pressures recorded, the DNAPL density, and the calculated depths of the pressure transducers using AECOM SOP 223-2.

5.3 Test Analysis

The detailed analysis of the tests is dependent on the site conceptual model and the aquifer behavior of the aquifer containing the DNAPL. Some of these analytical techniques are provided in the ASTM document E2856 entitled *Standard Guide for Estimation of LNAPL Transmissivity* with appropriate modifications applied to account for the differences between LNAPL and DNAPL.

6.0 Quality Assurance/Quality Control

All equipment will be decontaminated between wells following procedures outlined in the approved work plan and/or field sampling plan. Any rope used for the bailer will be replaced between wells.

7.0 Documentation

The field test form (figure 1) and or the project field book will be maintained as a part of the test results. These documents will provide a summary of the test method, site conditions, weather conditions, and test data. These documents will be kept in the project files for reference. Figure 2 and Figure 3 are example data sets of oil thickness vs. log (time). These figures present typical trends and measurements.

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2.0 Field Equipment Decontamination and Management of Investigation Derived Waste 2-1

3.0 Drilling and Soil Sampling Procedures 3-1

4.0 Groundwater Sampling Procedures 4-1

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6.0 Sample Documentation 6-1

1.0 Field Log Books

All field activities will be carefully documented in field log books. Entries will be of sufficient detail that a complete daily record of significant events, observations, and measurements is obtained. The field log book will provide a legal record of the activities conducted at the project site. Accordingly:

- Field books will be assigned a unique identification number.
- Field books will be bound with consecutively numbered pages.
- Field books will be controlled by the Field Team Leader while field work is in progress.
- Entries will be written with waterproof ink.
- Entries will be signed and dated at the conclusion of each day of field work.
- Erroneous entries made while field work is in progress will be corrected by the person that made the entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing the correction.
- Corrections made after departing the field will be made by the person who made the original entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing and dating the time of the correction.
- At a minimum, daily field book entries will include the following information:
    - Location of field activity;
    - Date and time of entry;
    - Names and titles of field team members;
    - Names and titles of any site visitors and site contacts;
    - Weather information, for example: temperature, cloud coverage, wind speed and direction;
    - Purpose of field activity;
    - A detailed description of field work conducted;
    - Sample media (soil, sediment, groundwater, *etc.*);
    - Sample collection method;
    - Number and volume of sample(s) taken;

- Description of sampling point(s);
- Volume of groundwater removed before sampling;
- Preservatives used;
- Analytical parameters;
- Date and time of collection;
- Sample identification number(s);
- Sample distribution (*e.g.* laboratory);
- Field observations;
- Any field measurements made, such as pH, temperature, conductivity, water level, *etc.*;
- References for all maps and photographs of the sampling site(s); and
- Information pertaining to sample documentation such as:
    - Bottle lot numbers
    - Dates and method of sample shipment
    - Chain-of-Custody (COC) Record numbers
    - Federal Express Air Bill Number

2.0 Field Equipment Decontamination and Management of Investigation Derived Waste

2.1 Decontamination Area

A temporary decontamination area lined with polyethylene sheeting will be constructed on-site for decontaminating the drilling equipment. Water collected from the decontamination cleaning activities will be collected in 55-gallon drums and managed as IDW.

2.2 Equipment Decontamination

The following procedures will be used to decontaminate equipment used during the field activities:

- All drilling equipment including the drilling rig, augers, bits, rods, tools, split-spoon samplers, and tremie pipe will be cleaned with a high-pressure steam cleaning or hot water pressure washing unit, as appropriate, before beginning work.
- Tools, drill rods, and augers will be placed on sawhorses or polyethylene plastic sheets following steam cleaning or pressure washing. Direct contact with the ground will be avoided.
- All augers, rods, and tools will be decontaminated between each drilling location according to the above procedures.
- The back of the drill rig and all tools, augers, and rods will be decontaminated at the completion of the work and prior to leaving the project site.

2.2.1 Sampling Equipment Decontamination

Suggested Materials:

- Potable water
- Phosphate-free detergent (*e.g.* Alconox™)
- Distilled water
- Aluminum foil
- Plastic/polyethylene sheeting
- Plastic buckets and brushes
- Personal protective equipment in accordance with the HASP

Procedures:

- Prior to sampling, all non-dedicated sampling equipment (bowls, spoons, interface probes, *etc.*) will be either steam cleaned or washed with potable water and a phosphate-free detergent (such as Alconox™). Decontamination may take place at the sampling location as long as all liquids are contained in pails, buckets, *etc.*

- The sampling equipment will then be rinsed with potable water followed by a deionized water rinse.

- Between rinses, equipment will be placed on polyethylene sheets or aluminum foil if necessary. At no time will washed equipment be placed directly on the ground.

- Equipment will be wrapped in polyethylene plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location.

2.3 Management of Investigation Derived Wastes

2.3.1 Decontamination Fluids

Steam-cleaning and decontamination fluids will be collected in 55-gallon drums. The drums will be labeled as investigation derived wastewater subsequently characterized and disposed.

2.3.2 Drill Cuttings

Visibly impacted drill cuttings will be contained in 55-gallon drums. The drums will be labeled as investigation derived soils and subsequently characterized and properly disposed.

2.3.3 Development and Purge Water

All development and purge water will be contained in 55-gallon drums. The drums will be labeled as investigation derived wastewater and subsequently characterized and properly disposed.

2.3.4 Personal Protective Equipment

All personal protective equipment (PPE) will be placed in 55-gallon drums for proper disposal.

2.3.5 Dedicated Sampling Equipment

All dedicated groundwater sampling equipment, if used, will be placed in 55-gallon drums for proper disposal.

3.0 Drilling and Soil Sampling Procedures

3.1 Introduction

Drilling activities during the field work might consist of:

- Soil borings
- Monitoring well installations
- DNAPL collection well installations

These procedures are described in the following section.

3.2 Soil Borings and Subsurface Soil Sampling

The following methods will be used for conducting soil borings.

3.2.1 Suggested Equipment

- Field book
- Project plans
- Personal protective equipment in accordance with the HASP
- Metal detector
- Stakes and flagging
- One pint containers for lithology samples
- Tape measure
- Decontamination supplies
- Water level indicator
- Photoionization detector (PID) with a 10.2 or 10.6 eV lamp
- Camera
- Clear tape, duct tape
- Aluminum foil

- Laboratory sample bottles
- Coolers and ice
- Shipping supplies

3.3 Drilling and Geologic Logging Method

- Soil borings will be advanced using rotosonic, hollow stem auger, or direct push drilling methods. The rotosonic method is preferred.
- Soil samples will be collected continuously to the bottom of the borings using 5 to 10-foot long 4-inch diameter sonic sample bags, 4-foot long, 2-inch diameter macro core samplers or 2-foot long, 2-inch diameter split spoon samplers.
- Soil samples retrieved from the borehole will be visually described for:
    - Percent recovery
    - Soil type
    - Color
    - Moisture content
    - Texture
    - Grain size and shape
    - Consistency
    - Visible and olfactory evidence of staining and/or contamination
    - Any other observations

The descriptions will be in accordance with the Unified Soil Classification System (USCS), American Society for Testing and Materials (ASTM) guidelines, or the modified Burmeister system.

- Soil samples will be immediately screened for the evolution of organic vapors with a PID.
- A representative portion of the sample will be placed in a plastic “zip lock” bag or an eight-ounce sample jar filled approximately half full. The container will be labeled with the boring number and interval sampled. Aluminum foil will be placed on the top of the jar and the cap will be screwed on tightly.
- After a minimum of 10 minutes, the lid will be unscrewed and the tip of the PID will be inserted through the aluminum foil across the cap or into the bag to measure the headspace for organic vapors.

- Remaining soil will be disposed of in accordance with methods specified in the procedure for the management of IDW.
- All borings will be completed as monitoring wells, backfilled with cuttings if soil is not impacted, or sealed with bentonite or cement/bentonite grout following completion.
- All drilling equipment will be decontaminated between each boring in accordance with methods specified in the procedure for field equipment decontamination.
- The designated field geologist will log borehole geology and headspace measurements in the field book and the drilling record along with any other observations (for example, odors, NAPL, soil staining, *etc*.)

3.3.1 Soil Sampling

- Samples for VOC analysis will be collected directly from the sonic liners or split-spoons, placed into appropriate containers, and compacted to minimize headspace and pore space. The remaining sample volume will be placed into a stainless steel bowl or plastic bag, homogenized, and placed in appropriate containers for the other analyses.
- The sample containers will be labeled, placed in a laboratory-supplied cooler, and packed on ice (to maintain a temperature of 4ºC). The coolers will be shipped overnight to the laboratory for analysis.
- Chain-of-custody procedures will be followed as outlined in the QAPP.
- The sampling equipment will be decontaminated between samples in accordance with procedures described in the procedure for field equipment decontamination.
- Excess soil remaining after sampling will be contained in accordance with methods specified in the procedure for the management of IDW.
- The sample locations, descriptions, and depths will be recorded in the field book.

3.4 Monitoring Well Installation and Development

The following methods will be used for drilling, installing, and developing the monitoring wells.

3.4.1 Suggested Equipment

- Field book
- Project plans
- Personal protective equipment in accordance with the HASP
- Metal detector
- Stakes and flagging

- One pint containers for lithology samples
- Tape measure
- Decontamination supplies
- Water level indicator
- Photoionization detector (PID) with a 10.2 or 10.6 eV lamp
- Camera
- Clear tape, duct tape
- Aluminum foil
- Laboratory sample bottles
- Coolers and ice
- Shipping supplies
- Polyethylene disposable bailers (development)
- Polypropylene rope (development)
- Waterra pump or other purge pump (development)
- Stainless steel or glass beakers (development)
- Turbidity meter (development)
- Temperature, conductivity, pH meter (development)

3.4.2 Monitoring Well Installation

The monitoring wells will be installed in accordance to the following specifications:

- The monitoring well borings will be advanced with 6-inch diameter sonic casing pipe or 4.25-inch inner diameter (ID) hollow stem augers.
- Wells will be constructed with 2-inch ID, threaded, flush-joint PVC casings and screens.
- Screens will be 10 feet long with 0.01-inch or 0.02-inch slot openings with a 2-foot sump at the base. Alternatives may be used at the discretion of the field geologist and approval of National Grid based on field conditions.
- The annulus around the screens will be backfilled with silica sand having appropriate size (*e.g.* Morie No. 1) to a minimum height of two feet above the top of the screen. Auger flights will be withdrawn as sand is poured in a manner that will minimize hole collapse and bridging.

- A bentonite pellet seal or slurry seal with a minimum thickness of one foot will be placed above the sand pack. The bentonite seal (pellets) will be allowed to hydrate before placement of grout above the seal.

- The remainder of the annular space will be filled with a cement-bentonite grout to the ground surface. The grout will be pumped through a tremie pipe from the bottom up. The grout will be allowed to set for a minimum of 24 hours before wells are developed.

- Each monitoring well will have a locking expandable gas-tight cap and will be contained in a flush-mount vault.

- The concrete seal or pad will be sloped to channel water away from the well, and be deep enough to remain stable during freezing and thawing of the ground.

- The op of the PVC well casing will be marked and surveyed to 0.01 foot, and the elevation will be determined relative to a fixed benchmark or datum.

- The measuring point on all wells will be on the innermost PVC casing.

- Monitoring well construction details will be recorded in the field book and on a construction log.

3.4.3 Monitoring Well Development

- After a minimum of 24 hours after completion, the monitoring wells will be developed by surging and pumping. Pumping methods may include using a centrifugal or peristaltic pump and dedicated polyethylene tubing, using a Waterra positive displacement pump and dedicated polyethylene tubing, or other methods at the discretion of the field geologist.

- Water levels will be measured in each well to the nearest 0.01 foot prior to development.

- The wells will be developed until the water in the well is reasonably free of visible sediment (50 NTU if possible or until pH, temperature, and specific conductivity stabilize). A portable nephelometer will be used to take this measurement.

- Development water will be contained in accordance with methods specified in the procedure for the management of IDW.

Following development, wells will be allowed to recover for at least 14 days before groundwater is purged and sampled. All monitoring well development will be overseen by a field geologist and recorded in the field book.

4.0 Groundwater Sampling Procedures

4.1 Introduction

Groundwater sampling will be conducted on Site monitoring well locations. Procedures for obtaining samples of groundwater are described in this section.

4.2 Groundwater Sampling

4.2.1 Suggested Equipment

- Field book
- Project plans
- Personal protective equipment in accordance with the HASP
- Water level indicator
- Disposable polyethylene bailers or low flow sampling pump
- Polypropylene rope
- Temperature, conductivity, pH meters
- Turbidity meter
- Dissolved oxygen meter
- 250-mL glass beaker
- Flow through cell (if low flow sampling pump is used)
- Decontamination supplies
- Waterra pump or other purge pump
- Plastic tubing
- Plastic sheeting
- Photovac PID
- Clear tape, duct tape
- Coolers and ice

- Laboratory sample bottles
- Federal Express labels

4.2.2 Groundwater Sampling Method

4.2.2.1 Purging

- The number and frequency of groundwater samples to be collected and the associated analytical parameters are summarized in Section 3-3 of the SMP.
- Prior to sampling, the static water level and thickness of any free product will be measured to the nearest 0.01 foot from the surveyed well elevation mark on the top of the PVC casing with a decontaminated oil/water interface probe. NAPL thickness will be determined using a clear bailer or a weighted string. The measurement will be recorded in the field book.
- The probe will be decontaminated according to procedures outlined in the procedures for field equipment decontamination.
- The well will be purged by removing groundwater until field parameters stabilize to within 10% of previous reading; up to 3 well volumes are removed or 1 hour of purging is performed. Purging will be conducted using a low-stress sampling technique such as the USEPA Region 1 Low-Stress sampling guidance.
- If a well goes dry before the required volumes are removed, it will be allowed to recover, purged a second time until dry or the required parameters are met, and sampled when it recovers sufficiently, in accordance with low flow sampling protocol.
- Purge water will be managed and disposed of in accordance with procedures described in the management of IDW.

4.2.2.2 Sampling

- Samples will be collected using dedicated ¼-inch polyethylene tubing and micro purging techniques consistent with low flow sampling protocol.
- Prior to filling the sample bottles, one 250-mL beaker will be filled with water. The temperature, pH, conductivity, oxidation reduction potential, dissolved oxygen, and turbidity will be measured with a pre-calibrated probe and recorded in the field book. If low flow sampling methods are used, these parameters (except turbidity) will be measured within a flow through cell.
- The sample containers will be labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of 4ºC). The cooler will be shipped overnight or delivered to the laboratory for analysis.
- Chain-of-custody procedures will be followed as outlined in the QAPP.

Well sampling data will be recorded on groundwater sampling record forms.

5.0 Field Instruments and Calibration

All field analytical equipment will be calibrated immediately prior to each day's use and more frequently if required. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. All instrument calibrations will be documented in the project field book and in an instrument calibration log. Records of all instrument calibration will be maintained by the Field Team Leader and will be subject to audit by the Quality Assurance Officer (QAO). Copies of all of the instrument manuals will be maintained on-site by the Field Team Leader. All changes to instrumentation will be noted in the field log book.

The following field instruments will be used during the investigation:

- PID
- pH probe
- Mini-RAM dust meter
- Dissolved oxygen probe
- Specific Conductivity probe
- Temperature probe
- Turbidity meter

Probes used to measure pH, dissolved oxygen, specific conductivity, and temperature are all housed in a single instrument and parameters are measured in a sealed flow through cell.

5.1 Portable Photoionization Analyzer

- The photoionization analyzer will be a Thermo 580B (or equivalent), equipped with a minimum 10.2 or 10.6 eV lamp. The PID is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for up to 73% of the volatile organic compounds on the Target Compound List.
- Calibration must be performed at the beginning and end of each day of use with a standard calibration gas having an approximate concentration of 100 parts per million of isobutylene. If the unit experiences abnormal perturbation or erratic readings, additional calibration will be required.
- All calibration data must be recorded in field notebooks and on calibration log sheets to be maintained on-site.
- A battery check must be completed at the beginning and end of each working day.

- All changes to the PID will be noted in the field notes (such as bulb or filter cleaning or replacement).

5.2 pH

- Calibration of the pH meter must be performed at the start of each day of use, and after very high or low readings as required by this plan, according to manufacturer's instructions.
- National Institute of Standards and Technology (NIST) – traceable standard buffer solutions which bracket the expected pH range will be used. The standards will be pH of 4.0, 7.0, and 10.0 standard units.
- The use of the pH calibration must be used to set the meter to display the value of the standard being checked.
- The calibration data must be recorded on calibration sheets and maintained on-site.

5.3 Dissolved Oxygen

Calibration of the dissolved oxygen meter must be performed at the start of each day of use, after very high or low readings (approaching or outside of the theoretical dissolved oxygen range at a given temperature), and after bubbles or spurious readings are observed.

Calibrate the meter to a prepared standard or other method in accordance with manufacturer's instructions and note the scale and units on the meter.

5.4 Specific Conductivity and Temperature

- Calibration checks using the conductivity standard must be performed at the start of each day of use, after five to ten readings or after very high or low readings as required by this plan, according to manufacturer's instructions.
- The portable conductivity meter must be calibrated using a reference solution of 200 ohms/cm on a daily basis. Readings must be within five percent to be acceptable.
- The thermometer of the meter must be calibrated against the field thermometer on a weekly basis.

5.5 Turbidity Meter

The turbidity meter must be checked at the start of each day of use and at the end of the day according to manufacturer's instructions.

6.0 Sample Documentation

6.1 Chain of Custody

- A Chain-of-Custody (COC) record will accompany the sample containers during selection and preparation at the laboratory, during shipment to the field, and during return shipment to the laboratory.
- The COC will identify each sample container and the analytical parameters for each, and will list the field personnel that collected the samples, the project name and number, the name of the analytical laboratory that will receive the samples, and the method of sample shipment.
- If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample shipment.
- The COC will be completed by field personnel as samples are collected and packed for shipment.
- Erroneous markings will be crossed-out with a single line and initialed by the author.
- The REMARKS space will be used to indicate if the sample is a matrix spike, matrix spike duplicate, or matrix duplicate.
- Trip and field blanks will be listed on separate rows.
- After the samples have been collected and sample information has been listed on the COC form, the method of shipment, the shipping cooler identification number(s), and the shipper air bill number will be entered on the COC.
- Finally, a member of the sampling team will write his/her signature, the date, and time on the first RELINQUISHED BY space. Duplicate copies of each COC must be completed.
- One copy of the COC will be retained by sampling personnel. The other copy and the original will be sealed in a plastic bag and taped inside the lid of the shipping cooler.
- Sample shipments will be refrigerated at 4ºC, typically by packing with ice, to preserve the samples during shipment.
- After the shipping cooler is closed, custody seals provided by the laboratory will be affixed to the latch and across the front and back of the cooler lid, and signed by the person relinquishing the samples to the shipper.
- The seal will be covered with clear tape, and the cooler lid will be secured by wrapping with packing tape.
- The cooler will be relinquished by the shipper, typically an overnight carrier.

- The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the samples will not be analyzed.
- The samples must be delivered to the laboratory within 48 hours of collection.

6.2 Sample Documentation

The field team leader will retain a copy of the COC, and, in addition, the field team leader will ensure that the following information about each sample is recorded in the field book:

- Sample identifier
- Identification of sampled media (*e.g.* soil, sediment, groundwater)
- Sample location with respect to a known reference point
- Physical description of sample location
- Field measurements (*e.g.* pH, temperature, conductivity, and water levels)
- Date and time of collection
- Sample collection method
- Volume of groundwater purged before sampling
- Number of sample containers
- Analytical parameters
- Preservatives used
- Shipping information:
    - Dates and method of sample shipment
    - Chain-of-Custody Record numbers
    - Federal Express Air Bill numbers

Sample recipient (*e.g.* laboratory name)

National Grid Standard Operating Procedures

Field Descriptions of Samples for Former Manufactured Gas Plant (MGP) Sites

SOIL SAMPLE DESCRIPTIONS

It is important that descriptive qualifiers are consistently used to characterize degree and nature of contaminant impacts and visual-manual soil classification. The following presents some examples of descriptive qualifiers.

SOIL LOGGING

- All soils are to be logged using the **Unified Soil Classification** (ASTM D 2488 field descriptions)
- **PID or FID** used to screen all soil samples (Jar Headspace method) – maximum readings should be recorded and included on the logs. PID/FID to be calibrated daily at a minimum
- **Moisture terms** are: Dry, Moist, and Wet
- **Color terms** - use geotechnical color charts - colors may be combined: e.g. red-brown. Color terms should be used to describe the "natural color" of the sample as opposed to staining caused by contamination (see below)
- **Log of each sample interval** should be prepared as follows:

  [Coarse Grained Example] NARROWLY GRADED SAND (SP); mostly fine sand; <5% fines; red-brown, moist, environmental/depositional/geologic descriptions.

  [Fine Grained Example] SANDY SILT (ML); heterogeneous till structure, nonplastic, ~30% fine to coarse, subangular sand; ~10% subangular fine gravel, max. size ~ 10 mm; brown; environmental/depositional/geologic descriptions.
- **Representativeness** – Soil logs should include particular notes if the field representative believes that there is a possibility the soil sample being described is not representative of the interval sampled.
- **Intervals for Description** – if using a 2' (split spoon) or 4' (Macro-core) long sampler – the field description should not necessarily be for the entire sample interval. It is important to look for, identify, and describe small-scale units and changes within each sample interval.

DESCRIPTION OF CONTAMINANTS

Visible Contamination Descriptors

- **Sheen** - iridescent petroleum-like sheen. Not to be used to describe a "bacterial sheen" which can be distinguished by its tendency to break up on the water surface at angles

whereas petroleum sheen will be continuous and will not break up. A field test for sheen is to put a soil sample in a jar of water and shake the sample (jar shake test) , then observe the presence/absence of sheen on the surface of the water in the jar.

- **Stained** - used w/ color (i.e. black or brown stained) to indicate that the soil matrix is stained a color other than the natural (unimpacted) color of the soil.

- **Coated** - soil grains are coated with tar/free product – there is not sufficient free-phase material present to saturate the pore spaces.

- **Blebs** - observed discrete sphericals of tar/free product - but for the most part the soil matrix was not visibly contaminated or saturated. Typically this is residual product.

- **Saturated** - the entirety of the pore space for a sample is saturated with the tar/free product. Care should be taken to ensure that you're not observing water saturating the pore spaces if you use this term. Depending on viscosity, tar/free-phase saturated materials may freely drain from a soil sample.

- **Oil**. Used to characterize free and/or residual product that exhibits a distinct fuel oil or diesel fuel like odor; distinctly different from MGP-related odors/impacts.

- **Tar**. Used to describe free and/or residual product that exhibits a distinct "coal tar" type odor (e.g. naphthalene-like odor). Colors of product can be brown, black, reddish-brown, or gold.

- **Solid Tar**. Used to describe product that is solid or semi-solid phase. The magnitude of the observed solid tar should be described (e.g. discrete granules or a solid layer).

- **Purifier Material**. Purifier material is commonly brown/rust or blue/green wood chips or granular material. It is typically associated with a distinctive sulfur-like odor. Other colors may be present.

Olfactory Descriptors

- Use terms such as " tar-like odor" or "naphthalene-like odor" or "fuel oil-like odor" that provide a qualitative description (opinion) as to the possible source of the odor.
- Use modifiers such as strong, moderate, faint to indicate intensity of the observed odor.

DNAPL/LNAPL

- A jar shake test should be performed to identify and determine whether observed tar/free-phase product is either denser or lighter than water. In addition, MGP residues can include both light and dense phases - this test can help determine if both light and dense phase materials are present at a particular location.

Viscosity of Free-Phase Product – If free-phase product/tar is present a qualitative description of viscosity should be made. Descriptors such as:

- Highly viscous (e.g. taffy-like)
- Viscous (e.g. No. 6 fuel oil or bunker crude like)
- Low viscosity (e.g. No. 2 fuel oil like)

GROUNDWATER SAMPLING OBSERVATIONS

- Any observations of sheen, blebs, free-phase product/tar, staining or coating of the sampling equipment, odor, etc. that made during sampling of groundwater are to be included in the groundwater sample collection log.

MGP COLOR CHART

	RGB Color	Auto Cad Index
TAR SATURATED	255,0,0	10
COATED MATERIAL, LENSES	255,0,255	210
BLEBS, GLOBS, SHEEN	255,191,0	40
STAINING, ODOR	255,255,0	50
PETROLEUM IMPACTS SHEEN, STAINING, ODORS	127,233,255	141
PURIFIER WASTE AND ODOR	0,0,255	170
NO OBSERVED IMPACTS	0,165,0	92

2.4.3 Sampling Interval and Flow Controller Setting

When you request canisters and flow controllers from Air Toxics Ltd., you will be asked for the sampling interval, and the flow controllers will be pre-set prior to shipment according to the table below. The flow controller is set to collect 5 L of sample over the sample interval. Final canister vacuum is targeted at 5 in. Hg. The flow rate is set at standard atmospheric conditions (approximately sea level). If the air sample is a process (pressurized or under vacuum) or is collected at elevation, the canisters will fill faster or slower depending on the sampling conditions. If you specify the pressure of the source at project set-up, we can set the flow controller accordingly. See Section 4 for a discussion of collecting a sample at elevation. The 24-hr flow controllers should not be used for process or source samples.

Table 2.4.3 Flow Rates for Selected Sampling Intervals (mL/min)

Sampling Interval (hrs)	0.5	1	2	4	8	12	24
6 L Canister	167	83.3	41.7	20.8	11.5	7.6	3.5
1 L Canister	26.6	13.3	6.7	-	-	-	-

Note: Target fill volumes for 6 L and 1 L canisters are 5,000 mL and 800 mL, respectively.

$$\text{Flow Rate(mL/min)} = \frac{\text{Target Fill Volume (mL)}}{\text{Sampling Interval (min)}}$$

2.4.4 Final Canister Vacuum and Flow Controller Performance

Ideally the final vacuum of a 6 L canister should be 5 in. Hg or greater. As long as the differential pressure is greater than 4 in. Hg ambient pressure, then the flow through the device will remain approximately constant as the canister fills. If there is insufficient differential pressure, the flow through the controller will decrease as the canister pressure approaches ambient. Because of the normal fluctuations in the flow rate (due to changes in ambient temperature, pressure, and diaphragm instabilities) during sampling, the final vacuum will range between 2 and 10 in. Hg.

Compliance Assessment Site Investigation and Remediation

nationalgrid

General Information

Observation Date _____ **Time** _____ AM / PM

Primary Task of Crew _____
(e.g., Installing wire, fusing gas line, etc.)

Additional info on Crew Task _____

Observed Department _____

Who did you observe? ◯ **Employees** ◯ **Contractor**

# of People Observed: _____

Observers	Observed Employees or Contractor Company Name

Location of Observation

Site Name _____

Address _____ **City** _____ **State** _____

Location Type ◯ Company Site ◯ Non-Company Site _____ (e.g., Office, Right of Way, etc.)

Observation Items

Communication & Risk Assessment					***Additonal information required under Observation Details***
1. Crew members demonstrate clear understanding of job hazards and conditions	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good
2. Demonstrates clear understanding of the controls necessary to minimize the risks associated wtih the hazards at the job site (demarcation, position of equipment, shoring, atmospheric monitoring, proper ventilation, etc)	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good
3. Understands "What's the worst thing that could happen on the job?"	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good
4. Daily safety meeting has been documented and performed with crew	◯ Safe	◯ Unsafe*			
5. Safety risk assessment was developed before work began	◯ Safe	◯ Unsafe*			
6. Job Brief identifies the most significant hazards and controls to mitigate risk. (ie: proximity of energized lines, grounding, shoring, low hanging pipes, etc.)	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good
Personal Protection					***Additonal information required under Observation Details***
7. Maintains PPE in good condition	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good
8. Wears all required PPE correctly	◯ Safe	◯ Unsafe*			
Work Area Safety					***Additonal information required under Observation Details***
9. Slippery or untidy areas are cleaned up quickly	◯ Safe	◯ Unsafe*			
10. Actively Managing Work Area - Good Housekeeping, maintains walking and work surfaces, clear areas of egress and good lighting for task	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good
11. Maintains adequate barriers and signs to protect others from the work area	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good
12. Properly handles and stores hazardous chemicals and materials	◯ Safe	◯ Unsafe*			
13. Work area air monitoring has been performed and documented	◯ Safe	◯ Unsafe*			
Vehicles / Mobile Equipment					***Additonal information required under Observation Details***
14. Follows safe vehicle backing procedures	◯ Safe	◯ Unsafe*			
15. Loads are secured properly	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good
16. Properly positioned vehicle at the work site	◯ Poor*	◯ Needs Improvement*	◯ Fair	◯ Good	◯ Very Good

Vehicles / Mobile Equipment					***Additonal information required under Observation Details***
17. Required distances are maintained from energized lines and equipment	Safe	Unsafe*			
Work Methods and Procedures					***Additonal information required under Observation Details***
18. Crews understand the applicable sections of the HASP	Poor*	Needs Improvement*	Fair	Good	Very Good
19. Environmental permits/plans are on site and conditions followed	Poor*	Needs Improvement*	Fair	Good	Very Good
20. Exclusion zone is properly delineated	Safe	Unsafe*			
21. Follows proper procedures for confined space / enclosed space	Safe	Unsafe*			
22. Follows the proper regulatory and corporate safety procedures for trenching, excavation, backfilling, compaction and restoration work	Poor*	Needs Improvement*	Fair	Good	Very Good
23. OSHA certificates and medical monitoring documents are on site	Safe	Unsafe*			
24. Proper decon procedures are followed	Safe	Unsafe*			
25. The HASP is on site	Safe	Unsafe*			
26. Visitor sign in sheet is on site	Safe	Unsafe*			
27. Works within applicable minimum approach distances	Safe	Unsafe*			
Work Place Environment					***Additonal information required under Observation Details***
28. Fire Extinguishers - Placement and Inspection Date	Safe	Unsafe*			
29. First Aid equipment is available and fully stocked	Safe	Unsafe*			
30. Adequate spill clean up equipment is on site	Poor*	Needs Improvement*	Fair	Good	Very Good
31. Lighting (Safety and Security) within building, garage, yard, parking area and at job site.	Poor*	Needs Improvement*	Fair	Good	Very Good
32. Work site is secure for unauthorized entry	Safe	Unsafe*			
Work Practices					***Additonal information required under Observation Details***
33. Not climbing or walking over materials, equipment or waste	Safe	Unsafe*			
34. Takes precautions when working in unique conditions - uneven surfaces, slopes, steps.	Poor*	Needs Improvement*	Fair	Good	Very Good
35. Follows safe practices when working in or near water	Poor*	Needs Improvement*	Fair	Good	Very Good
36. Maintains awareness of other activities in the work area (distance from moving equipment, work overhead, near excavations, confined areas etc)	Poor*	Needs Improvement*	Fair	Good	Very Good
37. Stockpiles are covered and secured at the end of each work day	Poor*	Needs Improvement*	Fair	Good	Very Good
Environmental					***Additonal information required under Observation Details***
38. Containers of waste appropriately marked	Safe	Unsafe*			
39. Ensures waste is properly managed	Poor*	Needs Improvement*	Fair	Good	Very Good
40. Follows procedures / methods to help protect the environment during work activities (use of absorbant materials, covers drains, proper location of equipment, hay bales to protect wetlands, good housekeeping etc.)	Poor*	Needs Improvement*	Fair	Good	Very Good
41. Knows procedures for responding to spills or other releases	Poor*	Needs Improvement*	Fair	Good	Very Good
42. Perimiter air monitoring is performed and documented	Poor*	Needs Improvement*	Fair	Good	Very Good
43. Water quality monitoring is performed and documented	Poor*	Needs Improvement*	Fair	Good	Very Good

Observation Details

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Observation Details for Observation #:

List Applicable Employees	Primary Cause (See List)	Immediate Action Taken (See List)

Comments

Follow-up Items

Description	Assigned To	Due Date	Complete Date

Additional Comments

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Executive Summary

This document presents standard operating procedures (SOPs) for conducting soil vapor intrusion evaluations at National Grid's manufactured gas plant (MGP) sites in New York State. These procedures have been developed on behalf of National Grid in cooperation with the New York State Departments of Health (NYSDOH) and Environmental Conservation (NYSDEC).

These SOPs are based on a current understanding of soil vapor intrusion, existing site-specific conditions at National Grid's MGP sites in New York State, and the current regulatory climate in the state. They have been developed in consideration of NYSDOH's Draft *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH, 2006~~5~~), NYSDEC and NYSDOH input, ~~standards~~ guidance documents issued by the United States Environmental Protection Agency (USEPA), O'Brien & Gere's and Haley & Aldrich's indoor air and soil vapor intrusion evaluation experience and expertise, National Grid's experience in New York State and New England, and consultation with other New York utility companies. As such, this set of SOPs may be updated or modified as the understanding of vapor intrusion continues to evolve, and as guidance documents and regulations are revised and updated. Further, these SOPs may be modified based on site-specific conditions.

Although the regulatory community generally considers soil vapor intrusion of non-chlorinated constituents ~~a~~ "… less of a ~~ower~~ priority in the evaluation of past sites …" (NYSDEC 2006), National Grid is working with the NYSDOH and NYSDEC to identify MGP sites where evaluation of the potential vapor intrusion pathway is warranted. For these sites, a soil vapor intrusion evaluation should be conducted during the Remedial Investigation (RI) phase so it can be adequately addressed in the Feasibility Study (FS) and integrated in the selection of a comprehensive site remedy.

SOP Objectives

While the NYSDOH guidance document (2006~~5~~) identified above provides general guidance for evaluating soil vapor intrusion for a wide range of sites, this set of SOPs complements that guidance document by focusing on specific procedures for evaluating soil vapor intrusion at MGP sites. Specifically, the primary objectives of these SOPs are to:

1. Establish consistent protocols for collecting and analyzing samples and evaluating data at National Grid's MGP sites in New York State; and

2. Establish uniform work plan and reporting elements for each applicable MGP site, thus streamlining work plan and report development and review.

Overview of Soil Vapor Intrusion Evaluations

The goal of a soil vapor intrusion evaluation is to assess whether there are complete exposure pathways of soil vapor to indoor air. A complete exposure pathway exists if vapors from MGP-related constituents are migrating through various pathways into nearby buildings at concentrations that may

result in an unacceptable human health risk. If a complete exposure pathway does not exist, then further assessment of soil vapor intrusion is not required, unless there is a relevant change in site conditions, or as noted above, the understanding of soil vapor intrusion evolves and guidance documents and regulations are revised and updated. Because soil vapor intrusion requires a complete pathway to exist between the source of the vapors and the receptor, a phased approach can be applied to establish if a complete pathway exists. This phased approach to soil vapor intrusion evaluations, as it applies to National Grid's MGP sites in New York State, includes:

Phase 1 – Documentation Review

Phase 2 – Soil Vapor Sampling

Phase 3 – Sub-Slab Sampling

Phase 4 – Indoor Air Sampling

Please note that not all of these phases may need to be conducted. Depending upon available site-specific data, any one of these phases may be bypassed. For instance, if Phase 1 reveals a high potential for impacted buildings, Phase 2 may be bypassed and the evaluation may proceed directly from Phase 1 to Phase 3 or 4. In addition, Phases 3 and 4 may be conducted simultaneously if site conditions dictate.

The remainder of this document describes the various procedures to review site documentation, conduct sampling, and evaluate sampling data, organized into the four phases outlined above. To facilitate the steps required for each phase, process flow diagrams for all four phases are provided (Figures 1 through 4).

1. Phase 1. Documentation Review

1.1. Objective

The first phase of the soil vapor intrusion evaluation for an MGP site involves reviewing available site documentation, and supplementing that data as necessary, to identify potential vapor receptors with respect to MGP-impacted soil and groundwater and to identify preferential pathways by which vapors would migrate to those receptors.

The steps of Phase 1 include:

Step 1. Data Compilation and Review

Step 2. Data Evaluation

Step 3. Data Reporting

Figure 1 illustrates a process flow diagram for Phase 1. If, during the Phase 1 documentation review, the data suggest that potential receptors are sufficiently close to potential MGP-impacted soil or groundwater, then the evaluation should proceed to Phase 2. This section discusses the Phase 1 steps in more detail and provides guidance on whether to proceed to Phase 2. Please note that the following steps may be modified based on site-specific conditions.

1.2. Step 1. Data Compilation and Review

Step 1 involves compiling and reviewing site-specific data to identify potential vapor receptors, MGP-impacted soil or groundwater, and preferential vapor pathways, as defined in the following subsections. Documentation to be compiled and reviewed includes data collected during the Site Characterization (SC) and/or RI phase, as well as other data/documents generated for the site. For some MGP sites, additional data may be needed to complete this first step, and a site visit may be necessary to collect more data.

1.2.1. Identify Potential Vapor Receptors

During the review of site-specific data, potential vapor receptors must be identified and located. Potential receptors are occupied or unoccupied buildings (which are anticipated to be reoccupied in the near future) to which soil vapors could migrate; however, potential receptors do not include:

- Buildings that are occupied infrequently and are not intended for long-term occupancy (such as storage garages and other storage buildings);
- Active and inactive non-residential buildings where large quantities of petroleum products are~~/were~~ used and/or stored (such as gas stations, auto repair shops, and vehicle staging buildings); and

- Unoccupied buildings owned by National Grid.

Vacant properties are not considered as potential vapor receptors. If no potential vapor receptors are found during this step, then there is no need to continue with the evaluation.

1.2.2. Identify Impacted Groundwater and Soil

During this first step, MGP-impacted groundwater and soil must also be identified. After compiling the necessary site-specific data, that information should be reviewed to determine:

- Depth to groundwater;
- Direction of groundwater flow;
- Location, depth, extent, and concentration of potential MGP-related constituents in unsaturated soil and groundwater;
- Location, depth, and extent of NAPL; and
- Presence of an overlying water bearing zone that does not have MGP impacts and provides an effective barrier to vapor migration.

1.2.3. Identify Preferential Vapor Pathways

During the review of site-specific documentation, preferential vapor pathways (if any) must be identified. A variety of site features can act as preferential pathways for vapor migration, including:

- Common anthropogenic features such as buried utilities and foundations that are backfilled with gravel or other porous fill. Because soil vapor can migrate horizontally and travel further in these features than in the surrounding native soil, vapors may enter buildings that are in contact with these features.
- Natural, buried drainage channels, which can also act as preferential vapor pathways and must be noted if present or suspected.

Most likely, these features would have been identified during previous investigation activities. Only preferential vapor pathways that overlay or intersect impacted groundwater or soil and abut or lay below the foundation of potential receptors, should be considered in the evaluation. However, features that are in saturated soils *(e.g.*, below the water table) do not act as preferential vapor pathways, and should not be evaluated further unless they are found to be transmitting impacted groundwater.

1.3. Step 2. Data Evaluation

The second step of Phase 1 involves evaluating the site-specific data to determine if one or both of the following conditions exist:

Condition 1. MGP-related impacts exist above screening levels in groundwater or detectable levels in unsaturated soil located within 100 feet[1] of a potential receptor.

Condition 2. A potential preferential vapor pathway exists between potential receptors and areas with MGP-related soil or groundwater impacts.

To assess the distance to a receptor (Condition 1), the horizontal distance from the nearest detectable concentration of MGP-impacted groundwater or soil must be determined. In the case of a non-impacted water table or saturated soil layers overlying impacted groundwater or soil, the upper water table serves as a vapor barrier; therefore, these areas should not be considered in this evaluation. It should be noted, that other barriers may also exist and inhibit vapor migration, such as subsurface structures, low-permeable soils, surface water bodies, and other features. These features and their influence on vapor migration need to be evaluated on a site-specific basis.

If one or both of the above conditions exist, then the following screening check~~s~~ must be conducted:

- Compare the impacted groundwater concentrations with the screening levels presented in Table 1. If the concentrations are equal to or greater than the screening levels, then the evaluation should proceed to Phase 2. If the concentrations are less than the screening levels, then further evaluation is not warranted at this time.[1] However, if site conditions change (e.g., soil and/or groundwater impacts increase in concentration or there is a change in property use), then this step must be revisited to confirm if Condition 1 and/or Condition 2 apply and additional investigation is necessary.

~~? Confirm the location of the impacted soil in relation to potential receptors if the site has soil impacts but no groundwater impacts. If the impacted soil lies directly below any receptor, then the evaluation must proceed to Phase 2. If the impacted soil does not lie below any receptors, then further evaluation is not warranted at this time.~~

1.4. Step 3. Data Reporting

Upon completion of Steps 1 and 2, a Phase 1 Summary Report must be prepared to document the site conditions and conclusions from this phase. The report should include pertinent MGP-related data/data trends (e.g., from ~~the most~~ recent rounds of groundwater sampling) or summarize the data/data trends and reference a publicly available document(s) which includes the data. The Phase I Summary Report should also include a site map that shows the following:

- Locations of potential vapor receptors;
- Description of the existing land use (commercial, industrial, residential) and type of commercial or industrial activities at potential vapor receptors;
- Locations of explorations and environmental sampling, such as groundwater monitoring wells, soil boring, and test pits;
- Areas of impacted groundwater and soil;

[1] Guidance from the USEPA recommends that buildings within 100 feet of known soil or groundwater contaminants be evaluated for potential vapor intrusion (USEPA, 2002).

- Soil type;
- Locations of preferential vapor pathways and/or vapor barriers; and
- Distances between impacted groundwater and soil to receptors.

If no further evaluation is warranted, then the Phase 1 Summary Report must be submitted to NYSDEC and NYSDOH stating that no further evaluation is warranted at this time, and include the basis and supporting documentation for this recommendation. If further evaluation is warranted, then the documentation assembled for this report must be included in the Phase 2 ~~Summary Report~~Work Plan (refer to Section 2).

2. Phase 2. Soil Vapor Sampling

2.1. Objective

Phase 2 involves collecting samples of the soil vapor to assess if vapors exist near potential receptors (which are identified in Phase 1), and at concentrations that would warrant further evaluation. The steps of this phase consist of:

Step 1. Work Plan Development

Step 2. Sampling and Analysis

Step 3. Data Evaluation

Step 4. Data Reporting

Figure 2 illustrates a process flow diagram for Phase 2, and the remainder of this section discusses these steps in more detail. Please note that the following steps may be modified based on site-specific conditions.

2.2. Step 1. Work Plan Development

Step 1 consists of developing a Sampling and Analysis Work Plan that will include:

- Sampling locations (which should be depicted on a site map included with the work plan), quantities, and rationale ;
- Sampling depths and rationale;
- Sampling and analysis methods*;
- Target analytes and reporting limits*;
- Quality assurance/quality control (QA/QC) program*;
- Data evaluation criteria*; and
- Data reporting.

* Details for these items do not need to be included in the work plan. Instead, refer to the details in this SOP.

Any deviations from these items listed above must be called out and briefly explained in the work plan. The work plan must be submitted to the NYSDEC and NYSDOH for review and approval. The work plan items are discussed below along with the remaining steps of Phase 2.

2.3. Step 2. Sampling and Analysis

This step involves implementing the Sampling and Analysis Work Plan that was developed during Step 1. Specifically, this section discusses the rationale for selecting site-specific sampling locations, quantities, and depths, and provides some details on the sampling and analytical methods, target analytes and reporting limits, and QA/QC procedures.

2.3.1. Determine Sample Locations, Quantities, and Rationale

Step 2 includes collecting soil vapor samples to assess the presence (if any) and magnitude of MGP-related constituents in soil vapor at the potential vapor receptors identified during Phase 1. This sampling effort could include the following:

- Sampling Near Buildings – Soil vapor samples would be collected near buildings (potential receptors) identified in Step 1 to assess if MGP-related constituents are present in soil vapor near the building. If this effort involves more than one building, sampling should start at a point nearest the contaminant source and work outward until soil vapor concentrations no longer warrant additional sampling.

Sampling locations should be as close as practical to the building without being in the backfill material surrounding the building's foundation. The number of samples to be collected depends on the anticipated degree of variability of soil vapor concentrations surrounding the building. For instance, buildings that are above or close to a relatively high vapor source may have variable soil vapor concentrations surrounding the building, higher nearer the source and lower farther from the source. In this instance, additional sampling may be required to obtain data that are representative. Such sampling may include collection of samples along one or more sides of the building to assess soil vapor and concentration gradients. Alternatively, buildings that are at some distance from a vapor source or are located above groundwater containing similar concentrations may have equivalent soil vapor concentrations along their foundations. In this second instance, less sampling would be required, such as the collection of one or more samples along the building side nearest the vapor source.

- Sub-Slab Representation – Some surface features may act as vapor caps, by capping the soil vapor and preventing or reducing its release rate to atmosphere. Vapor concentrations tend to equilibrate under these caps and spread out horizontally until they reach the edge of the cap where they release to the atmosphere. Soil vapor sample results can represent sub-slab concentrations when:

  - Soil vapor samples are collected under surface features that are contiguous with the building's foundation;
  - The surface feature is in good condition, without major cracks or openings;
  - The foundation is slab-on-grade;
  - Impacted soil is not located directly under the foundation; and
  - Impacted groundwater concentrations under the foundation are relatively uniform.

When these conditions are met, soil vapor sampling locations should be selected near the building's foundation, which may also include a sample collected on one or more sides of the building to assess whether soil vapor surrounding the building is consistent. These surface features should be shown on the site map presented in the Sampling and Analysis Work Plan, and the condition of the surfaces (e.g., broken pavement or concrete slab without cracks) should be noted.

- Ambient Air Sampling — In conjunction with the soil vapor sampling near buildings, at least one ambient air sample should be collected at breathing zone height above ground and immediately upwind of each building. If there are suspected outdoor sources in close proximity to the building, then additional ambient samples should be collected upwind and downwind of the local sources. The purpose of the ambient air sample collected along with soil vapor samples is to assess the site-specific background. This data may be used in data evaluation or planning for future potential sampling events (Steps 3 and 4).

2.3.2. Determine Sample Depths

Soil vapor samples should be collected from depths that are equivalent to the depth of the building's foundation slab, if possible. This guideline assumes that the sampling objective is to assess the potential soil vapor concentrations beneath an adjacent building. However, the sampling depth may be modified if the sampling objective is different. Although site-specific information may vary, in the case of slab-on-grade foundations, this depth would most likely be approximately 4 feet below grade. For crawl spaces and basements, samples depths would typically be 5 and 8 feet, respectively.

Other considerations for determining the appropriate soil vapor sample depth include the following:

- Sample depths of 3 feet or more below grade may help minimize potential entrainment of ambient air from the surface into the sample. However, a~~A~~ tracer gas should be used during sampling at any depth to assess whether entrainment of ambient air is not occurring (see Section 2.3.3).

- Selection of target sample depths should also consider the presence of any confining or saturated units in the subsurface. Because soil vapor sampling is not recommended in soils that have become saturated from heavy rain, sampling events should be postponed after a heavy rainfall until the soil has time to drain. Selected soil vapor sample depths should not target the capillary fringe. For the purposes of this document, collection of samples from less than 1 foot above the water table is not recommended.

2.3.3. Perform Sampling and Analysis

Detailed soil vapor and ambient air sampling procedures are provided in Appendices A and B, respectively. These procedures can be referenced in the Sampling and Analysis Work Plan. Important sampling and analysis considerations include the following:

- Sampling durations can range from 1 to 8 hours, depending on the practicality of site access.

- Purging and s~~S~~ampling rates must not exceed 0.2 liter per minute.

- Soil vapor samples must be analyzed using USEPA Compendium Method TO-15.

Care should be taken when installing soil vapor probes with direct push or Geoprobe-type drill rigs. The sand used as filter pack or tubing used by some of these contractors is suspected to contaminate the installation with iso-octane and other trimethylpentane isomers. The filter pack material should be glass beads or clean sand that has been confirmed to be free of volatile organic compounds through a laboratory analysis. It is important that the tubing is food grade.

2.3.4. Confirm Target Analytes and Reporting Limits

Target analytes are provided in Table 2, including analytes for which Method TO-15 has been validated and additional analytes that the laboratory must report for both soil vapor and ambient air samples. These additional analytes may assist with identifying MGP-related vapors and are identified in the NYSDOH's guidance document (2006~~5~~) as indicator compounds for MGP sites. These additional analytes may be analyzed as tentatively identified compounds (TICs), which assumes semi-quantitation (using the calibration curve of an analyte with similar detector response).

Table 2 also provides reporting limits for the Method TO-15 list of parameters. The actual reporting limits of field samples may be higher due to sample dilution by the laboratory necessary to properly quantify compounds with elevated concentrations (above the instrument's calibration range) and other factors. In some cases, the elevated compounds will not be related to MGP materials. An accurate quantitation of these compounds is not as important as obtaining appropriate reporting limits for potential MGP-related constituents, if possible. Therefore, the laboratory should be instructed to contact National Grid if sample dilution is warranted and not ~~prior~~ to dilute~~ing~~ samples unless approved by National Grid~~to obtain further guidance~~.

A smaller target list may be appropriate if previous sampling was conducted using the list in Table 2. Once previous sample results establish a site-specific list of analytes (often referred to as Compounds of Concern (COCs)), National Grid may request the laboratory to report results of just the COCs for subsequent sampling.

A larger list of target analytes may be appropriate in some instances where there is a probable subsurface contamination from petroleum-based sources other than MGP residuals. The larger list will assist in a forensic analysis that compares the sampling results to typical chemical fingerprints of various other petroleum sources (gasoline, diesel, etc). If a forensic analysis is warranted, a sample from of a known MGP residual soil vapor may also need to be collected. If other petroleum-based sources are suspected in the vicinity of the proposed sampling, assistance should be sought to evaluate and setup such analyses, as this document does not provide all the details on forensic analyses needed for complete guidance.

2.3.5. Monitor QA/QC Program

As summarized in Table 3, QA/QC samples may include one blind duplicate soil vapor sample for every 10 field samples. Other details of the QA/QC program include the following:

- The relative percent difference (RPD) between the duplicate sample and the co-located field sample must be less than 30% for results that are greater than five times the reporting limit. If this RPD criterion is exceeded, the results may lack adequate precision and may need to be qualified accordingly. If duplicate pair results are less than five times the reporting limit, RPD calculations are not applicable.

- Trip or equipment blanks are not necessary.
- Prior to use, sample canisters must be pre-certified by the laboratory as clean. Batch certification (one canister analyzed per 10) is adequate for soil vapor and ambient air sampling.
- Canisters must be sampled within 15 days of receipt from the laboratory. Canisters exceeding this time limit should be returned to the laboratory unused.
- Sampled canisters must be analyzed within 30 days of sample collection. Samples analyzed after this date shall have its results flagged during the validation process as "estimated."
- Analytical QA/QC, results, and documentation must meet the requirements of NYSDEC Category B deliverables. The analytical data must be reviewed and a Data Usability Summary Report (DUSR) must be generated.

2.4. Step 3. Data Evaluation

Step 3 involves evaluating the data collected during the sampling and analysis program, and includes the following specific tasks:

- Assess whether the constituents detected in the vapors (if any) are MGP-related;
- Compare the sample results to screening criteria of indoor air background and health risk levels; and
- Determine follow-on actions (e.g., continue the investigation, terminate the investigation, or collect more soil vapor data).

Each of these tasks is discussed in more detail below.

2.4.1. Assess Whether Vapor Constituents are MGP-Related

Vapor constituents that may result from MGP materials are also common to household and consumer products. As such, results for vapor constituents which may be related to MGP materials should be assessed.

Potential MGP-related constituents include the following:

- Certain volatile aromatic hydrocarbons such as benzene, toluene, ethylbenzene, and xylene (BTEX).
- Certain semivolatile organic compounds (SVOCs) such as naphthalenes, polycyclic aromatic hydrocarbons (PAHs), thiopenes, and some phenolic compounds.
- Additional volatile constituents associated with MGP sites where the carbureted water gas (CWG) process was employed may also include certain C10 through C19 compounds such as alkyl benzenes and normal alkanes.

The presence of the constituents listed above does not necessarily indicate that the vapors are MGP-related. For example, BTEX compounds are common constituents of gasoline. Table 5 lists some of the types of commonly found non-MGP-related sources and their vapor constituents that are similar to MGP-related constituents.

An analysis must be conducted to evaluate the soil vapor data set and determine the source(s) of the soil vapor impacts. The analysis will evaluate the soil vapor data with respect to:

- Potential MGP and non-MGP vapor constituents (Tables 4 and 5);
- Existing groundwater and soil data; and
- Historic and existing activities at and adjacent to the site.

The conclusions of the analysis will be included in the Phase 2 Summary Report (see Section 2.5).

2.4.2. Compare Sample Results to Screening Criteria

Soil vapor results must be compared to screening criteria which assume that the resulting indoor air concentrations are equal or less than the one-tenth of the soil vapor concentrations. Indoor air concentrations attributable to vapor intrusion are lower, by orders of magnitude, than soil vapor concentrations due to the attenuation caused by the slab and due to the dilution of the compound into a large volume of indoor air. USEPA guidance recommends an attenuation factor[2] of 0.1 be used to conservatively screen shallow soil vapor concentrations (USEPA, 2002). Actual attenuation factors have been found to be as low as 10^{-5}. National Grid has elected to conservatively use the 0.1 attenuation factor to screen soil vapor data.

Soil vapor sample results should be divided by 10 and the resultants compared to two types of criteria: 1) background concentrations; and 2) health risk concentrations. Background concentrations are those indoor air concentrations that already exist or are likely to exist without the influence of vapor intrusion. Two sources of background concentrations will be used: 1) site-specific ambient air; and 2) typical indoor air concentrations published by NYSDOH. The highest concentration for a given compound from these two sources of background concentrations will be used. In urban settings, ambient air concentrations may be higher than typical indoor concentrations. Table 6 presents the typical indoor air concentrations for MGP-related constituents.

USEPA's guidance recommends target indoor air concentrations for some MGP-related constituents (USEPA, 2002). The guidance provides three levels of health risk for potential carcinogenic compounds representing 10^{-4}, 10^{-5}, and 10^{-6} cancer risks. The guidance does not recommend which levels to use for various exposure settings. However, USEPA often uses the 10^{-5} risk level when evaluating health risk under the environmental indicators program for residential exposures. National Grid has elected to also use the 10^{-5} risk level for residential exposures and the 10^{-4} risk level for non-residential exposures. Furthermore, for those non-residential properties where petroleum-related constituents are routinely stored or used, alternate exposure numbers may be appropriate (e.g., Occupational Safety and Health Administration [OSHA] permissible exposure limits [PELs]). Table 6 provides the USEPA health risk levels for potential MGP-related constituents.

[2] Attenuation factor = indoor air concentration / soil vapor concentration

2.4.3. Determine Follow-On Actions

After sample results are compared to appropriate screening levels, follow-on actions must be determined. Three data evaluation scenarios and associated actions include:

Scenario 1: All MGP-related constituents in soil vapor are less than 10 times the highest criteria.
Next Action: No further investigation is warranted at this time.

Scenario 2: At least one MGP-related constituent in soil vapor is greater than 10 times the highest criteria. Soil vapor does not represent sub-slab vapor.
Next Action: Proceed to Phase 3 and conduct soil vapor sampling of adjacent buildings, if any.

Scenario 3: At least one MGP-related constituent in soil vapor is greater than 10 times the highest criteria. Soil vapor does represent sub-slab vapor.
Next Action: Proceed to Phase 4 or directly to mitigation. Conduct soil vapor sampling of adjacent buildings, if any.

2.5. Step 4. Data Reporting

The final step of Phase 2 involves transmitting data to the State Agencies (which include NYSDEC and NYSDOH) and preparing a Phase 2 Summary Report.

Within 48 hours after receiving data from the laboratory and before data are validated, analytical reports ~~data tables~~ and a figure showing sampling locations must be prepared and transmitted to the State Agencies. Any data summaries should be clearly labeled as preliminary. Receipt of data from the laboratory means the initial receipt of data and not the complete data package that is used for data validation. After validation is complete, any ~~additional~~ changes to the data must be submitted to the Agencies.

After data validation, a ~~complete~~ Phase 2 Summary Report must be submitted to the State Agencies and include the following:

- Phase 1 summary (see Section 1.4);
- Tabulated s~~S~~ummary of validated results of detected compounds;
- Analytical reports showing results of all detected and non-detected compounds;
- Site plan showing sampling locations, impacted groundwater and soil locations, potential vapor receptors, preferential vapor pathways, surface features, and hydraulic vapor barriers;
- Overview of sampling and analysis activities;
- Results of data evaluation; and
- Recommendations for follow-on actions, if appropriate.

The Phase 2 Summary Report will include an evaluation sufficient to conclude that either no further evaluation is warranted at this time or that the evaluation should proceed to Phase 3 or 4.

Article 27, Title 24 of the NYS Environmental Conservation Law (N Y ECL 27-2403(1)) requires any responsible party to provide vapor intrusion test results to the owner of the property that was tested within 30 days of data validation. The date of the finalized DUSR (validated data), discussed in Section 2.3.5, will commence the 30-day period. Results should be submitted in a letter to the property owner from National Grid that presents a table of results showing only detected compounds, an attachment of the laboratory report showing results of all analyzed compounds, and a figure showing locations from where samples were taken. The letter should also provide an interpretation of the results with respect to any follow-on actions based on input from the State Agencies. In order to accommodate input from the State Agencies, the draft letter should be submitted to the State for review at the beginning of or just prior to the start of the 30-day reporting period.

3. Phase 3. Sub-Slab Sampling

3.1. Objective

Phase 3 involves sub-slab sampling in buildings to assess if vapor from MGP-impacted groundwater and/or soil is present under the slab at such a magnitude that it could potentially intrude into the indoor air. The steps of this phase include:

Step 1. Building Survey and Chemical Inventory

Step 2. Work Plan Development

Step 3. Sampling and Analysis

Step 4. Data Evaluation

Step 5. Data Reporting

Figure 3 illustrates a process flow diagram for Phase 3. Each of the steps listed above is discussed in more detail below. Please note that the following steps may be modified based on site-specific conditions.

3.2. Step 1. Building Survey and Chemical Inventory

For Phase 3 of the evaluation, the first step is to conduct a building survey and chemical inventory to compile the following information:

- Ownership, contact information and address;
- Tenant name(s) and contact information;
- Type of foundation (basement, crawlspace or slab-on-grade);
- Condition of the slab;
- Sub-slab sample location(s);
- Indoor air pressure differential (i.e., negative or positive with respect to outdoor air pressure); and
- Indoor air sources that may contain the same compounds as MGP-related volatile constituents.

The NYSDOH Indoor Air Quality Questionnaire and Building Inventory Field Form (Appendix C) must be completed while conducting the building survey and chemical inventory. The purpose of the chemical inventory at this step is to assess potential indoor air sources in the event that indoor air

sampling (Step 4) is required. When selecting the sampling locations, Dig Safely New York will be called and any sub-slab utilities must be identified and, if possible, reviewed with the property owner to avoid potential damage/injury when drilling.

3.3. Step 2. Work Plan Development

The second step is to develop a Sampling and Analysis Work Plan that will include:

- Building survey and chemical inventory findings;
- Building foundation type (i.e., full basement, crawlspaces, slab-on grade);
- Building interior foundations (due to additions, different foundation elevations, etc.)
- Sampling locations and quantities;
- Sampling and analysis methods*;
- Target analytes and reporting limits*;
- QA/QC*;
- Data evaluation criteria*; and
- Data reporting.

* Do not discuss these items in detail in the work plan. Instead, refer to the details in this SOP.

Any deviations from these items listed above must be called out and briefly explained in the work plan. The remaining work plan items are discussed below. The Sampling and Analysis Work Plan should be submitted to NYSDEC and NYSDOH for review and approval prior to implementation.

3.4. Step 3. Sampling and Analysis

This step involves sampling and analysis to implement the work plan that was developed during Step 2. Specifically, this section discusses the rationale for selecting sampling locations, quantities, and depths, and provides some details on the sampling and analytical methods, target analytes and reporting limits, and QA/QC procedures.

3.4.1. Determine Sample Locations and Quantities

Sub-slab samples must be collected directly beneath the floor of the lowest level of the building. These samples should be collected near the center of the slab and away from slab openings (sumps, drains) and major cracks.

For residential buildings, one sample is usually sufficient. However, if the building is large or contains multiple additions and/or multiple foundation depths, more than one sample should be collected. If a building is directly above a known source area, multiple sub-slab locations should be sampled to evaluate the soil vapor concentration gradient.

Ambient air sampling is not necessary unless ambient air concentrations are expected to have changed since the soil vapor sampling. As stated in Section 2.3.1, the purpose of the ambient air sampling is to establish site-specific background.

3.4.2. Perform Sampling and Analysis

Detailed sub-slab sampling procedures are provided in Appendix D. These procedures do not need to be reiterated in the Sampling and Analysis Work Plan. Important sampling and analysis considerations include the following:

- Sampling durations can range from 1 to 24 hours, depending on the practicality of site access.
- Sampling rate should not exceed 0.2 liter per minute.
- Soil vapor samples must be analyzed using USEPA Compendium Method TO-15.

3.4.3. Confirm Target Analytes and Reporting Limits

The same target analytes and reporting limits discussed above in Section 2.3.4 for soil vapor sampling should be used for sub-slab sampling. However, a smaller target list may be appropriate if previous sampling was conducted using the list in Table 2. Once previous sample results establish a site-specific list of analytes (often referred to as Compounds of Concern (COCs)), National Grid may request the laboratory to report results of just the COCs for subsequent sampling.

In addition, forensic analyses also discussed in Section 2.3.4 may be an option for sub-slab sampling.

3.4.4. Monitor QA/QC Program

The same QA/QC components discussed above in Section 2.3.5 for soil vapor sampling should be used for sub-slab sampling.

3.5. Step 4. Data Evaluation

Step 4 of this phase includes the following data evaluation tasks:

- Assess whether the constituents detected in the vapors (if any) are MGP-related;
- Compare the sample results to screening criteria of indoor air background and health risk levels; and
- Determine follow-on actions (e.g., continue the investigation, terminate the investigation, or collect additional sub-slab data).

Refer to Section 2.4 for a discussion of MGP-related vapor constituents and screening criteria. After sample results are compared to appropriate screening levels, follow-on actions must be determined. Two data evaluation scenarios and associated actions include:

Scenario 1: All MGP constituents in sub-slab vapor are less than 10 times the highest criteria.
Next Action: No further investigation is warranted at this time.

Scenario 2: At least one MGP constituent in sub-slab vapor is greater than 10 times the highest criteria.
Next Action: Proceed to Phase 4 or directly to mitigation.

3.6. Step 5. Data Reporting

The final step of Phase 3 involves transmitting the sub-slab sampling data to the State Agencies and preparing a Phase 3 Summary Report. Within 48 hours after receiving data from the laboratory and before data are validated, ~~data tables~~analytical reports and a figure showing sampling~~potential receptor~~ locations must be prepared and transmitted to the State Agencies. Any data summaries should be clearly labeled as preliminary. Receipt of data from the laboratory means the initial receipt of data and not the complete data package that is used for data validation. After validation is complete, any ~~additional~~ changes to the data must be submitted to the Agencies.

Following data validation, a ~~complete~~ Phase 3 Summary Report must be submitted to the State Agencies and include:

- Tabulated summary of validated results of detected compounds;
- Analytical reports showing results of all detected and non-detected compounds;

~~? Summary of validated results;~~

- Site plan showing sampling locations, impacted groundwater and soil locations, potential vapor receptors, preferential vapor pathways, surface features, and hydraulic vapor barriers;
- Overview of sampling and analysis activities;
- Results of data evaluation; and
- Recommendations for follow-on actions, if appropriate.

As described in Section 2.5, the results of samples collected from property not owned by National Grid must be provided to the property owner within 30 days of data validation. See Section 2.5 for more detail.

4. Phase 4. Indoor Air Sampling

4.1. Objective

Phase 4 involves indoor air sampling in buildings identified in Phases 2 and/or 3 to assess if sub-slab vapor is intruding into the indoor space at such a magnitude that it has the potential to cause a health risk. The steps of this phase include:

Step 1. Building Survey and Chemical Inventory

Step 2. Work Plan Development

Step 3. Sampling and Analysis

Step 4. Data Evaluation

Step 5. Data Reporting

Figure 4 illustrates a process flow diagram for Phase 4. Each of these steps is discussed in more detail below. Please note that the following steps may be modified based on site-specific conditions.

4.2. Step 1. Building Survey and Chemical Inventory

If not already completed as part of Phase 3, a site visit to survey the building and inventory indoor chemicals must be conducted (or reconducted as appropriate). The same procedures discussed above in Section 3.2 must be followed. However, some additional tasks for the indoor air sampling program include the following:

- Complete a more detailed chemical survey. Potential sources of VOCs must be identified and photographed. Labels of indoor products should be reviewed for VOC contents; any findings must be recorded on the NYSDOH Indoor Air Quality Questionnaire and Building Inventory Field Form (Appendix C).

- Establish whether the building has a positive or negative pressure with respect to outdoors. Smoke pens may be used to help with this assessment. This may be done immediately before and immediately after indoor air sampling, but not during sampling.

4.3. Step 2. Work Plan Development

The second step is to develop a Sampling and Analysis Work Plan that will include:

- Building survey and chemical inventory findings;
- Sampling locations and quantities;
- Sampling and analysis methods*;

- Target analytes and reporting limits*;
- QA/QC*;
- Data evaluation criteria*; and
- Data reporting.

* Details for these items do not need to be included in the work plan. Instead, refer to the details in this SOP.

Any deviations from these items listed above must be called out and briefly explained in the work plan. The remaining work plan items are discussed in more detail below. The Work Plan should be submitted to NYSDEC and NYSDOH for review and approval prior to implementation.

4.4. Step 3. Sampling and Analysis

Step 3 involves implementing the work described in the Sampling and Analysis Work Plan. Specifically, this section discusses the rationale for selecting sampling locations and quantities, and provides some details on the sampling and analytical methods, target analytes and reporting limits, and QA/QC procedures.

4.4.1. Determine Sample Locations and Quantities

Indoor air samples should be collected from the lowest level of the building. In a large building or buildings with multiple tenants or rooms on the lowest level, more than one sample may be required. Other considerations when collecting indoor air samples include the following:

- Indoor air samples must be collected within the breathing zone, which is approximately 3 to 5 feet above the floor.
- Ambient air sampling must be conducted at the same time and for the same duration as indoor air sampling.
- At least one ambient air sample must be collected at breathing zone height above ground and immediately upwind of the building(s), if possible. For buildings with HVAC intakes, sampling in proximity to the intakes should be considered.
- If suspected outdoor sources are closely located to the building(s), then additional ambient samples must be collected upwind and downwind of those sources.
- One ~~If more than 3 months have lapsed between~~ sub-slab sampl~~ing~~e (Phase 3) should be collected concurrently and co-located with each ~~and~~ indoor air sample~~ing, then an additional sub-slab sample may be collected~~.
- Sampling must be conducted under conditions when vapors could potentially migrate and/or accumulate within the indoor air, which is typically when all doors and windows are closed and when the HVAC system is operating. If the property is a business, the sampling should

be conducted during a time of limited activity to avoid door openings to the outdoors, if possible.

4.4.2. Perform Sampling and Analysis

Detailed indoor air sampling procedures are provided in Appendix E, and ambient air sampling procedures are provided in Appendix B. These procedures do not need to be reiterated in the Sampling and Analysis Work Plan. Important sampling and analysis considerations include the following:

- Sampling durations can range from 4 to 24 hours, depending on the practicality of site access and the exposure scenario being evaluated (8 hour sample duration for commercial and industrial settings and 24 hours for residential settings).
- Sampling rate must not exceed 0.2 liter per minute.
- Soil vapor samples must be analyzed using USEPA Compendium Method TO-15.

In addition, building occupants should be instructed that within 24 hours of the sampling and during the sampling to avoid, to the extent possible the activities provided in Appendix F.

4.4.3. Confirm Target Analytes and Reporting Limits

The same target analytes and reporting limits discussed above in Section 2.3.4 for soil vapor sampling should be used for indoor air sampling.~~Air samples must be analyzed using USEPA Compendium Method TO-15 with instrumentation tuned to low levels, which allows for lower reporting limits as those discussed for soil vapor and sub-slab sample analysis. Table 7 provides a list of TO-15 low level analytes, which is a subset of the analyte list for the standard TO-15 analysis (Table 2). The laboratory must also include additional compounds identified in Table 7.~~ However, at this point previous sampling has been conducted that established a site-specific list of analytes (COCs), National Grid may request the laboratory to report results of just the COCs for subsequent sampling.

4.4.4. Monitor QA/QC Program

The same QA/QC components discussed above for sub-slab sampling in Section 3.3.4 should be used for indoor air sampling, except that canisters must be individually certified clean and not batch certified.

4.5. Step 4. Data Evaluation

Step 4 of this phase consists of the following data evaluation tasks:

- Evaluate whether the indoor air sample results are not attributable to vapor intrusion, indoor air sources or ambient air sources;
- Compare the indoor air sample results to criteria of ambient air background and health risk levels; and

- Determine follow-on actions (e.g., discontinue the investigation, additional assessment, or implement mitigation measures).

Each of these tasks is discussed in more detail below.

4.5.1. Assess Whether Vapor Constituents are MGP-Related

The primary goal of the assessment is to determine which detected indoor air analytes, if any, are solely or partially attributable to indoor air sources. As such, results for vapor constituents which may be related to MGP materials should be assessed.

- Compare the indoor air results with data from the sub-slab sampling. The ratio of indoor air to sub-slab vapor must be calculated for all analytes detected in both sample types.

- Compare the indoor air results with information obtained from the chemical inventory to verify the assumptions made from the first comparison.

4.5.2. Compare Sample Results to Screening Criteria

After completing the forensic analysis summarized above, the next task is to compare any indoor air results that are suspected to be partially or solely attributable to vapor intrusion with ambient air data and USEPA target indoor air concentrations. These indoor air screening criteria are presented in Table 6.

4.5.3. Determine Follow-On Actions

After sample results are compared to appropriate screening levels, follow-on actions must be determined. Two data evaluation scenarios and associated actions include:

Scenario 1: No MGP-related constituents in indoor air are attributable to vapor intrusion or all are less than the respective ambient air concentration or background or health risk criteria (whichever is higher).
Next Action: No further investigation is warranted.

Scenario 2: At least one MGP-related constituent in indoor air attributable to vapor intrusion is greater than the respective ambient air concentration, background, and health risk criteria.
Next Action: Resampling or mitigation is warranted.

4.6. Step 5. Data Reporting

The final step of Phase 4 involves transmitting the sub-slab, indoor air, and ambient air sampling data to the State Agencies and preparing a Phase 4 Summary Report. Within 48 hours after receiving data from the laboratory and before data are validated, ~~data tables~~analytical reports and a figure showing ~~potential receptor~~sampling locations must be prepared and submitted to the State Agencies. Any data summaries should be clearly labeled as preliminary. Receipt of data from the laboratory means the initial receipt of data and not the complete data package that is used for data validation. After validation is complete, any ~~additional~~ changes to the data must be submitted to the Agencies.

Following data validation, a ~~complete~~ Phase 4 Summary Report will be prepared and submitted to the State Agencies and will include:

- Tabulated summary of validated results of detected compounds;
- Analytical reports showing results of all detected and non-detected compounds;

~~? Summary of validated results;~~

- Site plan showing sampling locations, impacted groundwater and soil locations, potential vapor receptors, preferential vapor pathways, surface features, and hydraulic vapor barriers;
- Overview of sampling and analysis activities;
- Results of data evaluation; and
- Recommendations for follow-on actions.

As described in Section 2.5, the results of samples collected from property not owned by National Grid must be provided to the property owner within 30 days of data validation. See Section 2.5 for more detail.

References

NYSDEC. 2006. *DER-13 / Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York*. DEC Program Policy. (October 18, 2006)

NYSDOH. 2006~~5~~. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York.* ~~Public Comment Draft~~ (October~~February~~).

USEPA. 2002. *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils.* Office of Solid Waste and Emergency Response (November).

Table 1
Groundwater Screening Levels

Standard Operating Procedures for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State

MGP-Related Constituent	USEPA OSWER Target Groundwater Concentrations (ug/L) [a, b]		NYS Class GA Groundwater Standard[c]
	Residential	Non-Residential	
Benzene	14	140	1
Ethylbenzene	700	700	5
Toluene	1500	1500	5
m,p-Xylenes	22000	22000	5
o-Xylene	33000	33000	5
Naphthalene	150	150	5
1,2,4-Trimethylbenzene	24	24	5

Notes:

a. USEPA. 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. Office of Solid Waste and Emergency Response (November). $R=10^{-5}$ used for residential. $R=10^{-4}$ used for non-residential.

b. ug/L = micrograms per liter

c. NYS, Div. Of Water Technical Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limittations, June 1998.

Table 2
TO-15 Target Analtyes and Reporting Limits

Standard Operating Procedures for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State

Compound	CAS Number	Reporting Limit (ppbv)	Reporting Limit (ug/m^3)
Acetone (2-propanone)	67-64-1	5.0	12
Benzene	71-43-2	0.20	0.64
Bromodichloromethane	75-27-4	0.20	1.3
Bromoethene	593-60-2	0.20	0.87
Bromoform	75-25-2	0.20	2.1
Bromomethane (Methyl bromide)	74-83-9	0.20	0.78
1,3-Butadiene	106-99-0	0.20	0.49
2-Butanone (Methyl ethyl ketone)	78-93-3	0.50	1.5
Carbon disulfide	75-15-0	0.50	1.6
Carbon tetrachloride	56-23-5	0.20	1.3
Chlorobenzene	108-90-7	0.20	0.92
Chloroethane	75-00-3	0.20	0.53
Chloroform	67-66-3	0.20	0.98
Chloromethane (Methyl chloride)	74-87-3	0.20	0.41
3-Chloropropene (allyl chloride)	107-05-1	0.20	0.63
2-Chlorotoluene (o-Chlorotoluene)	95-49-8	0.20	1.04
Cyclohexane	110-82-7	0.20	0.69
Dibromochloromethane	124-48-1	0.20	2.0
1,2-Dibromoethane	106-93-4	0.20	1.5
1,2-Dichlorobenzene	95-50-1	0.20	1.2
1,3-Dichlorobenzene	541-73-1	0.20	1.2
1,4-Dichlorobenzene	106-46-7	0.20	1.2
Dichlorodifluoromethane (Freon 12)	75-71-8	0.20	0.99
1,1-Dichloroethane	75-34-3	0.20	0.81
1,2-Dichloroethane	107-06-2	0.20	0.81
1,1-Dichloroethene	75-35-4	0.20	0.79
1,2-Dichloroethene (cis)	156-59-2	0.20	0.79
1,2-Dichloroethene (trans)	156-60-5	0.20	0.79
1,2-Dichloropropane	78-87-5	0.20	0.92
cis-1,3-Dichloropropene	10061-01-5	0.20	0.91
trans-1,3-Dichloropropene	10061-02-6	0.20	0.91
1,2-Dichlorotetrafluoroethane (Freon 114)	76-14-2	0.20	1.4
1,4-Dioxane	123-91-1	5.0	18
Ethylbenzene	100-41-4	0.20	0.87
4-Ethyltoluene (p-Ethyltoluene)	622-96-8	0.20	0.98
n-Heptane	142-82-5	0.20	0.83
Hexachlorobutadiene	87-68-3	0.20	2.1
n-Hexane	110-54-3	0.20	0.70
Isopropyl Alcohol	67-63-0	5.0	12.5
Methylene chloride	75-09-2	0.50	1.7
Methyl Butyl Ketone	591-78-6	0.50	2.05
4-Methyl-2-pentanone (MIBK)	108-10-1	0.50	2.05
MTBE (Methyl tert-butyl ether)	1634-04-4	0.50	1.8
Styrene	100-42-5	0.20	0.85
Tertiary butyl alcohol (TBA)	75-65-0	5.0	15
1,1,2,2-Tetrachloroethane	79-34-5	0.20	1.4
Tetrachloroethene (PCE)	127-18-4	0.20	1.4
Toluene	108-88-3	0.20	0.75
1,2,4-Trichlorobenzene	120-82-1	0.50	3.7
1,1,1-Trichloroethane	71-55-6	0.20	1.1
1,1,2-Trichloroethane	79-00-5	0.20	1.1
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	76-13-1	0.20	1.5
Trichloroethene (TCE)	79-01-6	0.20	1.07
Trichlorofluoromethane (Freon 11)	75-69-4	0.20	1.1
1,2,4-Trimethylbenzene	95-63-6	0.20	0.98
1,3,5-Trimethylbenzene	108-67-8	0.20	0.98
2,2,4-Trimethylpentane	540-84-1	0.20	1.08
Vinyl chloride	75-01-4	0.20	0.51
Xylenes (m&p)	1330-20-7	0.20	0.87
Xylenes (o)	95-47-6	0.20	0.87
Additional Compounds to be Requested			
1,2,3-Trimethylbenzene	80-62-6	0.20	0.98
Naphthalene	91-20-3	0.50	2.9
1-Methylnaphthalene	90-12-0	TBD	TBD
2-Methylnaphthalene	91-57-6	TBD	TBD
Tetramethylbenzene	25619-60-7	TBD	TBD
Indene	95-13-6	TBD	TBD
Indane	496-11-7	TBD	TBD
Thiophene	110-02-1	TBD	TBD

Notes:

a. Actual reporting limits of field samples may be higher due to sample dilution by the laboratory to quantify compounds at elevated concentrations.(see note b)

b. The laboratory must notify National Grid prior to sample dilution.

c. ppbv = part per billion by volume

d. ug/m3 = microgram per cubic meter

e. TBD = to be determined

Table 4
Potential MGP-Related Volatile Constituents

Standard Operating Procedures for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State

Benzene
Ethylbenzene
Toluene
Xylenes
Naphthalene
Indene
Indane
1,2,4-Trimethylbenzene [a]
Tetramethylbenzenes [a]
n-Nonane [a]
n-Decane [a]
n-Undecane [a]
n-Dodecane [a]

Note:
a. Volatile constituents associated with petroleum used at MGP sites that employed the carbureted water gas process.

Table 6

Data Evaluation Criteria

Standard Operating Procedures for Soil Vapor Intrusion Evaluations at National Grid MGP Sites in New York State

MGP-Related Constituent	Typical Indoor Air Concentrations (ug/m^3) [a]		USEPA OSWER Target Indoor Air Concentrations (ug/m^3) [b]	
	Residential	Non-Residential	Residential	Non-Residential
Benzene	13	9.4	3.1	31
Ethylbenzene	6.4	5.7	22	220
Toluene	57	43	400	400
m,p-Xylenes	11	22.2	7000	7000
o-Xylene	7.1	7.9	7000	7000
Naphthalene	NA [c]	5.1	3	3
Indene	NA	NA	NA	NA
Indane	NA	NA	NA	NA
1,2,4-Trimethylbenzene	9.8	9.5	6	6
n-Nonane	7.9	7.8	NA	NA
n-Decane	15	17.5	NA	NA
n-Undecane	12	22.6	NA	NA
n-Dodecane	9.2	15.9	NA	NA

Notes:

a. NYSDOH. 2005. " Guidance for Evaluating Soil Vapor Intrusion in the State of New York". Public Comment Draft (October 2006). As recommended by NYSDOH, typical indoor air concentrations in residential settings are the upper fence values from the NYSDOH 2003 Fuel Oil Study data. Typical concentrations in non-residential settings are the 90th percentile values from the USEPA BASE data. ug/m^3 = microgram per cubic meter.

b. USEPA. 2002. "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils". Office of Solid Waste and Emergency Response (November). $R=10^{-5}$ used for residential. $R=10^{-4}$ used for non-residential.

c. NA = not available

APPENDIX A

SOIL VAPOR SAMPLE COLLECTION PROCEDURES

(NYSDEC and NYSDOH Approved, March 15, 2007)

[Updated by National Grid and resubmitted September 18, 2007]

This set of procedures outlines the general steps to collect soil vapor samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations, sample depths, and sampling duration.

Soil Vapor Probe Installation

Permanent and temporary soil vapor probes will be installed using the procedure outlined below:

- Record weather information (temperature, barometric pressure, rainfall, wind speed, and wind direction). Record substantial changes to these conditions that may occur during the course of the probe installation. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Install soil vapor probes using a direct-push drill rig (e.g., GeoProbe® or similar) or manually using a slide hammer. Probes will consist of stainless-steel drive points with stainless steel screens attached to food-grade (inert) Teflon® or polyethylene tubing through which the soil vapor sample will be drawn. Recommended tubing is ¼-inch O.D. flouropolymer tubing that can be found at AMS, Inc. (Item 215.00).

- Attach the drive points to a drive rod (stainless-steel tube) and drive the rod to the target depth, as define in the site-specific work plan.

- Withdraw the drive rods from the hole, leaving the drive point and tubing.

- Place filter pack material, such as glass beads or clean silica sand, in the annular space surrounding the tubing directly above the sample point to a height of approximately 1 to 2 foot. The depth of the filter pack material should always be adequate to prevent the bentonite slurry above from going over the drive point and sample inlet screen. Recommended ground glass blast media can be found at W.W. Grainger, Inc. (Item 6ZC15).

- Place bentonite slurry in the annulus above the filter pack material to provide a seal in the borehole. Ideally, place the bentonite annular seal at least 3 feet thick, although adjustments to this thickness may be required based on site-specific conditions. The entire borehole must be filled to the ground surface with either entirely bentonite or with natural fill between two bentonite seals (one above the filter pack material and one at the ground surface). Permanent installations must have a surface seal made of cement or cement/bentonite grout.

- For permanent installations, install flush-mounted protective covers to protect the probe and the tubing.

- Cut the end of the tubing to allow proper closure of the flush-mounted protective cover, but with a sufficient length of tubing exposed at the surface to facilitate connection of sampling equipment.

- Close or cap the sample tubing following installation and following collection of each sample.

Collection of Soil Vapor Samples

Collecting soil vapor samples will be accomplished by using the following procedure:

- Record weather information (i.e., temperature, barometric pressure, rainfall, wind speed, and wind direction) at the beginning of the sampling event. Also, record substantial changes to these conditions that may have occurred over the past 24 to 48 hours and that do occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- Identify sampling locations on a plot plan that also identifies buildings, other landmarks, and potential sources of VOC contamination to both the surface and outdoor air. Record the depth of the probe screen below grade.

- If necessary, connect additional tubing to the tubing extending from the soil vapor probe to allow for connection to sample collection equipment.

- Calculate the volume of air in the probe, tubing (volume = $\pi r^2 h$), including any additional tubing added in the step above and the annular space between the probe and the native material if sand or glass beads were used.

- Connect a vacuum pump or gas-tight syringe (~60 cubic centimeters [cc]) to the sample tubing. At a flow rate of no more than 0.2 liter per minute (lpm), purge air from the tubing until one to three of the above-calculated air volumes are removed.

- During purging, evaluate the potential for ambient air to be introduced in the soil vapor sample through the annulus of the soil vapor probe or tubing connections using a tracer gas such as helium. The procedures for the tracer gas evaluation are described below. Note that the bentonite used in the probe installation should have sufficient time to seal before the samples are collected. The tracer gas evaluation will verify if the seal is sufficient.

- Use an evacuated Summa® passivated (or equivalent) stainless-steel canister to collect the soil vapor sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as identified in the project-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be batch certified as clean by the laboratory.

- Remove the protective brass plug from the canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of-custody form for each sample.

- Connect the tubing from the soil vapor probe to the flow controller.

- Completely open the valve on the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Monitor the vacuum pressure in the canister routinely during sampling.

- Stop sample collection when the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valve. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

- Provided that no additional sampling is expected to be conducted, either pull out (if practical) or abandon in place the sampling probe. When abandoning, cut the tubing back as far down as practical and cover to surface with native soil.

Tracer Gas Evaluation

The tracer gas evaluation provides a means to evaluate the integrity of the soil vapor probe seal and assess the potential for introduction of ambient air into the soil vapor sample. A tracer gas evaluation should be conducted on all soil vapor probes. After the initial round of sampling and with the approval of the regulating agency, the use of tracer gas may be reduced to a minimum of 10 percent for permanent and semi-permanent probes if the initial round results showed installations with competent seals.

The following tracer gas evaluation procedure uses in-field tracer gas measurements and tracer gases (e.g., helium) that can be measured by portable detectors.

- Retain the tracer gas around the sample probe by filling an air-tight chamber (such as a plastic bucket) positioned over the sample location.

- Make sure the chamber is suitably sealed to the ground surface.

- Introduce the tracer gas into the chamber. The chamber will have tubing at the top of the chamber to introduce the tracer gas into the chamber and a valved fitting at the bottom to let the ambient air out while introducing tracer gas. A tracer gas detector will be attached to the valve fitting at the bottom of the chamber to verify the presence of the tracer gas. Close the valve after the chamber has been enriched with tracer gas at concentrations >50%.

- The chamber will have a gas-tight fitting or sealable penetration to allow the soil vapor sample probe tubing to pass through and exit the chamber.

- After the chamber has been filled with tracer gas, attach the sample probe tubing to a pump that will be pre-calibrated to extract soil vapor at a rate of no more than 0.2 lpm. Purge the tubing using the pump. Calculate the volume of air in the tubing and probe and purge one to three tubing/probe volumes prior measuring the tracer gas concentration.

- Use the tracer gas detector to measure the tracer gas concentration in the pump exhaust.

- Record the tracer gas concentrations in the chamber and in the soil vapor sample.

If the evaluation indicates a high concentration of tracer gas in the sample (>10% of the concentration of the tracer gas in the chamber), then the surface seal is not sufficient and requires improvement via repair or replacement prior to commencement of the sample collection. A non-detectable level of tracer gas is preferred; however, if the evaluation indicates a low potential for introduction of ambient air into the sample (<10% of the concentration of the tracer gas in the chamber), then proceed with the soil vapor sampling. While lower concentrations of tracer gas are acceptable, the impact of the detectable leak on sample results should be evaluated in the sampling report.

APPENDIX B

AMBIENT AIR SAMPLE COLLECTION PROCEDURES

(NYSDEC and NYSDOH Approved, March 15, 2007)

This set of procedures outlines the general steps to collect ambient air samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations and sampling duration.

The following procedures will be followed for the collection of ambient air samples:

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- Select a location upwind of the building or other area that is being evaluated. If possible, select a location upwind or near the HVAC air intake for the building being sampled.

- Record weather information (i.e., temperature, barometric pressure, relative humidity, wind speed, and wind direction) at the beginning of the sampling event. Record substantial changes to these conditions that may occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Use an evacuated Summa® passivated (or equivalent) stainless-steel canister to collect the ambient air sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as defined in the site-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be individually certified as clean by the laboratory.

- Place the canister at the sampling location. If the sample should be collected from breathing height (e.g., 3 to 5 feet above ground), then mount the canister on a stable platform such that the sample inlet will be at the proper height.

- Remove the protective brass plug from canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of custody form for each sample.

- Completely open the valve on the vacuum pressure in the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Document on a field form an outdoor plot sketch that indicates the building being sampled, streets, sampling location, location of potential outdoor air sources, north direction and paved areas. Also record pertinent observations such as odors, readings from field instrumentation, and significant activities in the vicinity that result in air emissions.

- Monitor the vacuum pressure in the canister routinely during sampling, when practical (sometimes the canister will sample over a 24-hour period and routine monitoring is not practical). During monitoring, note the vacuum pressure on the gauge.

- Stop sample collection after the scheduled duration of sample collection but make sure that the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valves. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation_____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

_____

_____

_____

Airflow near source

_____

_____

_____

Outdoor air infiltration

_____

_____

_____

Infiltration into air ducts

_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: _____(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

_____

_____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other_____
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	_____
1st Floor	_____
2nd Floor	_____
3rd Floor	_____
4th Floor	_____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA Please specify_____

d. Has the building ever had a fire? Y / N When?_____

e. Is a kerosene or unvented gas space heater present? Y / N Where? _____

f. Is there a workshop or hobby/craft area? Y / N Where & Type? _____

g. Is there smoking in the building? Y / N How frequently? _____

h. Have cleaning products been used recently? Y / N When & Type? _____

i. Have cosmetic products been used recently? Y / N When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?_____

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

APPENDIX D

SUB-SLAB VAPOR SAMPLE COLLECTION PROCEDURES

(NYSDEC and NYSDOH Approved, March 15, 2007)

This set of procedures outlines the general steps to collect sub-slab vapor samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sample locations, sample depths, and sampling duration.

Sub-Slab Vapor Probe Installation

Temporary sampling probes will be installed using the following procedures:

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- If appropriate, record weather information (temperature, barometric pressure, rainfall, wind speed, and wind direction) at the beginning of the sampling event. Record substantial changes to these conditions that may have occurred over the past 24 to 48 hours and that do occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Identify sampling location(s) on a floor plan that also identifies any slab breeches (e.g., utility penetrations, sumps, drains, and cracks) and locations of HVAC equipment.

- Insert a section of food-grade (inert) Teflon® or other appropriate tubing through a 3/8-inch (approx.) hole drilled through the slab. If necessary, advance the drill bit 2 to 3 inches into the sub-slab material to create an open cavity.

- Install the tubing inlet to the specified sampling depth below the slab, not to exceed 2 inches.

- Seal the annular space between the hole and tubing using 100% beeswax or another inert, non-shrinking sealing compound such as permagum®.

Sub-Slab Vapor Sample Collection

Sub-slab vapor samples will be collected by following the steps outlined below.

- Purge the tubing using a vacuum pump or gas-tight syringe (~60 cc). Calculate the volume of air (volume = $\pi r^2 h$) in the tubing and purge one to three tubing volumes prior to sample collection at a rate no greater than 0.2 liter per minute (lpm).

- Use an evacuated Summa® passivated (or equivalent) canister to collect the sub-slab vapor sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as defined in the site-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be batch certified as clean by the laboratory.

- Remove the protective brass plug from canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of-custody form for each sample.

- Connect the tubing from the sub-slab vapor sampling probe to the flow controller.

- Completely open the valve on the canister. Record the time that the valve is opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Monitor the vacuum pressure in the canister routinely during sampling, when practical (sometimes the canister will sample over a 24-hour period and routine monitoring is not practical).

- Complete the NYSDOH building survey and chemical survey form.

- Stop sample collection after the scheduled duration of sample collected, but when the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valve. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

- For temporary probes, remove the probe and seal the slab hole with cement. Repair flooring, if any.

APPENDIX E

INDOOR AIR SAMPLE COLLECTION PROCEDURES

(NYSDEC and NYSDOH Approved, March 15, 2007)

This set of procedures outlines the general steps to collect indoor air samples. The site-specific Sampling and Analysis Work Plan should be consulted for proposed sampling locations and other indoor air requirements (inventory, etc.).

Indoor air samples will be collected by following the steps outlined below:

- Sampling personnel must avoid activities immediately before and during the sampling that may contaminate the sample (e.g., using markers, fueling vehicles, etc.).

- Record weather information (temperature, barometric pressure, relative humidity, wind speed, and wind direction) and indoor temperature and humidity at the beginning of the sampling event. Record substantial changes to these conditions that may have occurred over the past 24 to 48 hours and that do occur during the course of sampling. The information may be measured with on-site equipment or obtained from a reliable source of local measurements (e.g., a local airport).

- Identify sampling location(s) on a floor plan that also identifies locations of HVAC equipment, chemical storage areas, garages, doorways, stairways, sumps, drains, utility perforations, north direction, and separate footing sections

- Use an evacuated Summa® passivated (or equivalent) stainless-steel canister to collect the outdoor air sample. The canister will be provided by the laboratory, along with a flow controller equipped with an in-line particulate filter and a vacuum gauge. The flow controller will be pre-calibrated by the laboratory for the desired flow rate or duration of sample collection, as defined in the site-specific work plan. The sampling flow rate should always be less than 0.2 lpm. The canisters will be individually certified as clean by the laboratory.

- Place the canister at the sampling location. The sample should be collected from breathing height (e.g., 3 to 5 feet above ground). Either mount the canister on a stable platform or attach

a length of inert tubing to the flow controller inlet and support it such that the sample inlet will be at the proper height.

- Remove the protective brass plug from canister. Connect the pre-calibrated flow controller to the canister.

- Record the identification numbers for the canister and flow controller. Record the initial canister pressure on the vacuum gauge (check equipment-specific instructions for taking this measurement). A canister with a significantly different pressure than originally recorded by the testing laboratory should not be used for sampling. Record these numbers and values on the chain-of custody form for each sample.

- Completely open the valve on the vacuum pressure in the canister. Record the time that the valve was opened (beginning of sampling) and the canister pressure on the vacuum gauge.

- Photograph the canister and the area surrounding the canister.

- Monitor the vacuum pressure in the canister routinely during sampling, when practical (sometimes the canister will sample over a 24-hour period and routine monitoring is not practical). During monitoring, note the vacuum pressure on the gauge.

- Complete the NYSDOH building survey and chemical survey form.

- Stop sample collection after the scheduled duration of sample collection, but make sure that the canister still has a minimum amount of vacuum remaining. Check with the laboratory supplying the canister and flow controller for the ideal final vacuum pressure. Typically, the minimum vacuum is between 2 and 5 inches of mercury, but not zero. If there is no vacuum remaining, the sample will be rejected and collected again in a new canister.

- Record the final vacuum pressure and close the canister valves. Record the date and time that sample collection was stopped.

- Remove the flow controller from the canister and replace the protective brass plug.

- Attach labels/tags (sample name, time/date of sampling, etc.) to the canister as directed by the laboratory.

- Place the canister and other laboratory-supplied equipment in the packaging provided by the laboratory.

- Enter the information required for each sample on the chain-of-custody form, making sure to include the identification numbers for the canister and flow controller, and the initial and final canister pressures on the vacuum gauge.

- Include the required copies of the chain-of-custody form in the shipping packaging, as directed by the laboratory. The field crew will retain a copy of the chain-of-custody for the project file.

- Deliver or ship the samples to the laboratory within one business day of sample collection and via overnight delivery (when shipping).

Appendix F

Building Owner/Occupant Instructions Prior to Vapor Intrusion Sampling

Some household products and activities can emit chemicals into the indoor air that could interfere with the evaluation of the sampling results. Therefore, it is strongly urged that building occupants refrain from the following activities at least 48 hours before sampling is conducted and during sampling:

- opening windows, fireplace openings or vents;
- keeping doors open for long periods of time;
- operating ventilation fans or air conditioning;
- use of scented candles, air fresheners or odor eliminators;
- smoking;
- use of wood stoves, fireplaces or auxiliary heating equipment, such as a kerosene heater;
- use of paints or varnishes;
- use of cleaning products such as household cleaners, floor cleaners, bathroom cleaners, furniture polish, etc.
- use of cosmetics, including hair spray, nail polish removers and perfume, etc.;
- use of solvents, such as paint thinners, glues, automobile degreasing chemicals, WD-40, etc.;
- use of pesticides (e.g. RAID), herbicides and fungicides;
- use of building repair or maintenance products, such as caulk and roofing tar;
- lawn mowing, paving with asphalt, or snow blowing;
- storing gasoline, oil or petroleum-based or other solvents within the building or attached garage (except for fuel oil tanks); and
- operating or storing automobiles or other gasoline-powered equipment or vehicles in an attached garage.

It should also be noted that any containers of paint, varnish, cleaning products, or solvents stored inside the building should be securely sealed.

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Ambient Air (Canister) Sample Collection Field Form

Project # _____ Consultant _____

Project Name _____ Collector _____

Sample ID _____

Vacuum gauge "zero" ("Hg) _____

Start Date/Time _____ Start Pressure ("Hg) _____

End Date/Time _____ End Pressure ("Hg) _____

Canister ID _____ End pressure > "zero"? _____

Flow controller ID _____ Sampling duration (intended) _____

Tubing type used _____ Length of tubing _____ cm Tubing volume _____ cc

Volume purged _____ cc @ _____ min 1 to 3 volumes purged @ < 200cc/min? _____

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Relative humidity _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Site Plan showing sample location, building(s) being sampled, building HVAC inlet, outdoor air sources, wind direction

Comments: _____

_____

_____

_____

_____

nationalgrid

Indoor Air (Canister) Sample Collection Field Form

Project # _____ Consultant _____

Project Name _____ Collector _____

Sample ID _____

Vacuum gauge "zero" ("Hg) _____

Start Date/Time _____ Start Pressure ("Hg) _____

End Date/Time _____ End Pressure ("Hg) _____

Canister ID _____ End pressure > "zero"? _____

Flow controller ID _____ Sampling duration (intended) _____

Associated ambient air sample ID _____ Associated sub-slab vapor sample ID _____

Tubing type used _____ Length of tubing _____ cm Tubing volume _____ cc

Volume purged _____ cc @ _____ min 1 to 3 volumes purged @ < 200cc/min? _____

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Relative humidity _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Indoor air temp (^{o}F) _____ Indoor relative humidity (%) _____

Building Survey and Chemical Inventory Form Completed? _____ Photograph IDs _____

Floor Plan showing sample location, HVAC equipment, indoor air sources, preferential pathways

Comments: _____

_____

_____

_____

_____

nationalgrid

Sub-slab Vapor (Canister) Sample Collection Field Form

Project # _____ Consultant _____

Project Name _____ Collector _____

Sample ID _____

Vacuum gauge "zero" ("Hg) _____

Start Date/Time _____ Start Pressure ("Hg) _____

End Date/Time _____ End Pressure ("Hg) _____

Canister ID _____ End pressure > "zero"? _____

Flow controller ID _____ Sampling duration (intended) _____

Associated indoor air sample ID _____ Associated ambient air sample ID _____

Tubing type used _____ Length of tubing _____ cm Tubing volume _____ cc

Volume purged _____ cc @ _____ min 1 to 3 volumes purged @ < 200cc/min? _____

Weather Conditions at Start of Sampling:

Air temperature (°F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Indoor air temp (°F) _____ Indoor relative humidity (%) _____

Building Survey and Chemical Inventory Form Completed? _____ Photograph IDs _____

Floor Plan showing sample location, HVAC equipment, indoor air sources, preferential pathways

Comments: _____

_____

_____

_____

_____

nationalgrid

Soil Vapor (Canister) Sample Collection Field Form

Project # _____ Consultant _____

Project Name _____ Collector _____

Sample ID _____

Vacuum gauge "zero" ("Hg) _____

Start Date/Time _____ Start Pressure ("Hg) _____

End Date/Time _____ End Pressure ("Hg) _____

Canister ID _____ End pressure > "zero"? _____

Flow controller ID _____ Sampling duration (intended) _____

Associated ambient air sample ID _____ Depth of sample point below grade _____

Tubing type used _____ Length of tubing _____ cm Tubing volume _____ cc

Volume purged _____ cc @ _____ min 1 to 3 volumes purged @ < 200cc/min? _____

Chamber tracer gas conc. _____ Tracer gas conc. during purging _____

Weather Conditions during Probe Installation:

Air temperature (^{o}F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways

Comments: _____

_____

_____

_____

nationalgrid

Ambient Air (Canister) Sample Collection Field Form

Project # _____ Consultant _____

Project Name _____ Collector _____

Sample ID _____

Vacuum gauge "zero" ("Hg) _____

Start Date/Time _____ Start Pressure ("Hg) _____

End Date/Time _____ End Pressure ("Hg) _____

Canister ID _____ End pressure > "zero"? _____

Flow controller ID _____ Sampling duration (intended) _____

Tubing type used _____ Length of tubing _____ cm Tubing volume _____ cc

Volume purged _____ cc @ _____ min 1 to 3 volumes purged @ < 200cc/min? _____

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Relative humidity _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Site Plan showing sample location, building(s) being sampled, building HVAC inlet, outdoor air sources, wind direction

Comments: _____

_____

_____

_____

_____

nationalgrid

Indoor Air (Canister) Sample Collection Field Form

Project # _____ Consultant _____

Project Name _____ Collector _____

Sample ID _____

Vacuum gauge "zero" ("Hg) _____

Start Date/Time _____ Start Pressure ("Hg) _____

End Date/Time _____ End Pressure ("Hg) _____

Canister ID _____ End pressure > "zero"? _____

Flow controller ID _____ Sampling duration (intended) _____

Associated ambient air sample ID _____ Associated sub-slab vapor sample ID _____

Tubing type used _____ Length of tubing _____ cm Tubing volume _____ cc

Volume purged _____ cc @ _____ min 1 to 3 volumes purged @ < 200cc/min? _____

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Relative humidity _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Indoor air temp (^{o}F) _____ Indoor relative humidity (%) _____

Building Survey and Chemical Inventory Form Completed? _____ Photograph IDs _____

Floor Plan showing sample location, HVAC equipment, indoor air sources, preferential pathways

Comments: _____

_____

_____

_____

_____

nationalgrid

Sub-slab Vapor (Canister) Sample Collection Field Form

Project # _____ Consultant _____

Project Name _____ Collector _____

Sample ID _____

Vacuum gauge "zero" ("Hg) _____

Start Date/Time _____ Start Pressure ("Hg) _____

End Date/Time _____ End Pressure ("Hg) _____

Canister ID _____ End pressure > "zero"? _____

Flow controller ID _____ Sampling duration (intended) _____

Associated indoor air sample ID _____ Associated ambient air sample ID _____

Tubing type used _____ Length of tubing _____ cm Tubing volume _____ cc

Volume purged _____ cc @ _____ min 1 to 3 volumes purged @ < 200cc/min? _____

Weather Conditions at Start of Sampling:

Air temperature (°F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Indoor air temp (°F) _____ Indoor relative humidity (%) _____

Building Survey and Chemical Inventory Form Completed? _____ Photograph IDs _____

Floor Plan showing sample location, HVAC equipment, indoor air sources, preferential pathways

Comments: _____

_____

_____

_____

_____

nationalgrid

Soil Vapor (Canister) Sample Collection Field Form

Project # _____ Consultant _____

Project Name _____ Collector _____

Sample ID _____

Vacuum gauge "zero" ("Hg) _____

Start Date/Time _____ Start Pressure ("Hg) _____

End Date/Time _____ End Pressure ("Hg) _____

Canister ID _____ End pressure > "zero"? _____

Flow controller ID _____ Sampling duration (intended) _____

Associated ambient air sample ID _____ Depth of sample point below grade _____

Tubing type used _____ Length of tubing _____ cm Tubing volume _____ cc

Volume purged _____ cc @ _____ min 1 to 3 volumes purged @ < 200cc/min? _____

Chamber tracer gas conc. _____ Tracer gas conc. during purging _____

Weather Conditions during Probe Installation:

Air temperature (^{o}F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Weather Conditions at Start of Sampling:

Air temperature (^{o}F) _____ Rainfall _____ Wind direction _____

Barometric pressure _____ Wind speed (mph) _____

Substantial changes in weather conditions during sampling or over the past 24 to 48 hrs:

_____

_____

Site Plan showing sample location, buildings, landmarks, potential soil vapor and outdoor air sources, preferential pathways

Comments: _____

_____

_____

_____

Appendix H

Quality Assurance Project Plan (Electronic Format)

Prepared for:
National Grid
Richmond County, New York

Quality Assurance Project Plan

Former Clifton Manufactured Gas Plant (MGP) Site
Richmond County, New York
NYSDEC Site Code: 243023

AECOM
January 2016

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List of Acronyms

%R	Percent recovery
ASP	Analytical services program
ASTM	American Society for Testing Materials
CAMP	Community Air Monitoring Plan
CAR	Corrective Action Request
CLP	Contract laboratory program
COC	Chain of custody
CRDLs	Contract Required Detection Limits
CRQLs	Contract Required Quantitation Limits
DQOs	Data quality objectives
DUSR	Data Usability Summary Report
EDD	Electronic data deliverable
ELAP	Environmental Laboratory Accreditation Program
GC/MS	Gas Chromatography/Mass Spectroscopy
HASP	Health and safety plan
LIMS	Laboratory information management system
MDLs	Method detection limits
MGP	Manufactured gas plant
MS	Matrix spike
MSD	Matrix spike duplicate
NIST	National Institute of Standards and Technology
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PA	Preliminary assessment
PID	Photoionization detector
PQL	Practical quantitation limit
QA	Quality assurance
QAO	Quality assurance officer
QAPP	Quality Assurance Project Plan
QC	Quality control
RPD	Relative percent difference
SOPs	Standard operating procedures

SVOA	Semivolatile organic analysis
SVOCs	Semivolatile organic compounds
TCLP	Toxicity characteristics leaching procedure
USEPA	United States Environmental Protection Agency
VOA	Volatile organic analysis
VOCs	Volatile organic compounds

1.0 Introduction

This Quality Assurance Project Plan (QAPP) details the protocols and procedures that will be followed during any ground intrusive and monitoring activities covered under the Site Management Plan [(SMP); AECOM, December 2014] for the former Clifton Manufactured Gas Plant Site (site) located in Clifton, New York. The purpose of these protocols and procedures is to ensure that all project activities will be performed in a manner consistent with the data quality objectives (DQOs) established for the project and all data collected are precise, accurate, representative, comparable, and complete.

1.1 Project Description

This document is required as an element of the remedial program at the site under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by the NYS Department of Environmental Conservation (NYSDEC). A predecessor company to National Grid owned and operated the former Manufactured Gas Plant until 1957. A predecessor company to National Grid executed an Order on Consent with the NYSDEC (Index #D2-0001-98-04, Site #2-43-023) in 1998 to investigate and remediate the site (NYSDEC, 1998a). The site and surrounding off-site areas were remediated in accordance with the Order on Consent. The locations of the site and surrounding off-site areas are shown on Figures 1-1 and 1-2 of the SMP.

1.1.1 General

This Order on Consent required the Remedial Party, National Grid, to investigate and remediate contaminated media at the site and surrounding off-site areas. The site is separated into two properties of land, portion of 40 Willow Avenue and 25 Willow Avenue. For purposes of further discussion in this Site Management Plan, the term “site” will include the following properties:

- Portion of 40 Willow Avenue, Block 2842 Lot 50 (OU-1)
- 25 Willow Avenue, Block 2841 Lot 91 (OU-2)

The term off-site areas will include the following properties:

- 53 Lynhurst Avenue (adjacent property to the south of 40 Willow Avenue, OU-1)
- 89 Willow Avenue (adjacent property to the west of 25 Willow Avenue, OU-2)
- The City of New York sidewalks and roads (east and south of 25 Willow Avenue, OU-2)
- Block 2822 Lots 21, 22, 23, 24, and 26 (east of 25 Willow Avenue and Bay Street, OU-2)

After completion of the remedial work described in the various Remedial Action/Remedial Design Work Plans, some contamination remains in the subsurface at the site and the off-site areas (only in portions defined above), which is hereafter referred to as ‘remaining contamination.” This FSAP was developed as an appendix (Appendix G) to the SMP which was prepared to manage remaining contamination at the Site in perpetuity or until extinguishment of the Environmental Easement in accord with NYS Environmental Conservation Law (ECL) Article 71, Title 36.

This document was prepared by AECOM, on behalf of National Grid, in accord with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation [(DER-10); DEC, 2010] and the guidelines provided by NYSDEC.

1.2 Scope of Work

The scope of work covered under this QAPP includes but is not limited to:

- Underground utility work
- Surface/shallow subsurface soil sampling and analysis
- Soil boring advancement, subsurface soil sampling and analysis
- Excavation of test pits, soil sampling and analysis
- Monitoring well installation and development
- Groundwater sampling and analysis
- Indoor air and ambient air sampling and analysis
- Investigation-derived waste management
- Community air monitoring
- Site survey
- Data validation evaluation, and reporting

1.3 Data Quality Objectives

DQOs are qualitative and quantitative statements to ensure that data of known and appropriate quality are obtained during any activities. Data will be used to achieve the overall objectives of the project. These objectives are to:

- Identify potential residual Manufactured Gas Plant (MGP) contamination during any subsurface activity.
  - Data will identify MGP-related constituents in soil and groundwater.
  - Data will be collected using a systematic method to delineate the perimeter of MGP-related impacts.
  - Analytical methods will be of sufficient sensitivity that method detection limits (MDLs) and practical quantitation limits (PQLs) measure constituent concentrations at or below constituent NYSDEC guidance values.
- Perform, if necessary, an indoor air survey in accordance with NYS Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York. The DQOs for vapor intrusion data include the following items.
  - Data will identify MGP-related constituents in indoor air (if present).
  - Data will be collected using a systematic method to determine whether vapor intrusion of MGP-related impacts is occurring.
  - Analytical methods will be of sufficient sensitivity to meet a minimum PQL of at most one part per billion.

1.3.1 Data Quality Levels

There are five analytical levels of data quality which may be used to accomplish these objectives. They are typically designated as follows:

- Level I – Field screening or analysis using portable instruments, calibrated to non-compound specific standards
- Level II – Field analysis using portable instruments, calibrated to specific compounds
- Level III – Non-Contract Laboratory Program (CLP/ASP) laboratory methods
- Level IV – ASP-CLP Routine Analytical Services methods
- Level V – Non-standard analytical methods.

To meet the specific objectives of this project, Levels I and III data quality levels will be utilized.

1.3.1.1 Level I – Field Screening Methods

These tests, which are quantitative and/or semi-quantitative, are classified as field screening evaluations, even though they typically are not used for characterization purposes.

Soil and soil headspace screening will be conducted using a photoionization detector (PID) to determine the soil boring interval(s) that will be submitted for analytical laboratory analysis.

In addition, as part of the Health and Safety Plan (HASP) and the Community Air Monitoring Plan (CAMP), worker safety and ambient air quality may be monitored using one or more of a variety of field screening tests. Applicable equipment may include but not be limited to: a PID, Draeger tubes, and personal monitors to test for volatile organic vapors, or a combustible gas indicator to test for explosive potential. Worker health and safety requirements are specified in the HASP.

1.3.1.2 Level III – Non-Contract Laboratory Program (CLP/ASP) Laboratory Methods

Samples will be analyzed according to the required United States Environmental Protection Agency (USEPA) SW-846, ASTM, and USEPA Compendium air methods described in the most recent editions of the USEPA reference methods (see section 7.0). Data will be analyzed using Level III Non-Contract Laboratory Program (CLP/ASP) laboratory methods; however, the laboratory will provide Level IV data packages for all data including hazardous waste classification data. Laboratory data will be reported in the New York State Analytical Services Program (ASP) Category B deliverables format. This level of data quality will ensure the generation of legally and technically defensible data for project use. The laboratory performing the analysis of samples will be certified for the specific parameters pursuant to NYSDOH ELAP Certification program.

2.0 Project Organization

Any field activity will be completed for National Grid by an environmental contractor (the Contractor), who will arrange for analytical services and provide an onsite field representative to perform the oversight, soil logging, soil sampling, surveying, and groundwater sampling. The Contractor will also perform the data interpretation and reporting tasks.

Any field activity to be completed on behalf of the respective Property owner must require at least 15 day notification to National Grid and DEC.

Key contacts for this project are as follows:

National Grid Project Manager:

Name: Andrew Prophete
Address: 287 Maspeth Avenue, Brooklyn, NY
Telephone: (718) 963-5412
Fax: (718) 963-5611
Email: andrew.prophete@us.ngrid.com

NYSDEC Project Manager:

Name: Section Chief
Address: New York State Department of Environmental Conservation
Site Control Section, Bureau of Technical Support
625 Broadway Albany, New York 12233-7014
Telephone: (518) 402-9662
Fax: (518) 402-9679

3.0 Quality Assurance/Quality Control Objectives for Measurement of Data

3.1 Introduction

The quality assurance and quality control (QA/QC) objectives for all measurement data include precision, accuracy, representativeness, completeness, and comparability. These objectives are defined in following subsections. They are formulated to meet the requirements of the USEPA SW-846. The analytical methods and their Contract Required Quantitation Limits (CRQLs) and Contract Required Detection Limits (CRDLs) are provided in Section 7.

3.2 Precision

Precision is an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Specifically, it is a quantitative measurement of the variability of a group of measurements compared to their average value (USEPA, 1987). Precision is usually stated in terms of standard deviation, but other estimates such as the coefficient of variation (relative standard deviation), range (maximum value minus minimum value), relative range, and relative percent difference (RPD) are common.

For this Site, field sampling precision will be determined by analyzing coded duplicate samples (labeled so that the laboratory does not recognize them as duplicates) for the same parameters, and then, during data validation (Section 8), calculating the RPD for field duplicate sample results.

Analytical precision will be determined by the laboratory by calculating the RPD for the results of the analysis of internal QC duplicates and matrix spike duplicates. The formula for calculating RPD is as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where:

RPD= Relative Percent Difference

V1, V2 = The two values to be compared

|V1 - V2| = The absolute value of the difference between the two values

(V1 + V2)/2 = The average of the two values

For soil samples, the data quality objectives for analytical precision, calculated as the RPD between duplicate analyses, is presented in Table 3-1.

The same is presented for groundwater in Table 3-2 and air samples in Table 3-3.

Table 3-1 Quality Control Limits For Soil Samples

Analytical	Analytical Method [a]	Matrix Spike (MS) Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
VOCs [e]	8260B	1,1-Dichloroethane	77-139	20	50-150	Toluene-d8	63-124
		Trichloroethene	81-129	20	82-113	Bromofluorobenzene	50-133
		Benzene	83-135	20	81-118	1,2-Dichloroethane-d4	54-142
		Toluene	79-140	20	81-115		
		Chlorobenzene	80-141	20	83-114		
SVOCs [f]	8270C	Phenol	42-105	20	48-96	Nitrobenzene-d5	28-110
		2-Chlorophenol	52-107	20	54-92	2-Fluorobiphenyl	32-109
		1,4-Dichlorobenzene	40-101	20	57-86	Terphenyl-d14	30-150
		N-Nitroso-di-n-propylamine	63-97	20	49-99	Phenol-d5	29-104
		1,2,4-Trichlorobenzene	42-98	20	57-93	2-Fluorophenol	23-104
		4-Chloro-3-methylphenol	60-100	20	57-92	2,4,6-Tribromophenol	24-112
		Acenaphthene	65-100	20	52-97		
		4-Nitrophenol	45-95	20	24-120		
		2,4-Dinitrotoluene	56-104	20	61-101		
		Pentachlorophenol	33-111	20	32-102		
		Pyrene	49-120	20	53-103		
PCBs (as Aroclors)	8082	Aroclor-1016	55-128	20	67-121	TCMX	44-141
		Aroclor-1260	58-140	20	78-128	DCB	34-145

Analytical	Analytical Method [a]	Matrix Spike (MS) Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
Pesticides	8081A	4,4'-DDD	35-165	20	86-133	TCMX	30-158
		4,4'-DDE	50-144	20	80-130	DCB	30-161
		4,4'-DDT	23-170	20	72-141		
		Aldrin	57-145	20	84-133		
		alpha-BHC	37-154	20	81-136		
		beta-BHC	51-161	20	83-132		
		delta-BHC	43-159	20	77-131		
		gamma-BHC (Lindane)	48-159	20	83-135		
		alpha-Chlordane	44-156	20	88-132		
		gamma-Chlordane	61-147	20	87-135		
Pesticides (cont.)	8081A	Dieldrin	41-154	20	81-129		
		Endosulfan II	52-151	20	85-132		
		Endosulfan sulfate	32-162	20	76-135		
		Endrin	31-165	20	82-134		
		Endrin aldehyde	48-152	20	85-134		
		Endrin ketone	70-141	20	87-132		
		Heptachlor	41-155	20	85-132		
		Heptachlor epoxide	44-160	20	86-132		
		Methoxychlor	44-163	20	82-137		
		Toxaphene	50-150	20	50-150		

Analytical	Analytical Method [a]	Matrix Spike (MS) Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
Herbicides	8151A	2,4,5-TP (Silvex)	47-128	20	47-128	2,4-DCAA	50-130
		2,4,5-T	72-130	20	72-130		
		2,4-D	55-122	20	55-122		
		2,4-DB	75-125	20	75-125		
Inorganics [h]	6010B	Inorganic Analyte	75-125 [i]	20 [j]	80-120	NA	NA
	6020		75-125 [i]	20 [j]	80-120	NA	NA
	7471A		75-125 [i]	20 [j]	80-120	NA	NA
	ASTM D4282-02 (free cyanide)		75-125 [i]	20 [j]	90-110	NA	NA

Notes
(a) Analytical Methods: USEPA SW-846, 3rd edition, Revision 1, November 1990, any subsequent revisions shall supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
(e) Target Compound List Volatile Organic Compounds
(f) Target Compound List Semivolatile Organic Compounds
(g) Limits are advisory only
(h) Target Analyte List Inorganics (metals and cyanide)
(i) Matrix spike only
(j) Laboratory duplicate RPD
NA - Not Applicable

Table 3-2 Quality Control Limits for Water Samples

Analytical	Analytical Method [a]	Matrix Spike Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
VOCs [e]	8260B	1,1-Dichloroethane	55-139	20	55-139	Toluene-d8	83-117
		Trichloroethene	55-138	20	61-138	Bromofluorobenzene	74-123
		Benzene	85-121	20	66-125	1,2-Dichloroethane-d4	75-124
		Toluene	83-123	20	68-121		
		Chlorobenzene	85-119	20	70-122		
SVOCs [f]	8270C	Phenol	11-48	20	10-100	Nitrobenzene-d5	30-120
		2-Chlorophenol	35-99	20	41-91	2-Fluorobiphenyl	35-111
		1,4-Dichlorobenzene	49-88	20	53-91	Terphenyl-d14	26-135
		N-Nitroso-di-n-propylamine	55-127	20	54-116	Phenol-d5	30-77
		1,2,4-Trichlorobenzene	62-105	20	59-104	2-Fluorophenol	30-78
		4-Chloro-3-methylphenol	12-125	20	46-97	2,4,6-Tribromophenol	27-118
		Acenaphthene	68-99	20	63-101		
		4-Nitrophenol	10-89	20	10-78		
		2,4-Dinitrotoluene	61-99	20	67-106		
		Pentachlorophenol	39-107	20	33-100		
		Pyrene	72-112	20	64-108		
PCBs (as Aroclors)	8082	Aroclor-1016	30-150	20	65-126	TCMX	42-133
		Aroclor-1260	36-147	20	76-131	DCB	30-141
Pesticides	8081A	4,4'-DDD	55-177	20	86-134	TCMX	30-150

Analytical	Analytical Method [a]	Matrix Spike Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
		4,4'-DDE	54-126	20	89-126	DCB	45-131
Pesticides (continued)	8081A	4,4'-DDT	55-160	20	74-138		
		Aldrin	57-167	20	83-131		
		alpha-BHC	63-178	20	87-136		
		beta-BHC	50-150	20	88-131		
		delta-BHC	98-131	20	78-128		
		gamma-BHC (Lindane)	89-138	20	86-133		
		alpha-Chlordane	69-144	20	88-131		
		gamma-Chlordane	76-126	20	92-133		
Pesticides (cont.)	8081A	Dieldrin	72-136	20	81-132		
		Endosulfan I	84-127	20	91-132		
		Endosulfan II	79-138	20	90-129		
		Endosulfan sulfate	84-134	20	99-130		
		Endrin	75-143	20	87-130		
		Endrin aldehyde	62-160	20	95-133		
		Endrin ketone	87-135	20	90-130		
		Heptachlor	63-131	20	85-131		
		Heptachlor epoxide	82-125	20	89-132		
		Methoxychlor	76-161	20	88-139		
		Toxaphene	50-150	20	50-150		
Herbicides	8151A	2,4,5-TP (Silvex)	48-140	20	48-140	2,4-DCAA	45-140

Analytical	Analytical Method [a]	Matrix Spike Compounds	Laboratory Accuracy and Precision			Surrogate Compounds	Surrogate Recovery (%)
			MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	LCS [d] Recovery (%)		
		2,4,5-T	60-145	20	60-145		
Herbicides (continued)	8151A	2,4-D	60-138	20	60-138		
		2,4-DB	75-125	20	75-125		
Inorganics [h]	6010B	Inorganic Analyte	75-125 [i]	20 [j]	80-120	NA	NA
	6020		75-125 [i]	20 [j]	80-120	NA	NA
	7470A		75-125 [i]	20 [j]	80-120	NA	NA
	9012 (cyanide)		75-125 [i]	20 [j]	80-120	NA	NA

Notes

(a) Analytical Methods: USEPA SW-846, 3rd edition, Revision 1, November 1990, any subsequent revisions shall supersede this information
(b) MS/MSD = Matrix Spike/Matrix Spike Duplicate
(c) RPD = Relative Percent Difference
(d) LCS = Laboratory Control Sample
(e) Target Compound List Volatile Organic Compounds
(f) Target Compound List Semivolatile Organic Compounds
(g) Limits are advisory only
(h) Target Analyte List Inorganics (metals and cyanide)
(i) Matrix spike only
(j) Laboratory duplicate RPD
NA - Not Applicable

Table 3-3 Quality Control Limits for Air Samples

Analytical Parameter	Analytical Method [a]	Analyte Compounds	LCS [d] Recovery (%)	Duplicate RPD [c], [e] (%)	Laboratory Accuracy and Precision			
					MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	Surrogate Compounds	Surrogate Recovery (%)
VOCs	TO-15 Mod.	Acetone	60-140	25	NA	NA	Toluene-d8 Bromofluorobenzene 1,2-Dichloroethane-d4	70-130 70-130 70-130
		Bromodichloromethane	60-140	25				
		Butadiene, 1,3-	60-140	25				
		Carbon Disulfide	60-140	25				
		Chloro-1-Propene, -3 (Allyl Chloride)	60-140	25				
		Chlorodibromomethane	60-140	25				
		Cumene	60-140	25				
		Dichloroethylene, Trans-1,2-	60-140	25				
		Dioxane, 1,4-	60-140	25				
		Hexane	60-140	25				
		Methyl Ethyl Ketone	60-140	25				
		Methyl Isobutyl Ketone	60-140	25				
		Methyl Tert-Butyl Ether (MTBE)	60-140	25				
		Naphthalene	60-140	25				
		Propylbenzene, N-	60-140	25				
		Tribromomethane (Bromoform)	60-140	25				
		Cyclohexane	60-140	25				
		2-Hexanone	60-140	25				

Analytical Parameter	Analytical Method [a]	Analyte Compounds	LCS [d] Recovery (%)	Duplicate RPD [c], [e] (%)	Laboratory Accuracy and Precision			
					MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	Surrogate Compounds	Surrogate Recovery (%)
		4-Ethyltoluene	60-140	25				
		Ethanol	60-140	25				
		Heptane	60-140	25				
		2-Methylpentane	60-140	25				
		Isopentane	60-140	25				
		2,3-Dimethylpentane	60-140	25				
		2,2,4-Trimethylpentane	60-140	25				
		Indene	60-140	25				
		Indan	60-140	25				
		Thiopene	60-140	25				
		2-Propanol	60-140	25				
		Tetrahydrofuran	60-140	25				
VOCs	TO-15 Mod.	Benzene	70-130	25	NA	NA	Toluene-d8 Bromofluorobenzene 1,2-Dichloroethane-d4	70-130 70-130 70-130
		Bromomethane	70-130	25				
		Carbon Tetrachloride	70-130	25				
		Chlorobenzene	70-130	25				
		Chloroethane	70-130	25				
		Chloroform	70-130	25				
		Dibromoethane, 1,2- (Ethylene Dibromide)	70-130	25				

Analytical Parameter	Analytical Method [a]	Analyte Compounds	LCS [d] Recovery (%)	Duplicate RPD [c], [e] (%)	Laboratory Accuracy and Precision			
					MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	Surrogate Compounds	Surrogate Recovery (%)
		Dichlorobenzene, 1,2-	70-130	25				
		Dichlorobenzene, 1,3-	70-130	25				
		Dichlorobenzene, 1,4-	70-130	25				
		Dichlorodifluoromethane (Freon 12)	70-130	25				
		Dichloroethane, 1,1-	70-130	25				
		Dichloroethane, 1,2-	70-130	25				
		Dichloroethylene, 1,1-	70-130	25				
		Dichloroethylene, Cis-1,2-	70-130	25				
		Dichloromethane (Methylene Chloride)	70-130	25				
		Dichloropropane, 1,2-	70-130	25				
		Dichloropropene, Cis-1,3-	70-130	25				
		Dichloropropene, Trans-1,3-	70-130	25				
		1,2-Dichloro-1,1,2,2,-tetrafluoroethane	70-130	25				
		Ethyl Benzene	70-130	25				
		Fluorotrichloromethane (Freon 11)	70-130	25				
		Methyl Chloride	70-130	25				
		Styrene	70-130	25				
		Tetrachloroethane, 1,1,2,2-	70-130	25				

Analytical Parameter	Analytical Method [a]	Analyte Compounds	LCS [d] Recovery (%)	Duplicate RPD [c], [e] (%)	Laboratory Accuracy and Precision			
					MS/MSD [b] Recovery (%)	MS/MSD RPD [c] (%)	Surrogate Compounds	Surrogate Recovery (%)
		Tetrachloroethylene (PCE)	70-130	25				
		Toluene	70-130	25				
		Trichloro-1,2,2-Trifluoroethane, 1,1,2-	70-130	25				
		Trichlorobenzene, 1,2,4-	70-130	25				
VOCs	TO-15 Mod.	Trichloroethane, 1,1,1-	70-130	25	NA	NA	Toluene-d8 Bromofluorobenzene 1,2-Dichloroethane-d4	70-130 70-130 70-130
		Trichloroethane, 1,1,2-	70-130	25				
		Trimethylbenzene, 1,3,5-	70-130	25				
		Vinyl Chloride	70-130	25				
		m,p-xylene	70-130	25				
		o-xylene	70-130	25				
		Hexachlorobutadiene	70-130	25				
		alpha-chlorotoluene	70-130	25				
Fixed Gas	ASTM D1945 Mod.	Helium	75-125	30	NA	NA	NA	NA

Notes

(a) USEPA, 1999. Compendium Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared-Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). January 1999.

American Society of Testing Materials, 2003. D1945-03. Standard Test Method for Analysis of Natural Gas by Gas Chromatograph, 2003.

(b) Matrix Spike/Matrix Spike Duplicate

(c) Relative Percent Difference

(d) Laboratory Control Sample
(e) Laboratory duplicate RPD
NA - Not Applicable

3.3 Accuracy

Accuracy is a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern (Taylor, 1987), or the difference between a measured value and the true or accepted reference value. The accuracy of an analytical procedure is best determined by the analysis of a sample containing a known quantity of material, and is expressed as the percent of the known quantity which is recovered or measured. The recovery of a given analyte is dependent upon the sample matrix, method of analysis, and the specific compound or element being determined. The concentration of the analyte relative to the detection limit of the analytical method is also a major factor in determining the accuracy of the measurement. Concentrations of analytes which are close to the detection limits are less accurate because they are more affected by such factors as instrument "noise". Higher concentrations will not be as affected by instrument noise or other variables and thus will be more accurate.

Sampling accuracy may be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy is typically assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks. Additionally, initial and continuing calibrations must be established and be within method control limits. Instrument and method analytical accuracy can then be determined for any sample set.

Accuracy is normally measured as the percent recovery (%R) of a known amount of analyte, called a spike, added to a sample (matrix spike) or to a blank (blank spike). The %R is calculated as follows:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:

%R = Percent recovery
SSR = Spike sample result: concentration of analyte obtained by analyzing the sample with the spike added
SR = Sample result: the background value, i.e., the concentration of the analyte obtained by analyzing the sample
SA = Spiked analyte: concentration of the analyte spike added to the sample

The acceptance limits for accuracy for each parameter are presented in Tables 3-1, 3-2, and 3-3.

3.4 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter which is most concerned with the proper design of the sampling program (USEPA, 1987). Samples must be representative of the environmental media being sampled. Selection of sample locations and sampling procedures will incorporate consideration of obtaining the most representative sample possible.

Field and laboratory procedures will be performed in such a manner as to ensure, to the degree that is technically possible, that the data derived represents the in-place quality of the material sampled.

Every effort will be made to ensure that chemical compounds will not be introduced into the sample via sample containers, handling, and analysis. Decontamination of sampling devices and digging equipment will be performed between samples. Analysis of field blanks, trip blanks, and method blanks will also be performed to monitor for potential sample contamination from field and laboratory procedures.

The assessment of representativeness also must consider the degree of heterogeneity in the material from which the samples are collected. Sampling heterogeneity will be evaluated during data validation through the analysis of coded field duplicate samples. The analytical laboratory will also follow acceptable procedures to assure the samples are adequately homogenized prior to taking aliquots for analysis, so the reported results are representative of the sample received.

Chain-of-custody procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling. Details of blank, duplicate and chain-of-custody procedures are presented in Sections 4 and 5.

3.5 Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid (USEPA, 1987). The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested. Completeness is defined as follows for all sample measurements:

$$\%C = \frac{V}{T} \times 100$$

where:

%C = Percent completeness
V = Number of measurements judged valid
T = Total number of measurements

3.6 Comparability

Comparability expresses the degree of confidence with which one data set can be compared to another (USEPA, 1987). The comparability of all data collected for this project will be ensured by:

- Using identified standard methods for both sampling and analysis phases of this project,
- Requiring traceability of all analytical standards and/or source materials to the USEPA or National Institute of Standards and Technology (NIST),
- Requiring that all calibrations be verified with an independently traceable standard from a source other than that used for calibration (if applicable),
- Using standard reporting units and reporting formats including the reporting of QC data,
- Performing a complete data validation on all of the analytical results, including the use of data qualifiers in all cases where appropriate,
- Requiring that all validation qualifiers be considered any time an analytical result is used for any purpose.

These steps will ensure all future users of either the data or the conclusions drawn from them will be able to judge the comparability of these data and conclusions.

4.0 Sampling Program

4.1 Introduction

The sampling program, if necessary, will provide data concerning the presence and the nature and extent of contamination of groundwater, soil, and air. This section presents sample collection procedures, sample container preparation procedures, sample preservation procedures, sample holding times, and field QC sample requirements.

4.2 Sample Collection

Soil, groundwater, and air samples may be collected at the Site. The location and frequency of sampling and the methods selected for field procedures and laboratory analysis are described in detail in the SMP.

4.3 Sample Container Preparation and Sample Preservation

All sample containers will be new and will meet the specifications required by the USEPA. Copies of the sample container QC analyses will be provided by the laboratory for each container lot used for sample collection. The containers will be labeled and the appropriate preservatives will be added. The container requirements are shown in Tables 4-1, 4-2, and 4-3.

Samples shall be preserved according to the preservation techniques given in Tables 4-1 through 4-3. Preservatives will be added to the sample bottles by the laboratory prior to their shipment in sufficient quantities to ensure that proper sample pH is met. Following sample collection, the sample bottles should be placed on ice in the shipping cooler, cooled to 4 ± 2 ºC with ice, and delivered to the laboratory within 48 hours of collection. Chain-of-custody (COC) procedures are described in Section 5.

4.4 Sample Holding Times

The sample holding times for organic and inorganic parameters are given in Tables 4-1 through 4-3 and must be in accordance with the NYSDEC ASP requirements. Holding times for Toxicity Characteristic Leaching Procedure (TCLP) samples are given in Table 4-4. The NYSDEC ASP holding times must be strictly adhered to by the laboratory. Any holding time exceedances must be reported to National Grid.

4.5 Field Quality Control Samples

To assess field sampling and decontamination performance, two types of "blanks" will be collected and submitted to the laboratory for analyses. In addition, the precision of field sampling procedures will be assessed by collecting coded field duplicates and matrix spike/matrix spike duplicates (MS/MSD). The blanks will include the following.

- Trip Blanks – A trip blank will be prepared before the sample containers are sent by the laboratory. The trip blank will consist of a 40-ml VOA vial containing distilled, deionized water, which accompanies the water sample bottles into the field and back to the laboratory. A trip

blank will be included with each shipment of water samples for volatiles analysis. The trip blank will be analyzed for volatile organic compounds to assess any contamination from sampling, transport, storage, and internal laboratory procedures.

- Rinseate Blanks – Rinseate blanks will be taken at a minimum frequency of one per 20 field samples per sample matrix. Rinseate blanks are used to determine the effectiveness of the decontamination procedures for sampling equipment. It is a sample of reagent water provided by the laboratory that has passed through a decontaminated bailer or other sampling apparatus. It is usually collected as a last step in the decontamination procedure, prior to taking an environmental sample. The rinseate blank may be analyzed for all or some of the parameters of interest.

The duplicates collected to assess field sampling/laboratory precision and sample homogeneity will consist of the following.

- Coded Field Duplicate – To determine the representativeness of the sampling methods, coded field duplicates will be collected. The samples are termed "coded" because they will be labeled in such a manner that the laboratory will not be able to determine that they are field duplicate samples. This will eliminate any possible bias that could arise. Field duplicates will be taken at a minimum frequency of one per 20 field samples per sample matrix.

- Matrix Spike/Matrix Spike Duplicate (MS/MSD) – MS/MSD samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be collected at a frequency of one pair per 20 field samples. MS/MSD samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes. The advisory acceptance limits for MS/MSD %R and RPDs are given in Tables 3-1 and 3-2.

Table 4-1 Soil and Waste Sample Containerization and Holding Times

Analysis	Bottle Type	Preservation [(a)]	Holding Time [(b)]
Volatile Organic Compounds (VOCs)	Wide-mouth glass w/ Teflon lined cap	Cool to 4ºC	10 days
Extractable Organic Compounds [(c)]	Wide-mouth glass w/ Teflon lined cap	Cool to 4ºC	10 days*
Metals	Wide-mouth plastic or glass	Cool to 4ºC	6 months, except mercury (26 days)
Cyanide	Wide-mouth plastic	Cool to 4ºC	10 days
TCLP Organic Compounds	Wide-mouth glass w/ Teflon lined cap	Cool to 4ºC	See Table 4-5
TCLP Metals	Wide-mouth plastic or glass	Cool to 4ºC	See Table 4-5
Total Petroleum Hydrocarbons (TPH)	DRO: Clear glass GRO: Clear glass	DRO: Cool to 4ºC GRO: Cool to 4ºC	DRO: 7 days to extraction/40 days to analysis GRO: 14 days
Corrosivity	Clear glass	None	Analyze ASAP
Ignitability	Clear glass	None	Analyze ASAP
Reactive Cyanide and Sulfide	Clear glass	None	Analyze ASAP
Total Organic Halogens	Amber glass	pH < 2 with H_2SO_4, Cool to 4ºC, Dark	28 days

Notes
(a) All samples to be preserved with ice during collection and transport
(b) Days from verified time of sample receipt (VTSR).
(c) Semivolatile organic compounds, PCBs, pesticides, herbicides.

* Sohxlet or sonication procedures for extraction and concentration of soil/waste samples for SVOCs must be completed within 5 days of VTSR. Sohxlet or sonication procedures for extraction and concentration of soil/sediment/waste samples for PCBs must be completed within 5 days of VTSR. Extracts of soil samples must be analyzed within 40 days of extraction.

Table 4-2 Water Sample Containerization and Holding Times

Analysis	Bottle Type	Preservation [(a)]	Holding Time [(b)]
Volatile Organic Compounds (VOCs)	(2) 40 mL glass vial with Teflon septum	Cool to 4ºC	10 days
Extractable Organic Compounds [(c)]	1000 mL glass w/ Teflon-lined cap	Cool to 4ºC	5 days*
Metals	1000 mL plastic bottle	Nitric Acid to pH < 2 Cool to 4ºC	6 months, except mercury (26 days)
Cyanide	500 mL plastic bottle	NaOH to pH > 12 Cool to 4ºC	10 days

Notes
(a) All samples to be preserved in ice during collection and transport.
(b) Days from validated time of sample receipt (VTSR)
(c) Semivolatile organic compounds, PCBs, pesticides, herbicides

* Continuous liquid-liquid extraction is the required extraction for water samples for SVOCs. Continuous liquid-liquid extraction and concentration of water samples for SVOC analysis must begin within 5 days and be completed within 7 days of VTSR. Extracts of water samples must be analyzed within 40 days of extraction.

Table 4-3 Soil Gas Sample Containerization and Holding Times

Analysis	Bottle Type	Preservation	Holding Time [b]
Volatile Organic Compounds (VOCs)	6 L Summa® canister [a]	NA	30 days
Fixed Gases (Helium)	6 L Summa® canister [a]	NA	30 days

Notes

(a) Stainless steel SUMMA® canisters must be certified clean by the laboratory using TO-15 § 8.4.1. The canisters will be delivered to the field with a pressure of 28-30" Hg. Canisters received with a vacuum pressure less than 25" Hg will not be used.

(b) Days from date of sample collection. The holding time for the TO-15 analysis is 30 days. The holding time for an evacuated canister is 30 days. After 30 days, unused canisters must be exchanged for recently cleaned canisters.

Table 4-4 TCLP [a] Sample Holding Times

Analytical Parameter	From: Sample Collection To: TCLP Extraction*	From: TCLP Extraction To: Preparative Extraction	From: Preparative Extraction To: Determinative Analysis
Volatiles	7 days	NA	7 days
Semivolatiles	5 days	7 days	40 days
PCBs (as Aroclors)	5 days	7 days	40 days
Mercury	5 days	NA	28 days
Metals (except Mercury)	180 days	NA	180 days

Notes:

NA - Not Applicable.

(a) Toxicity Characteristic Leaching Procedure.

*Times shown are from verified time of sample receipt (VSTR).

5.0 Sample Tracking and Custody

5.1 Introduction

This section presents sample custody procedures for both the field and laboratory. Implementation of proper custody procedures for samples collected in the field is the responsibility of field personnel. Both laboratory and field personnel involved in collection and transfer of samples will be trained as to the purpose and procedures for sample custody prior to implementation.

Evidence of sample traceability and integrity is provided by COC procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. The sample custody flowchart is shown in Figure 5-1. A sample is considered to be in a person's custody if the sample is:

- In a person's possession,
- Maintained in view after possession is accepted and documented,
- Locked and tagged with Custody Seals so that no one can tamper with it after having been in physical custody,
- In a secured area which is restricted to authorized personnel.

5.2 Field Sample Custody

A COC record (Figure 5-2 or similar) accompanies the sample containers from selection and preparation at the laboratory, during shipment to the field for sample collection and preservation, and during the return to the laboratory. Triplicate copies of the COC must be completed for each sample set collected.

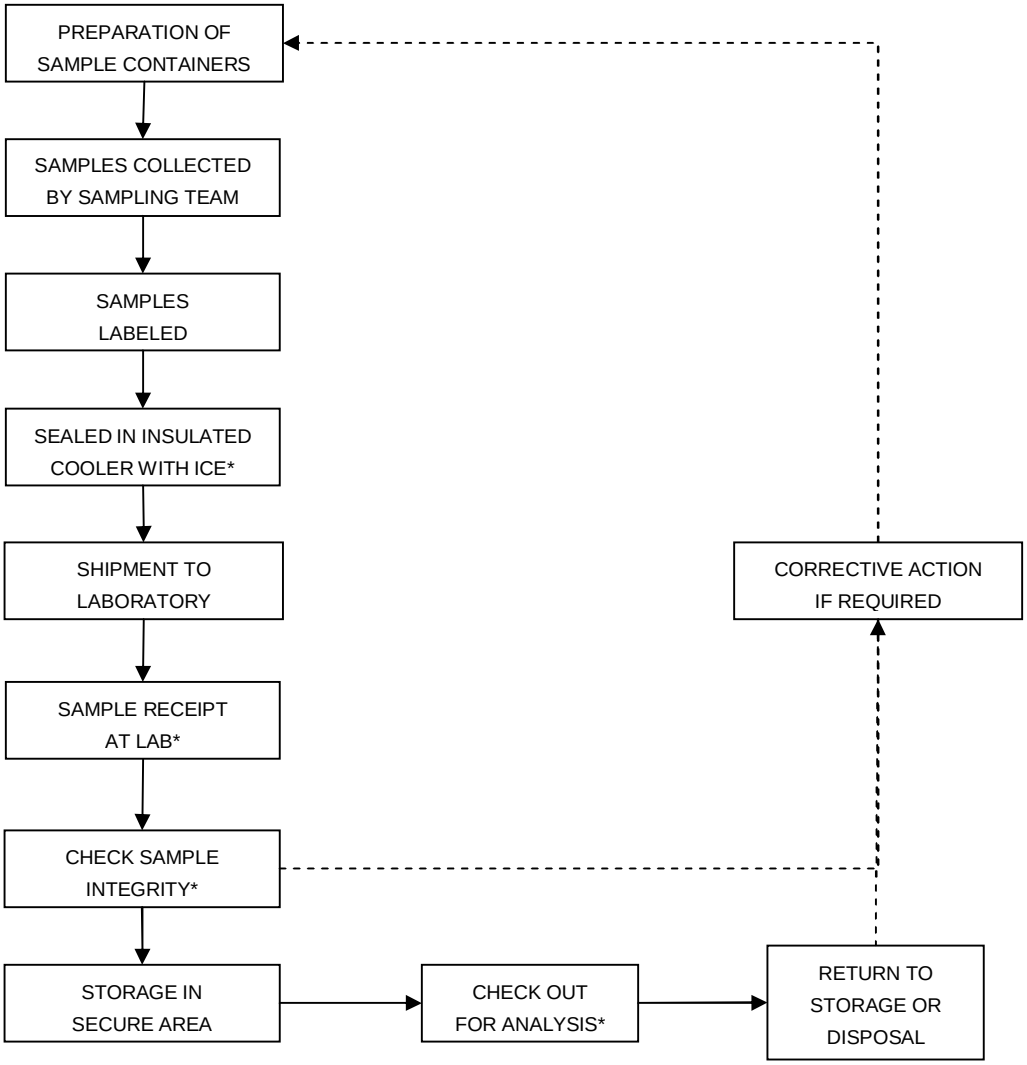
The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

The **REMARKS** space on the COC is used to indicate if the sample is a matrix spike, matrix spike duplicate, or any other sample information for the laboratory. Since they are not specific to any one sample point, trip and field blanks are indicated on separate rows. Once all bottles are properly accounted for on the form, a sampler will write his or her signature and the date and time on the first **RELINQUISHED BY** space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper airbill number on the top of the COC. Errors in field records will be crossed out with a single line in ink and initialed by the author.

One copy of the COC is retained by sampling personnel and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody

seals provided by the laboratory are affixed to the latch and across the back and front of the cooler lid, and the person relinquishing the samples signs their name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the sample(s) will not be analyzed.

Figure 5-1 Sample Custody Flowdown



*Requires Sign-Off On Chain-Of-Custody.

Figure 5-2 Chain-Of-Custody Record

CHAIN OF CUSTODY RECORD

Client Name		Purchase Order	
Address		Phone/Fax #	
City	State Zip	Report Attention:	
Sampled by:		Signature:	

Number of Containers

Analyses Requested

Turnaround Time: Standard: ____ Other: ____ Rush: 24 Hr ____ 48 Hr ____

Compliance Monitoring: Yes: ___ No: ___

Lab Use Only: Sub-Sample pH <2 >12

Date Sampled	Time Sampled	Sample Type *	Sample Identification	Preservative* See Key Below	Number of Containers									Remarks	pH <2	pH >12

	Signature	Print Name	Company	Date	Time
Relinquished By:					
Received By:					
Relinquished By:					
Received By:					
Relinquished By:					
Received By Laboratory:					

Custody Seal Intact
Yes ____ No ____ None ____

Sample Temperature

Degrees C _____

Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The analytical results associated with this COC apply only to the samples as they are received by the laboratory. The liability of the laboratory is limited to the amount paid for the report.
Terms: Net thirty days on approved credit.

** KEY:* Sample Type: 1=Drinking Water, 2=Surface Water, 3=Ground Water, 4=Waste Water, 5=Soil, 6=RCRA, 7=Other
Preservative: 1=NaOH, 2=NaOH + ZnOAC, 3=HNO3, 4=H2SO4, 5=Na2S2O3, 6=None, 7=Other

SEM COC Form Revised 02/01

5.3 Laboratory Sample Custody

The Project Manager or Field Team Leader will notify the laboratory of upcoming field sampling activities and the subsequent shipment of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped as well as the anticipated date of arrival.

The following laboratory sample custody procedures will be used:

- The laboratory will designate a sample custodian who will be responsible for maintaining custody of the samples and for maintaining all associated records documenting that custody.
- Upon receipt of the samples, the custodian will check cooler temperature, and check the original COC documents and compare them with the labeled contents of each sample container for correctness and traceability. The sample custodian will sign the COC record and record the date and time received.
- Care will be exercised to annotate any labeling or descriptive errors. In the event of documentation or sample integrity issues, the laboratory will immediately contact the Project Manager or Field Team Leader as part of the corrective action process. A qualitative assessment of each sample container will be performed to note any anomalies, such as broken or leaking bottles. This assessment will be recorded as part of the incoming COC procedure.
- The soil, water, and air samples will be stored in a secured area until analyses commence, at a temperature of approximately 4 ± 2 ˚C if required.
- A laboratory tracking record will accompany the sample or sample fraction through final analysis for control.

A copy of the tracking record will accompany the laboratory report and will become a permanent part of the project records.

6.0 Calibration Procedures

6.1 Field Instruments

All field analytical equipment will be calibrated immediately prior to each day's use. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. Records of all instrument calibration will be maintained by the Field Team Leader. Copies of all the instrument manuals will be maintained onsite by the Field Team Leader.

Calibration procedures for instruments used for monitoring health and safety hazards (e.g., photoionization detector [PID] and explosimeter) are provided in the HASP. More frequent calibration may be needed depending on conditions encountered in the field.

6.2 Laboratory Instruments

The laboratory will follow all calibration procedures and schedules as specified in the sections of the USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods given in Section 7.

7.0 Analytical Procedures

7.1 Introduction

Soil, water, and waste samples will be analyzed according to the USEPA SW-846 "*Test Methods for Evaluating Solid Waste*," November 1986, 3rd edition and subsequent updates. Air and soil gas samples will be analyzed according to the USEPA Compendium Method TO-15, *Determination of VOCs in Air Collected in Specially Prepared-Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1999 and helium (fixed gas) analyses will be performed using American Society for Testing Materials (ASTM), Method 1945 modified. The methods to be used for the laboratory analysis of water and soil samples are presented in Tables 7-1 and 7-2. The soil gas and ambient air samples will be analyzed by USEPA Method TO-15 as presented in Table 7-3. These methods were selected because they attain the quantitation limits and DQOs required by the project, which are compiled on Tables 7-1 through 7-3. All analytical analysis will be conducted at an ELAP certified laboratory as per Section 1.3.1.2.

Table 7-1 Project Quantitation Limits for Soil and Water

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [(a)] (µg/L)	Soil [(b)] (µg/kg)
Volatile Organics						
71-55-6	1,1,1-Trichloroethane	SW8260B	5	5	5	800
79-34-5	1,1,2,2-Tetrachloroethane	SW8260B	5	5	5	600
79-00-5	1,1,2-Trichloroethane	SW8260B	5	5	1	
76-13-1	1,1,2-Trichlorotrifluoroethane	SW8260B	5	5	5	
75-34-3	1,1-Dichloroethane	SW8260B	5	5	5	200
75-35-4	1,1-Dichloroethene	SW8260B	5	5	5	400
120-82-1	1,2,4-Trichlorobenzene	SW8260B	5	5	5	3400
96-12-8	1,2-Dibromo-3-Chloropropane	SW8260B	5	5	0.04	
106-93-4	1,2-Dibromoethane	SW8260B	5	5	0.0006	
95-50-1	1,2-Dichlorobenzene	SW8260B	5	5	3	7900
107-06-2	1,2-Dichloroethane	SW8260B	5	5	0.6	100
78-87-5	1,2-Dichloropropane	SW8260B	5	5	1	
541-73-1	1,3-Dichlorobenzene	SW8260B	5	5	3	1600
106-46-7	1,4-Dichlorobenzene	SW8260B	5	5	3	8500
78-93-3	2-Butanone	SW8260B	25	25	50	300
591-78-6	2-Hexanone	SW8260B	25	25	50	
108-10-1	4-Methyl-2-Pentanone	SW8260B	25	25		1000
67-64-1	Acetone	SW8260B	25	25	50	200
71-43-2	Benzene	SW8260B	5	5	1	60
75-27-4	Bromodichloromethane	SW8260B	5	5	50	
75-25-2	Bromoform	SW8260B	5	5	50	
74-83-9	Bromomethane	SW8260B	5	5	5	
75-15-0	Carbon Disulfide	SW8260B	5	5		2700
56-23-5	Carbon Tetrachloride	SW8260B	5	5	5	600
108-90-7	Chlorobenzene	SW8260B	5	5	5	1700
75-00-3	Chloroethane	SW8260B	5	5	5	1900
67-66-3	Chloroform	SW8260B	5	5	7	300
74-87-3	Chloromethane	SW8260B	5	5	5	
156-59-2	cis-1,2-Dichloroethene	SW8260B	5	5	5	
10061-01-5	cis-1,3-Dichloropropene	SW8260B	5	5	0.4	
110-82-7	Cyclohexane	SW8260B	5	5		
124-48-1	Dibromochloromethane	SW8260B	5	5	50	
75-71-8	Dichlorodifluoromethane	SW8260B	5	5	5	
100-41-4	Ethyl Benzene	SW8260B	5	5	5	5500
98-82-8	Isopropylbenzene	SW8260B	5	5	5	
79-20-9	Methyl Acetate	SW8260B	5	5		
1634-04-4	Methyl tert-butyl Ether	SW8260B	5	5		
108-87-2	Methylcyclohexane	SW8260B	5	5		
75-09-2	Methylene Chloride	SW8260B	5	5	5	100
100-42-5	Styrene	SW8260B	5	5	930	
10061-02-6	t-1,3-Dichloropropene	SW8260B	5	5	0.4	

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [(a)] (µg/L)	Soil [(b)] (µg/kg)
127-18-4	Tetrachloroethene	SW8260B	5	5	5	1400
108-88-3	Toluene	SW8260B	5	5	5	1500
156-60-5	trans-1,2-Dichloroethene	SW8260B	5	5	5	300
79-01-6	Trichloroethene	SW8260B	5	5	5	700
75-69-4	Trichlorofluoromethane	SW8260B	5	5	5	
Volatile Organics (continued)						
75-01-4	Vinyl Chloride	SW8260B	5	5	2	200
136777-61-2	m/p-Xylenes	SW8260B	10	10	5	1200
95-47-6	o-Xylene	SW8260B	5	5	5	
Semivolatile Organics						
92-52-4	1',1-Biphenyl	SW8270C	10	330	5	
108-60-1	2,2'-oxybis(1-Chloropropane)	SW8270C	10	330	5	
95-95-4	2,4,5-Trichlorophenol	SW8270C	10	330		100
88-06-2	2,4,6-Trichlorophenol	SW8270C	10	330		
120-83-2	2,4-Dichlorophenol	SW8270C	10	330		400
105-67-9	2,4-Dimethylphenol	SW8270C	10	330		
51-28-5	2,4-Dinitrophenol	SW8270C	10	330		200
121-14-2	2,4-Dinitrotoluene	SW8270C	10	330	5	
606-20-2	2,6-Dinitrotoluene	SW8270C	10	330	5	1000
91-58-7	2-Chloronaphthalene	SW8270C	10	330	10	
95-57-8	2-Chlorophenol	SW8270C	10	330		800
91-57-6	2-Methylnaphthalene	SW8270C	10	330		36400
95-48-7	2-Methylphenol	SW8270C	10	330		100
88-74-4	2-Nitroaniline	SW8270C	10	330	5	430
88-75-5	2-Nitrophenol	SW8270C	10	330		330
91-94-1	3,3'-Dichlorobenzidine	SW8270C	10	330	5	n/a
65794-96-9	3+4-Methylphenols	SW8270C	10	330		900
99-09-2	3-Nitroaniline	SW8270C	10	330	5	500
534-52-1	4,6-Dinitro-2-methylphenol	SW8270C	10	330		
101-55-3	4-Bromophenyl-phenyl ether	SW8270C	10	330		
59-50-7	4-Chloro-3-methylphenol	SW8270C	10	330		240
106-47-8	4-Chloroaniline	SW8270C	10	330	5	220
7005-72-3	4-Chlorophenyl-phenyl ether	SW8270C	10	330		
100-01-6	4-Nitroaniline	SW8270C	10	330	5	
100-02-7	4-Nitrophenol	SW8270C	10	330		100
83-32-9	Acenaphthene	SW8270C	10	330	20	50000
208-96-8	Acenaphthylene	SW8270C	10	330		41000
98-86-2	Acetophenone	SW8270C	10	330		
120-12-7	Anthracene	SW8270C	10	330	50	50000
1912-24-9	Atrazine	SW8270C	10	330	7.5	
56-55-3	Benzo(a)anthracene	SW8270C	10	330	0.002	224
50-32-8	Benzo(a)pyrene	SW8270C	10	330	ND	61
205-99-2	Benzo(b)fluoranthene	SW8270C	10	330	0.002	1100
191-24-2	Benzo(g,h,i)perylene	SW8270C	10	330		50000

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [a] (µg/L)	Soil [b] (µg/kg)
207-08-9	Benzo(k)fluoranthene	SW8270C	10	330	0.002	1100
100-52-7	Benzaldehyde	SW8270C	10	330		
111-91-1	bis(2-Chloroethoxy)methane	SW8270C	10	330	5	
111-44-4	bis(2-Chloroethyl)ether	SW8270C	10	330	1	
117-81-7	bis(2-Ethylhexyl)phthalate	SW8270C	10	330	5	50000
85-68-7	Butylbenzylphthalate	SW8270C	10	330	50	50000
105-60-2	Caprolactam	SW8270C	10	330		
86-74-8	Carbazole	SW8270C	10	330		
218-01-9	Chrysene	SW8270C	10	330	0.002	400
53-70-3	Dibenzo(a,h)anthracene	SW8270C	10	330		14
Semivolatile Organics (continued)						
132-64-9	Dibenzofuran	SW8270C	10	330		6200
84-66-2	Diethylphthalate	SW8270C	10	330	50	7100
131-11-3	Dimethylphthalate	SW8270C	10	330	50	2000
84-74-2	Di-n-butylphthalate	SW8270C	10	330	50	8100
117-84-0	Di-n-octyl phthalate	SW8270C	10	330	50	50000
206-44-0	Fluoranthene	SW8270C	10	330	50	50000
86-73-7	Fluorene	SW8270C	10	330	50	50000
118-74-1	Hexachlorobenzene	SW8270C	10	330	0.04	410
87-68-3	Hexachlorobutadiene	SW8270C	10	330	0.5	
77-47-4	Hexachlorocyclopentadiene	SW8270C	10	330	5	
67-72-1	Hexachloroethane	SW8270C	10	330	5	
193-39-5	Indeno(1,2,3-cd)pyrene	SW8270C	10	330	0.002	3200
78-59-1	Isophorone	SW8270C	10	330	50	4400
91-20-3	Naphthalene	SW8270C	10	330	10	13000
98-95-3	Nitrobenzene	SW8270C	10	330	0.4	200
621-64-7	N-Nitroso-di-n-propylamine	SW8270C	10	330		
86-30-6	N-Nitrosodiphenylamine	SW8270C	10	330	50	
87-86-5	Pentachlorophenol	SW8270C	10	330		1000
85-01-8	Phenanthrene	SW8270C	10	330	50	50000
108-95-2	Phenol	SW8270C	10	330		30
129-00-0	Pyrene	SW8270C	10	330	50	50000
Metals						
7429-90-5	Aluminum	6010B / 6020	50	5000	2000	SB
7440-36-0	Antimony	6010B / 6020	25	2500	6	SB
7440-38-2	Arsenic	6010B / 6020	10	1000	50	7500
7440-39-3	Barium	6010B / 6020	50	5000	2000	300000
7440-41-7	Beryllium	6010B / 6020	3	300	3	160
7440-43-9	Cadmium	6010B / 6020	3	300	5	1000
7440-70-2	Calcium	6010B / 6020	1000	100000		SB
7440-47-3	Chromium	6010B / 6020	5	500	100	10000
7440-48-4	Cobalt	6010B / 6020	15	1500	5	30000
7440-50-8	Copper	6010B / 6020	10	1000	1000	25000
7439-89-6	Iron	6010B / 6020	50	5000	600	2000000
7439-92-1	Lead	6010B / 6020	6	600	50	400 [c]

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [(a)] (µg/L)	Soil [(b)] (µg/kg)
7439-95-4	Magnesium	6010B / 6020	1000	100000	35000	SB
7439-96-5	Manganese	6010B / 6020	10	1000	600	SB
7440-02-0	Nickel	6010B / 6020	20	2000	200	13000
7440-09-7	Potassium	6010B / 6020	1000	100000		SB
7782-49-2	Selenium	6010B / 6020	10	1000	20	2000
7440-22-4	Silver	6010B / 6020	5	500	100	SB
7440-23-5	Sodium	6010B / 6020	1000	100000		SB
7440-28-0	Thallium	6010B / 6020	20	2000	0.5	SB
7440-62-2	Vanadium	6010B / 6020	20	2000		150000
7440-66-6	Zinc	6010B / 6020	20	2000	5000	20000
7439-97-6	Mercury	7471A	0.2	10	1.4	100
Inorganics						
n/a	Cyanide, Free	ASTM D4282-02 / 9013A		60		
n/a	Cyanide, Total	9012 / 9010A	10		400	
Pesticides						
72-54-8	4,4'-DDD	8081	0.05	1.7	0.3	2900
72-55-9	4,4'-DDE	8081	0.05	1.7	0.2	2100
50-29-3	4,4'-DDT	8081	0.2	1.7	0.2	2100
309-00-2	Aldrin	8081	0.05	1.7	ND	41
319-84-6	alpha-BHC	8081	0.05	1.7	0.01	110
319-85-7	beta-BHC	8081	0.2	1.7	0.04	200
319-86-8	delta-BHC	8081	0.05	1.7	0.04	300
58-89-9	gamma-BHC (Lindane)	8081	0.05	1.7	0.05	60
5103-71-9	alpha-Chlordane	8081	0.05	1.7		540
5566-34-7	gamma-Chlordane	8081	0.05	1.7		540
57-74-9	Chlordane	8081	0.5	17	0.05	540
60-57-1	Dieldrin	8081	0.05	1.7	0.004	44
959-98-8	Endosulfan I	8081	0.05	1.7		900
33213-65-9	Endosulfan II	8081	0.05	1.7		900
1031-07-8	Endosulfan sulfate	8081	0.05	1.7		1000
72-20-8	Endrin	8081	0.05	1.7	ND	100
7421-93-4	Endrin aldehyde	8081	0.05	1.7	5	
53494-70-5	Endrin ketone	8081	0.05	1.7	5	
76-44-8	Heptachlor	8081	0.05	1.7	0.04	100
1024-57-3	Heptachlor epoxide	8081	0.05	1.7	0.03	20
72-43-5	Methoxychlor	8081	0.05	1.7	35	
8001-35-2	Toxaphene	8081	0.5	17	0.06	
PCB's						
12674-11-2	Aroclor-1016	8082	0.5	17	0.09* Applies to the sum of the PCBs	1000 (total surface soil) 10000 (total subsurface
11104-28-2	Aroclor-1221	8082	0.5	17		
11141-16-5	Aroclor-1232	8082	0.5	17		
53469-21-9	Aroclor-1242	8082	0.5	17		
12672-29-6	Aroclor-1248	8082	0.5	17		

CAS No.	Analysis/Compound	Method	Quantitation Limits		State of New York Standards	
			Water (µg/L)	Soil (µg/kg)	Water [a] (µg/L)	Soil [b] (µg/kg)
11097-69-1	Aroclor-1254	8082	0.5	17		soil)
11096-82-5	Aroclor-1260	8082	0.5	17		
37324-23-5	Aroclor-1262	8082	0.5	17		
11100-14-4	Aroclor-1268	8082	0.5	17		
Herbicides						
93-72-1	2,4,5-TP (Silvex)	8151	2	67	0.26	700
93-76-5	2,4,5-T	8151	2	67		1900
94-75-7	2,4-D	8151	2	67		500
94-82-6	2,4-DB	8151	2	67		

Notes:

N/A - Not Applicable

SB - soil background

ND - not detected

(a) - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, NYSDEC, October 1993, reissued June 1998

(b) - Determination of Soil Cleanup Objectives and Cleanup Levels, NYSDEC, January 24, 1994

(c) - EPA Guidance on Residential Lead-Based Paint, Lead Contaminated Dust, and Lead Contaminated Soil, July 14, 1994

Table 7-2 Practical Quantitation Limits (PQLs) for TCLP

Compound	SW-846 Analysis	Water (µg/L)
TCLP Volatile Organic Compounds		
Benzene	1311 / 8260B	25
Carbon Tetrachloride	1311 / 8260B	25
Chloroform	1311 / 8260B	25
1,2-Dichloroethane	1311 / 8260B	25
1,1-Dichloroethene	1311 / 8260B	25
2-Butanone	1311 / 8260B	125
Tetrachloroethene	1311 / 8260B	25
Trichloroethene	1311 / 8260B	25
Vinyl Chloride	1311 / 8260B	25
TCLP Semivolatile Organic Compounds		
2-Methylphenol	1311 / 3510 / 8270B	10
3 & 4-Methylphenol	1311 / 3510 / 8270B	10
1,4-Dichlorobenzene	1311 / 3510 / 8270B	10
2,4-Dinitrotoluene	1311 / 3510 / 8270B	10
Hexachlorobutadiene	1311 / 3510 / 8270B	10
Hexachloroethane	1311 / 3510 / 8270B	10
Hexachlorobenzene	1311 / 3510 / 8270B	10
Nitrobenzene	1311 / 3510 / 8270B	10
Pentachlorophenol	1311 / 3510 / 8270B	10
Pyridine	1311 / 3510 / 8270B	10
2,4,5-Trichlorophenol	1311 / 3510 / 8270B	10
2,4,6-Trichlorophenol	1311 / 3510 / 8270B	10
TCLP Metals		
Arsenic	1311 / 3010 / 6010B	10
Barium	1311 / 3010 / 6010B	50
Cadmium	1311 / 3010 / 6010B	3
Chromium	1311 / 3010 / 6010B	5
Lead	1311 / 3010 / 6010B	6
Selenium	1311 / 3010 / 6010B	10

Silver	1311 / 3010 / 6010B	5
Mercury	7470A	0.2
TCLP Pesticides		
Chlordane	1311 / 8081A	0.5
Endrin	1311 / 8081A	0.05
Heptachlor (and its hydroxide)	1311 / 8081A	0.05
Lindane	1311 / 8081A	0.05
Methoxychlor	1311 / 8081A	0.05
Toxaphene	1311 / 8081A	0.5
TCLP Pesticides		
2,4-D	1311 / 8151A	2
2,4,5-TP Silvex	1311 / 8151A	2

Notes:
ND - Not Determined

Table 7-3 Project Quantitation Limits for Air

Analysis / Compound	Method	Quantitation Limits Soil Gas/Air ($\mu g/M^3$)
Fixed Gases		
Helium	ASTM D1945 mod.	16360 (0.01%)
Volatile Organics [1]		
Freon 12	TO-15 Mod.	0.81
Freon 114	TO-15 Mod.	1.14
Chloromethane	TO-15 Mod.	0.34
Vinyl Chloride	TO-15 Mod.	0.42
Bromomethane	TO-15 Mod.	0.63
Chloroethane	TO-15 Mod.	0.43
Freon 11	TO-15 Mod.	0.92
1,1-Dichloroethene	TO-15 Mod.	0.64
Freon 113	TO-15 Mod.	1.26
Methylene Chloride	TO-15 Mod.	0.56
1,1-Dichloroethane	TO-15 Mod.	0.66
cis-1,2-Dichloroethene	TO-15 Mod.	0.64
Chloroform	TO-15 Mod.	0.81
1,1,1-Trichloroethane	TO-15 Mod.	0.89
Carbon Tetrachloride	TO-15 Mod.	1.03
Benzene	TO-15 Mod.	0.52
1,2-Dichloroethane	TO-15 Mod.	0.66
Trichloroethene	TO-15 Mod.	0.89
1,2-Dichloropropane	TO-15 Mod.	0.76
cis-1,3-Dichloropropene	TO-15 Mod.	0.74
Toluene	TO-15 Mod.	0.61
trans-1,3-Dichloropropene	TO-15 Mod.	0.74
1,1,2-Trichloroethane	TO-15 Mod.	0.89
Tetrachloroethene	TO-15 Mod.	1.11
1,2-Dibromoethane (EDB)	TO-15 Mod.	1.26

Analysis / Compound	Method	Quantitation Limits Soil Gas/Air (µg/M^3)
Chlorobenzene	TO-15 Mod.	0.76
Ethyl Benzene	TO-15 Mod.	0.71
m,p-Xylene	TO-15 Mod.	0.71
o-Xylene	TO-15 Mod.	0.71
Styrene	TO-15 Mod.	0.69
1,1,2,2-Tetrachloroethane	TO-15 Mod.	1.13
1,3,5-Trimethylbenzene	TO-15 Mod.	0.81
1,2,4-Trimethylbenzene	TO-15 Mod.	0.81
1,3-Dichlorobenzene	TO-15 Mod.	0.98
1,4-Dichlorobenzene	TO-15 Mod.	0.98
alpha-Chlorotoluene	TO-15 Mod.	0.85
1,2-Dichlorobenzene	TO-15 Mod.	0.98
1,2,4-Trichlorobenzene	TO-15 Mod.	6.12
Hexachlorobutadiene	TO-15 Mod.	8.69
Propylene	TO-15 Mod.	1.4
1,3-Butadiene	TO-15 Mod.	1.77
Acetone	TO-15 Mod.	1.93
Carbon Disulfide	TO-15 Mod.	2.58
trans-1,2-Dichloroethene	TO-15 Mod.	3.22
2-Butanone (MEK)	TO-15 Mod.	2.42
Hexane	TO-15 Mod.	2.9
Tetrahydrofuran	TO-15 Mod.	2.42
Cyclohexane	TO-15 Mod.	2.74
1,4-Dioxane	TO-15 Mod.	2.9
Bromodichloromethane	TO-15 Mod.	5.47
4-Methyl-2-pentanone	TO-15 Mod.	3.38
2-Hexanone	TO-15 Mod.	3.38
Dibromochloromethane	TO-15 Mod.	6.92
Bromoform	TO-15 Mod.	8.37
4-Ethyltoluene	TO-15 Mod.	4.03

Analysis / Compound	Method	Quantitation Limits Soil Gas/Air ($\mu g/M^3$)
Ethanol	TO-15 Mod.	1.55
Methyl tert-butyl ether	TO-15 Mod.	2.9
Heptane	TO-15 Mod.	3.38
Naphthalene	TO-15 Mod.	4.35
2-Methylpentane	TO-15 Mod.	2.9
Isopentane	TO-15 Mod.	2.42
2,3-Dimethylpentane	TO-15 Mod.	3.38
2,2,4-Trimethylpentane	TO-15 Mod.	3.86
Indene	TO-15 Mod.	3.86
Indane	TO-15 Mod.	3.86
Thiophene	TO-15 Mod.	2.74
2-Propanol	TO-15 Mod.	1.93

Notes

(1) The final quantitation limit (QL) is adjusted to reflect the initial pressurization step, dilution required to bring target analyte levels into the calibration range, and/or minimize matrix interferences

Final QL = QL * DF, DF was assumed to be 1.61 for a 6-L Canister, with 5 in. Hg Final Canister Pressure.

8.0 Data Reduction, Assessment, and Reporting

8.1 Data Reduction

Data collected in the field will be reduced in accordance with SW-846 protocols and reviewed by the laboratory QA personnel. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates.

8.2 Data Quality Assessment

NYSDEC recommends two levels of data review. The basic review is a Data Usability Summary Report (DUSR). Current NYSDEC policy is to require this level of review for analytical data on most sites. Full data validation is called for at sites where the data will be used in litigation, or where problems are expected with data quality (such as where matrix interference is expected to be significant). The laboratory deliverables (i.e., NYSDEC ASP Category B) are the same in both cases, and a DUSR can be upgraded to full validation at a later time if necessary. For this Site a DUSR will be performed.

Based on the results of data assessment, the validated analytical results reported by the laboratory will be assigned one of the following USEPA-defined data usability qualifiers:

- U – Not detected at given value,
- UJ – Estimated not detected at given value,
- J – Estimated value,
- N – Presumptive evidence at the value given,
- R – Result not useable,
- No Flag – Result accepted without qualification.

Trained and experienced data assessors, who meet NYSDEC approval criteria, will perform the data review. Résumés of people who will perform the data validation and prepare the DUSR will be provided to NYSDEC for review and approval, upon request.

8.2.1 Data Usability Summary Report

Data will be evaluated and qualification applied in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, USEPA-540-R-07-003, July 2007 and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540-R-04-004, October 2004, as they applied to the analytical methods employed. A DUSR will be generated in accordance with USEPA Region II guidelines.

The DUSR will include a review and an evaluation of all the analytical results. To ensure compliance with the analytical method protocols the following parameters will be reviewed:

- Chain-of-custody forms,

- Holding times,
- Initial and continuing calibrations,
- Blanks,
- Laboratory control standards and matrix spikes,
- Surrogate recoveries,
- Matrix interference checks,
- Field and laboratory duplicates,
- Sample data.

The DUSR will contain a description of the samples and parameters reviewed. Any deficiencies identified during the review will be noted and the effect on the generated data will be discussed. Any re-sampling or reanalysis recommendations will be then be made to the Project Manager. The DUSR will be electronically transmitted to the NYSDEC within 15 business days of validating the data and no later than 45 business days from receiving the laboratory data.

8.2.2 Data Validation

The determination to validate data will be made based on the presence of data anomalies, suspect data, or laboratory issues. Data will be validated and qualifications applied in accordance with *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, USEPA-540-R-07-003, July 2007 and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540-R-04-004, October 2004, as they applied to the analytical methods employed. If applicable, a data validation report will be prepared and reviewed by the Quality Assurance Office (QAO) before issuance. The data validation report will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each sample delivery group will follow. For each of the organic analytical methods, the following parameters will be assessed:

- Holding times,
- Instrument tuning,
- Instrument calibrations,
- Blank results,
- System monitoring compounds or surrogate recovery compounds (as applicable),
- Internal standard recovery results,
- MS and MSD results,

- Field duplicate results,
- Target compound identification,
- Result calculations,
- Pesticide cleanup (if applicable),
- Compound quantitation and reported detection limits,
- System performance,
- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times,
- Calibrations,
- Blank results,
- Interference check sample,
- Laboratory check samples,
- Duplicates,
- Matrix Spike(s),
- Furnace atomic absorption analysis QC,
- ICP serial dilutions,
- Results verification and reported detection limits,
- Result calculations.

8.3 Data Reporting

The data package provided by the laboratory will contain all items discussed above in a NT ASP Category B “CLP-equivalent” format. Data quality issues will be discussed in a case narrative included with the data report. The completed copies of the COC records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

Two copies of the analytical data packages and an electronic data deliverable (EDD) will be provided by the laboratory approximately 30 days after receipt of a complete sample delivery group. The Project Manager will immediately arrange for filing one package. A second copy and the EDD will be

used to generate summary tables. These tables will form the database for assessment of the site contamination condition.

The EDD format required is current format Earths of EQuIS® Environmental Data Management Software.

Each EDD must be formatted and copied using an MS-DOS operating system. To avoid transcription errors, data will be loaded directly into the ASCII format from the laboratory information management system (LIMS). If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All EDDs must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all nonconformance issues are resolved prior to use of the data. The EDDs and data validation report will be electronically transmitted to the NYSDEC within 15 business days of validating the data and no later than 45 business days from receiving the laboratory data.

9.0 Internal Quality Control Checks

QC procedures and checks are used to evaluate the precision and accuracy of analytical data. Field QC checks are used to identify potential problems associated with sample collection procedures. Laboratory QC checks are used to identify problems associated with sample preparation and analysis.

9.1 Field Quality Control Checks

To check the quality of data from field sampling efforts, blanks and duplicate samples will be collected for analysis. Field duplicate and rinseate blank samples will be collected at a frequency of one in 20 samples. Trip blank samples will be analyzed at a frequency of one per each shipment of VOC samples. Field MS/MSD samples will be collected at a frequency of one in 20 samples. These samples will be treated as separate samples for identification, logging, and shipping purposes. Analytical results for blanks and duplicates will be reported with the field sample data.

9.2 Laboratory Quality Control Checks

The analytical laboratory must have an implemented QC program documented in a QA manual to ensure the reliability and validity of the analysis performed at the laboratory. All analytical procedures are documented in writing as standard operating procedures (SOPs) and each SOP must include a QC section that addresses the minimum QC requirements for the procedure. The internal QC checks differ slightly for each individual procedure, but in general the QC requirements include the following:

- Method blanks,
- Reagent/preparation blanks (applicable to inorganic analysis),
- Instrument blanks,
- MS/MSDs ,
- Surrogate spikes (organic methods only),
- Analytical spike (applicable to graphite furnace analysis),
- Laboratory control samples,
- Internal standard areas for GC/MS analysis,
- Mass tuning for GC/MS analysis,
- Endrin/4,4'-DDT degradation checks for pesticide analysis,
- Second, dissimilar column confirmation for pesticide and polychlorinated biphenyl (PCB) analysis.

All data obtained will be properly recorded. The data package will include a full deliverable package capable of allowing the recipient to reconstruct QC information and compare it to QC acceptance criteria. The laboratory will reanalyze any samples associated with nonconforming quality control checks, if sufficient volume is available. It is expected that sufficient volumes/weights of samples will be collected to allow for reanalysis when necessary.

10.0 Performance and System Audits and Frequency

Two types of audit procedures are conducted during any environmental work: performance and system audits. These audits are performed on the laboratory as well as field activities. The laboratory and field auditors will be independent of the function they will be auditing. Audits will be documented and maintained by the respective Laboratory or Contractor Project Manager.

10.1 Performance Audits

10.1.1 Laboratory Performance Audits

Laboratory performance audits are administered by the laboratory QA department on a periodic basis (e.g., semi-annually). The audit samples are used to monitor accuracy and identify and resolve problems in sample preparation and analysis techniques, which lead to the generation of nonconforming data.

The laboratory performance audits include verification of each analyst's record keeping, proper use and understanding of procedures, and accuracy evaluation. Corrective action will be taken for any performance failure noted.

10.1.2 Field Performance Audits

The QAO or designee will perform field performance audits of the field sample team on an annual basis at a minimum. The field team leader will review all field data. The analytical results of the field blanks and replicate samples are indirect audits of the level of performance of field activities. If a nonconformance is found in the evaluation of field QC data, corrective action will be taken to resolve the issue. The corrective action will be documented.

10.2 System Audits

10.2.1 Laboratory System Audits

Laboratory system audits will be conducted against the QA Manual and the administrative and method SOPs, by the laboratory QA department, on an annual basis. System audits are used to ensure that all aspects of the laboratory's QC program are implemented and effective. This involves a thorough review of all laboratory practices and documentation to confirm that work is performed according to project specifications.

Outside agency performance and system audits may be used to verify contract compliance or the laboratory's ability to meet requirements for analytical methods and documentation. Copies of current certifications and accreditations may be used in lieu of an audit by the Contractor Project Manager.

10.2.2 Field System Audits

The QAO or designee shall perform field system audits of the field sampling team on an annual basis at a minimum. All field activities will be audited to ensure that the field work is being performed according to the approved work plans, QAPP, and method procedures. Accuracy, precision, and documentation clarity will be evaluated. Any time a deficiency is noted during an ongoing systems

audit, the project manger or designee will inform the field staff immediately so that corrective actions may be implemented.

11.0 Preventive Maintenance

11.1 Field Instrument Preventive Maintenance

Written procedures will establish the schedule for servicing critical items in order to minimize the downtime of the measurement system(s). Field instruments will be checked and calibrated daily before use. Calibration checks will be documented on the field calibration log sheets. Critical spare parts such as tape and batteries will be kept on-site to reduce potential downtime. Backup instruments and equipment will be available on-site or within 1-day shipment to avoid delays in the field schedule.

11.2 Laboratory Instrument Preventive Maintenance

Designated laboratory employees regularly perform routine scheduled maintenance and repair of all instruments. All maintenance that is performed is documented in the laboratory's operating records. All laboratory instruments are maintained in accordance with manufacturer's specifications. The laboratory's QA Manual specifies the typical frequency with which components of key analytical instruments or equipment will be serviced.

11.3 Records

Logs shall be established to record maintenance and service. All maintenance records will be controlled and traceable to the designated equipment, instruments, tools, or gauges. Records produced shall be reviewed, maintained, and filed by the operators at the laboratories. The QAO may audit the field maintenance records to verify complete adherence to these procedures.

12.0 Corrective Action

12.1 Introduction

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, and corrected.

12.2 Procedure Description

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude recurrence. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Contractor Project Manager, Field Team Leader, and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, report, and investigate conditions adverse to quality. Corrective actions will be initiated as follows.

- When predetermined acceptance standards are not attained
- When procedure or data compiled are determined to be deficient
- When equipment or instrumentation is found to be faulty
- When samples and analytical test results are not clearly traceable
- When quality assurance requirements have been violated
- When designated approvals have been circumvented
- As a result of system and performance audit findings
- As a result of a management assessment
- As a result of laboratory/field comparison studies
- As required by USEPA SW-846 and subsequent updates, or by the NYSDEC ASP

Project management and staff, such as field teams, remedial response planning personnel, and laboratory groups, will monitor on-going work performance in the normal course of daily responsibilities. Work may be audited at the sites, laboratories, or contractor locations. Activities or documents ascertained to be nonconforming with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 12-1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Contractor Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file.

Any project personnel may identify issues requiring corrective action; however, the QAO is responsible for documenting, numbering, logging, and verifying the closeout action. The Contractor Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

Figure 12-1 Corrective Action Form

CORRECTIVE ACTION REQUEST Number: _____ Date: _____
TO: _____ You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____
CONDITION:
REFERENCE DOCUMENTS:
RECOMMENDED CORRECTIVE ACTIONS:
_____ _____ _____ _____ _____ _____ Originator Date Approval Date Approval Date
RESPONSE
CAUSE OF CONDITION
CORRECTIVE ACTION (A) RESOLUTION (B) PREVENTION (C) AFFECTED DOCUMENTS
C.A. FOLLOW-UP: CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

13.0 References

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Appendix I

Groundwater Pump and Treat OM&M Plan (Electronic Format)

Operations and Maintenance Manual for Water Treatment System

National Grid- Former Clifton Manufactured Gas Plant Site, Staten Island, New York

Prepared by:

AECOM Inc
250 Apollo Drive
Chelmsford, MA

AECOM Project Number:

Prepared for:

National Grid- Clifton

Prepared by:

_____

Karthik Shankaran, Project Engineer

Reviewed by:

_____

Sean Crowell, Senior Engineer

January, 2016

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Sean Crowell, Senior Engineer

January, 2016

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Appendix B Equipment Manufacturer's Manuals
Appendix C Procedures and Forms for System Operation
Appendix D SPDES Permit Equivalency and Reporting Forms
Appendix E Excel Spreadsheet Reporting Forms

1 Introduction

The purpose of this document is to present an Operations and Maintenance Manual for the Pump and Treat (P&T) System located at the National Grid – Former Clifton MGP Site located at 40-50 Willow Avenue, Staten Island, NY. The system has not yet been built and this O&M is written based on what has been designed. More details will be added and this manual would be updated accordingly to match the As-built.

Operability Unit 1 (OU-1) consists of the jet grouted area (aka containment cell) surrounding the buried remains of a former gas holder. Conditions within the containment cell exhibit a continuous increase in the elevation of the saturated zone which must be controlled in relation to that outside of the containment cell.

Groundwater collection, treatment and discharge which will adequately manage the groundwater elevation in the containment cell with respect to that outside of the cell and with minimal operator attention.

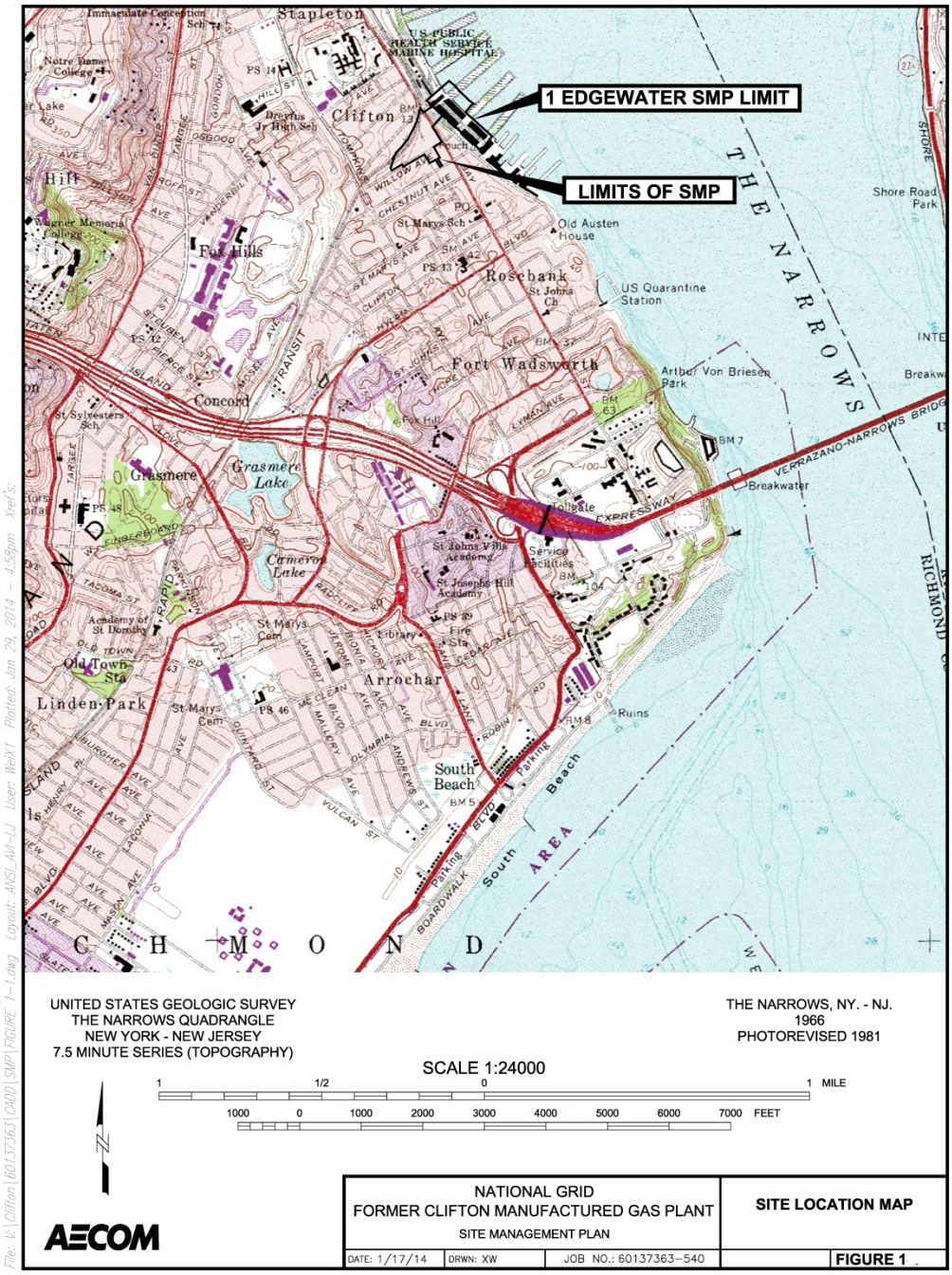
Historical data indicates the presence of dissolved and free phase organic matter including BTEX and common PAH.

1.1 Document Organization

This document is organized as follows:

- **Section 1 – Introduction** provides an introduction and purpose for this document, document organization, as well as project background information.
- **Section 2 – System Configuration** presents a description of the water treatment system including the system components and programmable logic controller (PLC).
- **Section 3 – Operations** provide operational procedures as well as start-up and shut-down procedures.
- **Section 4 – Maintenance and Troubleshooting** provides procedures for system maintenance and troubleshooting.
- **Section 5 – References** lists references for this O&M Plan.

Figure 1 Site Location



2 System Configuration

The treatment system consists of recovery well pump, oil water separator, transfer pump, bag filters, carbon filter followed by cartridge filter. The treatment system will be housed inside a heated container. The piping and instrumentation drawing (P&ID) for the treatment system is presented in Appendix A. Equipment manufacturer's literature are located in Appendix B.

Recovery Well Pump (P-01)

- Submersible well pump with 240V three phase motor driven by variable frequency drive (VFD)
- The pump will have a spring-loaded Hand/Off/Auto switch, to ensure the system is not run in the Hand position continuously.
- Pump speed control using PID loop based of the differential level between the two level transmitters between RWA and RWB.
- Pump is monitored by Amp and hour meters to monitor performance.

Oil Water Separator (OW-01)

- The recovery well pumps the wastewater into OW-01.Inflow into the OW-01 shall not exceed the design flow of 5 gpm.
- OW-01 has influent chamber with baffle to aid in settling down of any solids /sludge. A sludge hopper chamber located directly at the bottom of the influent chamber collects the solids.
- Wastewater then flows through the coalescing media and the separated DNAPL gets collected at an oil reservoir at the bottom of the unit.
- The unit has an adjustable skimmer pipe to collect any LNAPL and free phase oil floating on top.
- Unit is completely plumbed for easy separation and removal of both LNAPL and DNAPL by the operator.

Transfer Pump (P-02)

- Fixed speed centrifugal pump with 1 phase, 120V motor
- The specified pump will have a spring-loaded Hand/Off/Auto switch, to ensure the system is not run in the Hand position continuously.
- The specified pump will be equipped with all necessary panel mounted controls such that the pump operates ON-OFF based on floats provided in in OW-01.
- The specified pump has amp and hour meters, to allow for the operational performance of the system to be monitored.

Bag Filters (F-01A/B)

- Basket filter shall have 5 micron bags for removal of solids.

Liquid Phase Carbon Filters (F-02 A/B/C)

- Rated appropriately for use with an allowable pressure a minimum of 60 PSI.
- Filled with 200 lbs. virgin liquid phase granular activated carbon.
- Plumbed with hose/fittings to facilitate easy change outs of media as necessary.

Effluent Cartridge Filter (F-03)

- Appropriately sized filter housing and cartridges.
- Provided with a minimum of 10 spare cartridges.

Effluent Flow Meter (FQ-119)

- Shall be mechanical type flow meter with local read out
- Shall provide both total and instantaneous flow
- Shall be provided with certified calibration records

Effluent piping

- Effluent pipe has a siphon break and discharges to the sewer located at the intersection of Bay Street and Willow Avenue
- Effluent piping outside the container is insulated and heat traced.

Cargo Container

- The P&T system will be mounted in an appropriately sized “cargo container”, with two standard doors at the front end for access (end with doors is considered the front end).
- The trailer will be properly ventilated, heated and illuminated with expectation for operation with ambient temperature ranges between 0 and 100 degrees F.

3 Operation

System operation is controlled primarily via the programmable logic controller (PLC) control panel in the treatment container. There are two major components to the PLC control system: the PLC and the man-machine interface (MMI). The PLC contains all of the control logic and hard wired connections to sensors and pumps. Instrument inputs (water levels, recovery well flowrates, auxiliary contacts, and hand switch positions) are evaluated, and the program logic is applied to perform control actions (pump operation, filter pump speed, alarm enunciation). The MMI displays process conditions on several screens, can store data in datalog files. The MMI also can transmit data to the PLC, such as level and flow calibrations, filter pump control loop parameters, and individual recovery well set-points and control modes. The MMI screen is a touch sensitive screen. However, to avoid damaging the screen with dirt, *etc.*, a mouse and keyboard should be used whenever possible. The detailed procedure for MMI operation shall be provided by the control panel vendor at the time of delivery.

3.1 Controls

Logic & Controls

Alarm Condition	Alarm ID	Alarm Function
OW High High Level Alarm	LSHH - 102	• Email, and alarm light • System Shut Down • Must Be Acknowledged On Site
Bag Filter High Pressure Alarm	PAH-106/108	• Email, and alarm light • Must Be Acknowledged On Site
Floor Sump Alarm	FS-125	• Email, and alarm light • System Shut Down • Must Be Acknowledged On Site

Well Pump P-01 fault alarm	ZI-104	• Email, and alarm light • System Shut Down • Must Be Acknowledged On Site
Transfer Pump P-02 fault alarm	ZI-105	• Email, and alarm light • Must Be Acknowledged On Site
Container room temperature alarm	If temp<40F	• Email, and alarm light • Must Be Acknowledged On Site
OW-01 High-High level alarm		• Shutdown P-01 until level recedes below low level in OW-01
High pressure alarm in bag filter. The high pressure value (PSI) is an user input at the HMI		• Email, and alarm light
Main power fail alarm		• Email, and alarm light • PLC shall resume to run mode automatically when power resumes.
Low battery voltage		Email alarm
E-Stop Alarm		Email alarm

Refer to Appendix A, for the actual location of each switch.

- Emergency stop button to shut down all system operations, red mushroom pushbutton switch which is two pole single throw (SPST). One pole provides input to PLC. The other pole bypasses the PLC program and physically shuts the systems down.

- All alarms shall be relayed out via email, fax phone.

- RW-01 pump speed shall be controlled PID loop based on user defined differential level between the two level transmitters.
- Data log input, output, events and alarms.

3.2 Telemetry System

The system will be equipped with an Automation Direct P3000 PLC with all necessary software and programmable logic that will allow any authorized party to contact, to view the system operation data and/or any of the below alarm conditions. The telemetry system will be able to alert specific personnel through email if any of the specified alarm conditions occur or any motor overload relays are tripped. The PLC shall be appropriately sized based on necessary I/O and equipped with the following features at a minimum:

- C-More HMI Screen (8 inch display)
- Wireless Cellular Modem
- Communication Via Web access (graphics, text, email, and data logging)
- Access by IPhone and other mobile devices
- Appropriate logic and screen programming
- Battery backup for the PLC and the wireless cellular modem.

3.3 Routine Operation

- Start-up, shutdown, bag filter change out, and carbon filter backwash procedures are provided in Appendix C. These forms should be copied and filled out when performing any of these procedures. Once an operator is familiar with a routine procedure, the process log sheet in the electronic spreadsheet should be updated.

3.4 Monitoring

- Sampling and analysis of water collected and discharged at the water treatment system must be done monthly. Analyses required are listed in the discharge requirements, Appendix D.
- Datalogs are to be saved, and incorporated into quarterly reports.
- Level transducers are to be calibrated monthly. Flowmeters to be calibrated annually.

4 Maintenance and Troubleshooting

4.1 Well Pumps

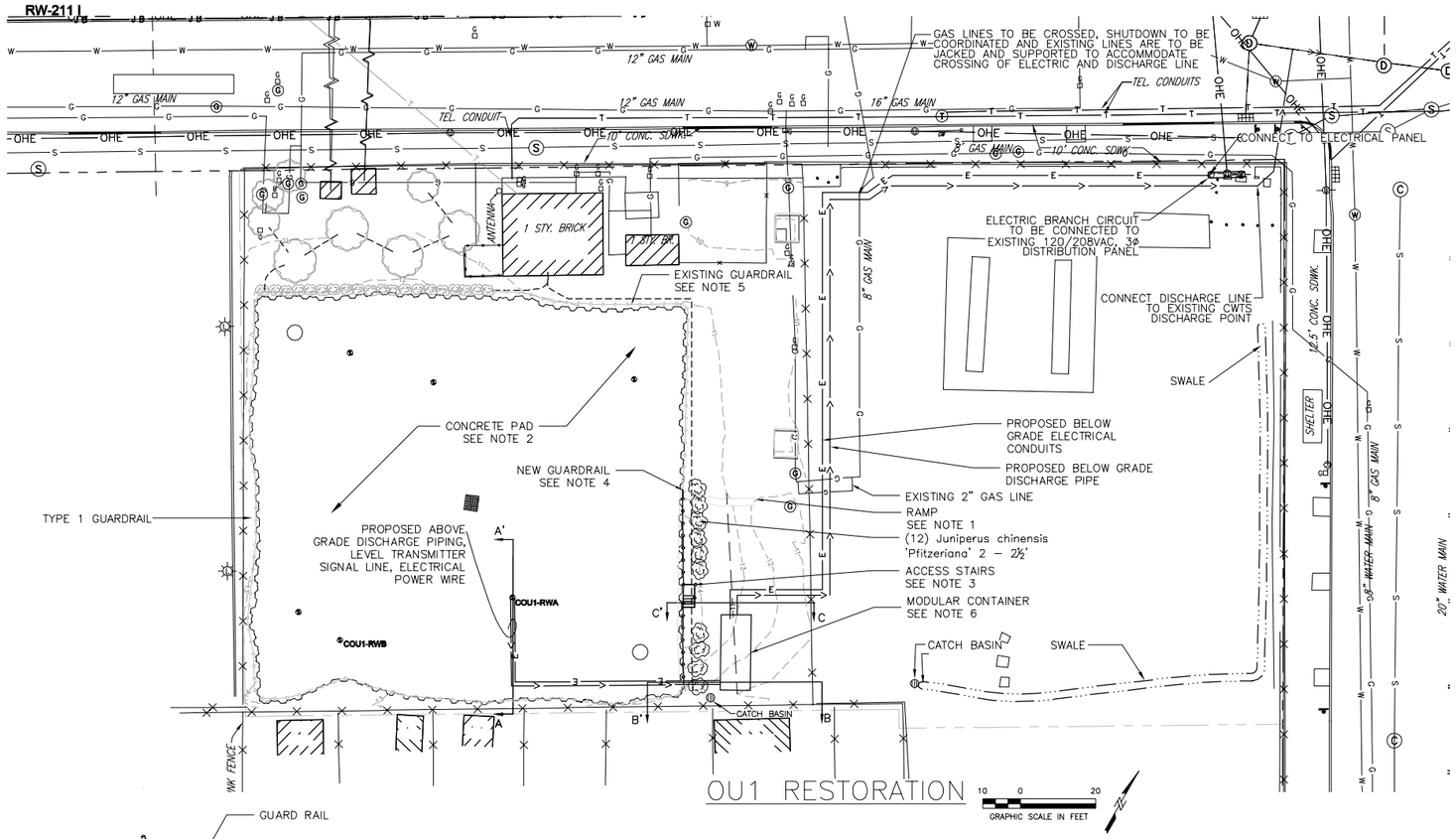
Well pumps problems can be diverse, and a general knowledge of pumps and flow through piping is necessary to operate and troubleshoot this system. If the problem is determined to be electrical, only competent personnel should address troubleshooting and reparations, this is most often a licensed electrician. Kill power physically either by a disconnect switch/breaker before doing any maintenance on electrical systems.

Table 1 Well Pump Trouble Shooting

PROBLEM	SOLUTION(S)
Pump not running in an Auto Mode	Check VFD for power and error code. Repower VFD and make sure the VFD is in run mode
	Try operating the pump by turning the associated HOA switch to the Hand position. A helper should be in the associated well vault to determine that the pump turns on. Do not assume that a running pump will necessarily bring water to the treatment container. If Hand operation is successful, there may be no problem, or there may be a problem with a level transducer.
	If the pump will not run in hand mode, check the MCP's in the PLC control panel. If the associated thermal overload or MCP has tripped, confirm that the setting is above the motor FLA, but no more than 120% of FLA.
	If the circuit protectors are not the problem, test power at the motor side of the MCP. This should be 120 VAC. If it is, there is either a problem with wiring or the motor is burnt out. Bring in a qualified electrician to test the wire and motor.
Pump comes on, but there is no, or little, flow	Confirm that flow is available in the vault at the sample port.
	If no flow is available at the sample port, turn off the pump and confirm that there is water in the well.
	If there is water in the well, there is either a plug in the well piping, or the pump itself is clogged. Remove the pump and test the pump hose and pump housing.
	If flow is available at the vault, but not in the treatment shed, there is a blockage in the piping between the two. This may be cleared by backpressuring the line using a test pump, or pressure from one of the other well pumps via the manifold in the shed.

Appendix A

Site Plan and P&ID



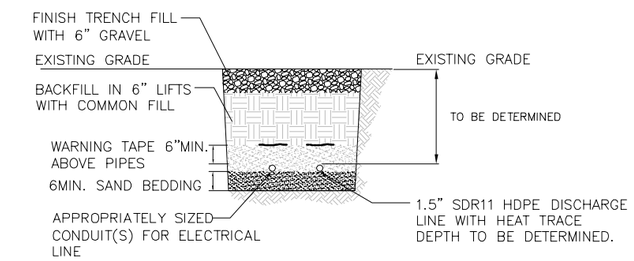
OU1 RESTORATION

PLAN NOTES:

1. REMOVE RAMP AND CONCRETE BLOCK WALL. FINISH DISTURBED AREAS WITH 6" OF TOPSOIL.
2. SEAL CRACKS IN CONCRETE PAD WITH CEMENT.
3. INSTALL ERECTASTEP (OR ENGINEER APPROVED EQUIVALENT) ACCESS STAIRS WITH GUARDRAIL. THE LOCATION SHOWN ON PLANS IS APPROXIMATE. THE FINAL LOCATION OF STAIRS IS TO BE DETERMINED BY THE CONSTRUCTION MANAGER.
4. GUARDRAIL TO CONSIST OF SAFETYRAIL COMPANY PERMANENT RAILING TO MATCH PREVIOUSLY INSTALLED GUARDRAILS.
5. GUARDRAIL SECTIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING EXACT MEASUREMENTS PRIOR TO ORDERING NEW GUARDRAIL.
6. THE LOCATION SHOWN FOR THE TREATMENT CONTAINER AND UNDERGROUND PIPING IS SUBJECT TO CHANGE BASED ON FINAL APPROVAL FROM GAS OPERATIONS.
7. PROCESS WATER PIPING MUST BE HEAT TRACED WITH SELF REGULATING HEAT TRACE.

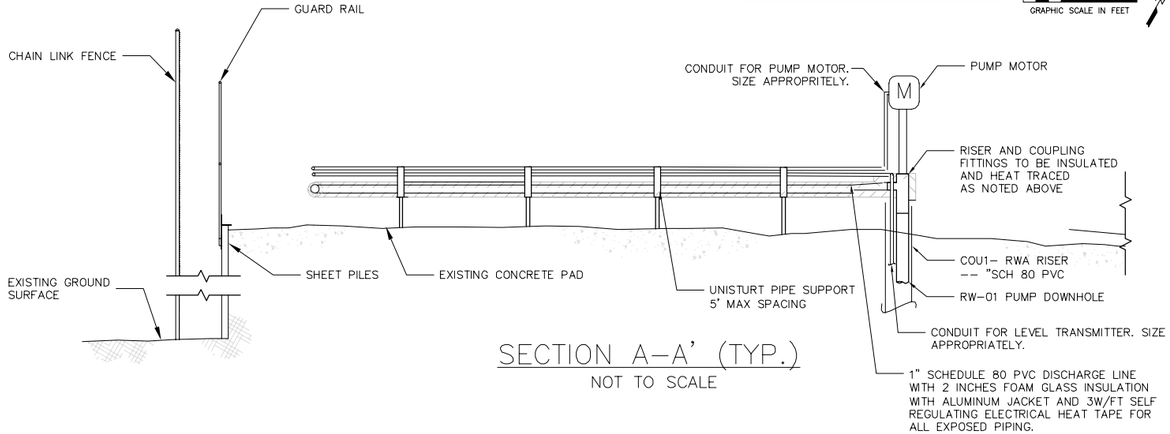
PLANTING NOTES:

1. REMOVE ALL DAMAGED TREES AND STUMPS IN LANDSCAPE AREA.
2. TREES AND SHRUBS TO BE PROVIDED AND PLANTED IN ACCORDANCE WITH"GENERAL TREE AND SHRUB PLANTING STANDARDS – NATIONAL GRID 9/15/09" PROVIDED.
3. ALL TREES WILL BE FINISHED WITH A 5' CIRCLE OF SHREDDED WOOD MULCH, 3" DEEP. SHRUBS WILL BE MULCHED AS A CONTINUOUS BED.
4. UNDER MULCH, "NETAFIM TECHLINE" IRRIGATION TO BE INSTALLED IN TWO ZONES AS SHOWN, INCLUDING "ORBIT" 4–ZONE TIMER AND SOLENOID VALVES, OR EQUIVALENT.



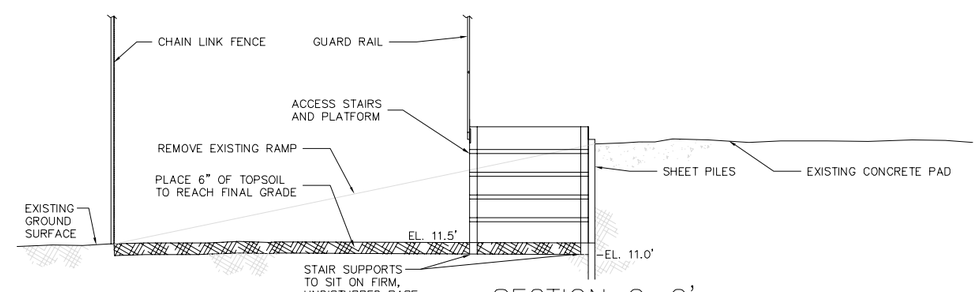
TRENCH SECTION (TYP.)

NOT TO SCALE



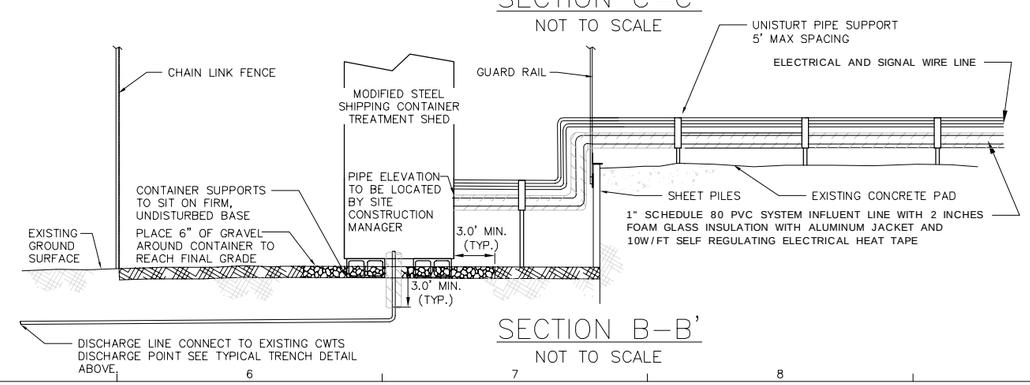
SECTION A–A' (TYP.)

NOT TO SCALE



SECTION C–C'

NOT TO SCALE



SECTION B–B'

NOT TO SCALE

ISSUED FOR CONSTRUCTION

NO	DRWN	DATE	REVISION	CHKD	DATE	APP'D	DATE
7							
6							
5							
4							
3							
2							
1							
0	RCW	07/28/15	ISSUE FOR CONSTRUCTION				

AECOM
AECOM
230 APOLLO DRIVE, CHELMSFORD, MA
(978) 905-2200
www.aecom.com

NATIONAL GRID
FORMER CLIFTON
MANUFACTURED GAS PLANT

DATE: 07/28/15

PROJ. NO.: 60137363-520

RESTORATION DETAILS OU-1

DRAWING NUMBER: C-01

SHEET NUMBER:

REVISION 0

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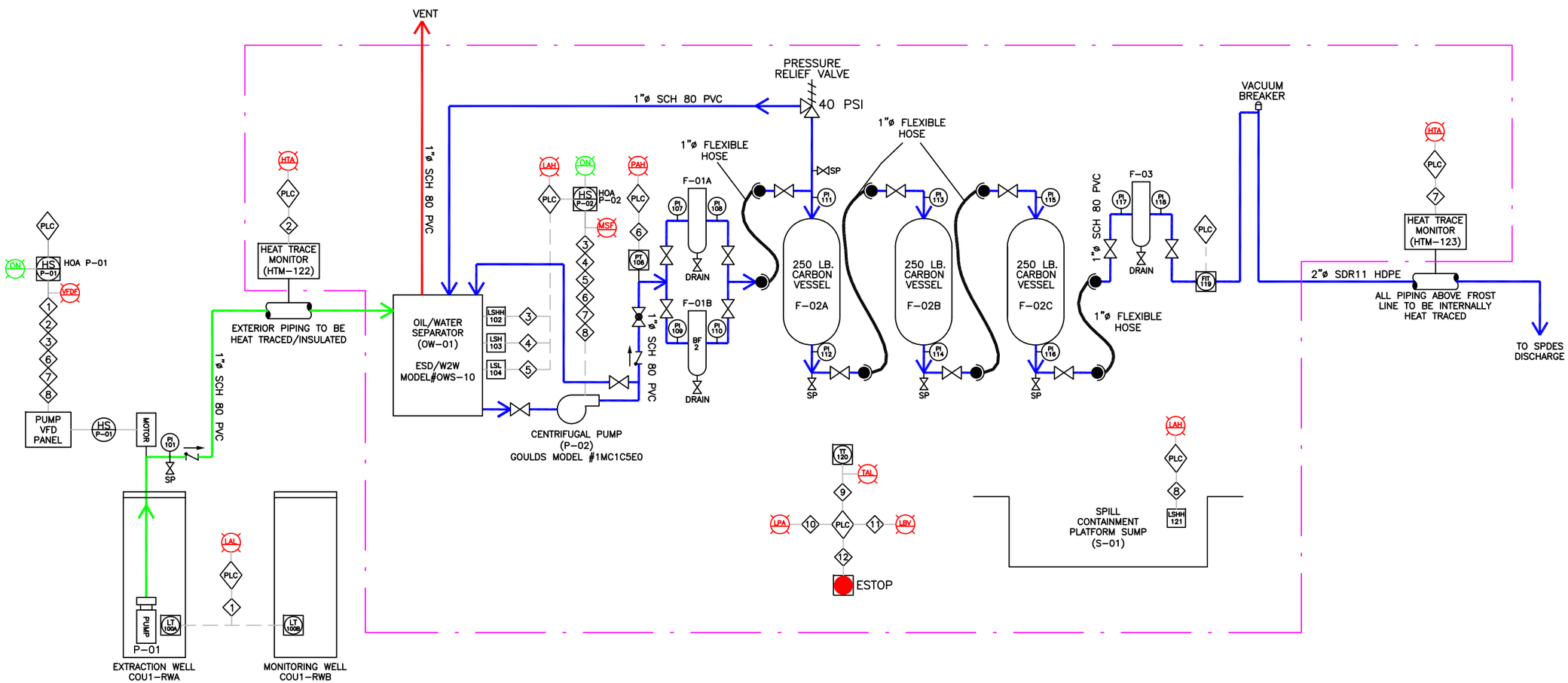


SYSTEM LEGEND:

- PRESSURE GAUGE
- FLOW INDICATING METER/TRANSMITTER
- LEVEL SWITCH
- LEVEL TRANSDUCER
- PRESSURE TRANSMITTER
- TEMPERATURE TRANSMITTER
- BALL VALVE
- GLOBE VALVE
- CHECK VALVE
- SAMPLE PORT
- HAND SWITCH PANEL MOUNTED
- HAND SWITCH LOCALLY MOUNTED
- CONTROL PANEL INDICATOR LIGHT
- CONTROL PANEL INTERLOCK
- ELECTRIC LINE
- TOTAL FLUIDS FLOW DIRECTION
- AIR FLOW DIRECTION
- WATER FLOW DIRECTION
- ENCLOSURE LIMITS

INDICATOR LIGHT INDEX:

- HTA — HEAT TRACE ALARM
- LAH — LEVEL ALARM HIGH
- LAL — LEVEL ALARM LOW
- LBV — LOW BATTERY VOLTAGE
- LPA — LOSS OF POWER ALARM
- MSF — MOTOR STARTER FAILURE
- PAH — PRESSURE ALARM HIGH
- TAL — TEMPERATURE ALARM LOW
- VFDF — VARIABLE FREQUENCY DRIVE FAULT
- ON — MOTOR RUN INDICATOR

INTERLOCK SCHEDULE:

1. P-01 TO BE CAPABLE OF BEING OPERATED TO MAINTAIN A SET DIFFERENTIAL LEVEL BETWEEN LT100A AND LT100B OR TO MAINTAIN A SET LEVEL MEASURED BY EITHER LT100A OR LT100B.
2. INFLUENT HEAT TRACE FAULT – SHUT DOWN P-01, SEND ALARM EMAIL.
3. HIGH LEVEL IN OW-01 – SHUT DOWN P-01 AND P-02, SEND ALARM EMAIL.
4. WATER LEVEL AT LSH103 – TURN ON P-02.
5. WATER LEVEL BELOW LSL104 – TURN OFF P-02.
6. HIGH PRESSURE ON BAG FILTERS – SHUT DOWN P-01 AND P-02, SEND ALARM EMAIL.
7. EFFLUENT HEAT TRACE FAULT – SHUT DOWN P-01 AND P-02, SEND ALARM EMAIL.
8. HIGH LEVEL IN S-01 – SHUT DOWN P-01 AND P-02, SEND ALARM EMAIL.
9. LOW TEMPERATURE IN SYSTEM CONTAINER (<40F) – SEND ALARM EMAIL.
10. LOSS OF THREE PHASE POWER – SEND ALARM EMAIL.
11. LOW BATTERY VOLTAGE – SEND ALARM EMAIL.
11. EMERGENCY STOP ENGAGED – SHUT DOWN P-01 AND P-02, SEND ALARM EMAIL.

DRAWN/REVISED BY: JW
REVISION DATE: APRIL 7, 2015

FIGURE: 1

DRAWING TITLE

PROPOSED REMEDIATION SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM

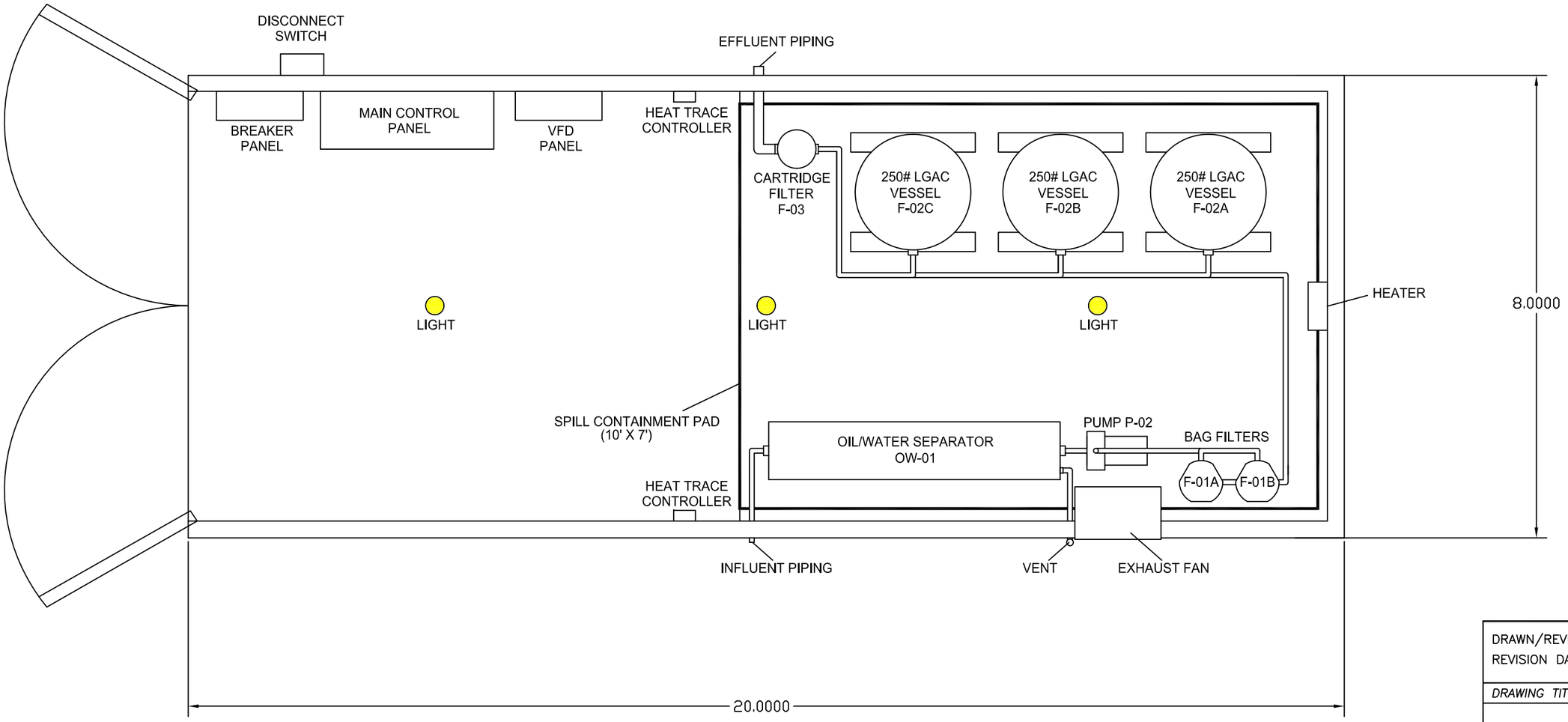
PREPARED FOR

NATIONAL GRID
FORMER CLIFTON
MANUFACTURED GAS PLANT

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

Submittal#8.6

REMEDIATION SYSTEM ENCLOSURE (PLAN VIEW)



NOTES:
1. SYSTEM ENCLOSURE TO BE STANDARD 20-ft SHIPPING CONTAINER (8'Wx20'Lx8.5'H).
2. INTERIOR WALLS AND CEILING TO BE FRAMED OUT WITH 2"X3" STUDS, R-11 FIBERGLASS INSULATION, AND ONE-HALF INCH PLYWOOD SHEETING.

DRAWN/REVISED BY: JW
REVISION DATE: MAR. 12, 2015

FIGURE: 2

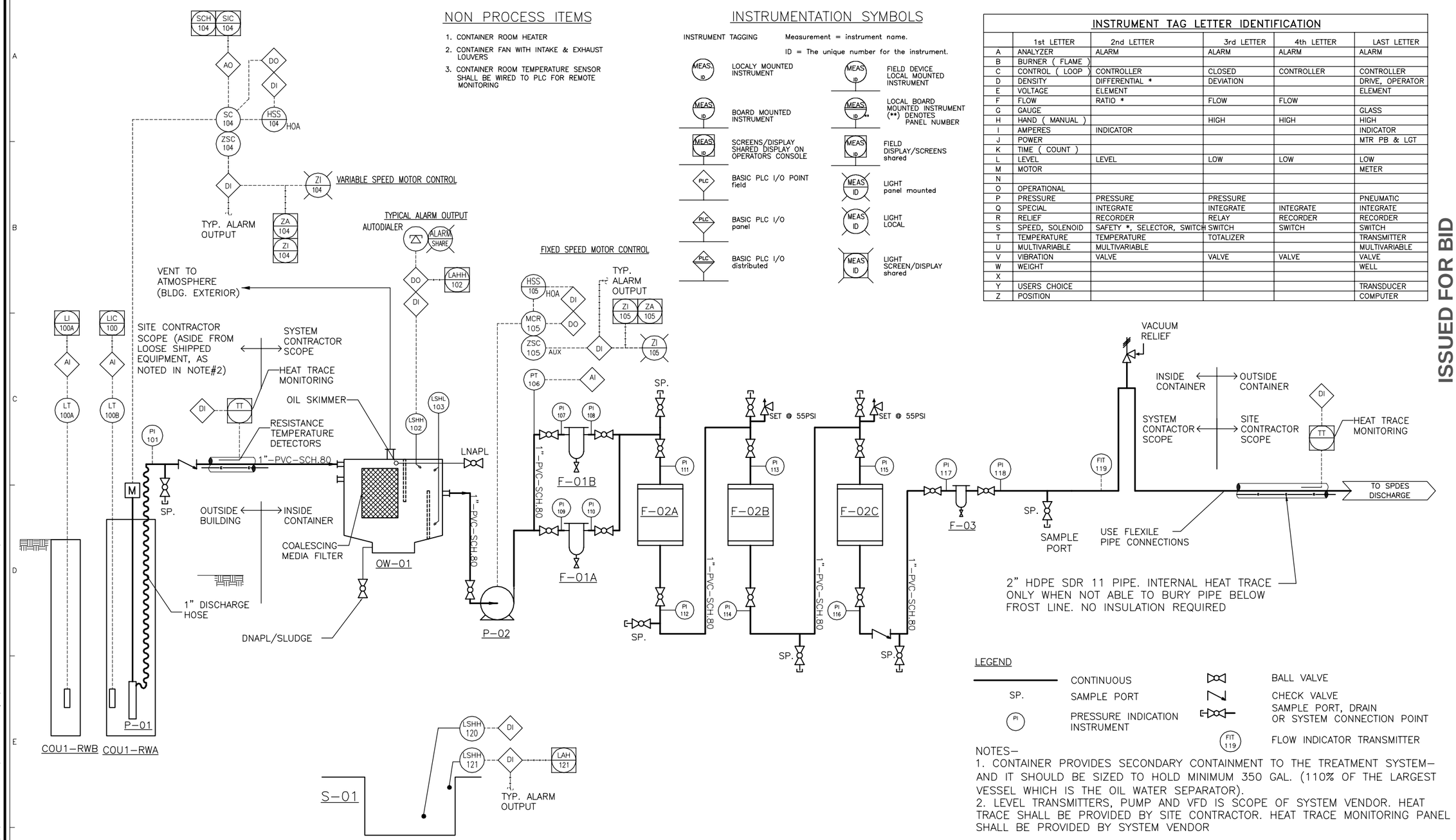
DRAWING TITLE

PROPOSED REMEDIATION SYSTEM ENCLOSURE LAYOUT

PREPARED FOR

NATIONAL GRID
FORMER CLIFTON
MANUFACTURED GAS PLANT

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001



NON PROCESS ITEMS

1. CONTAINER ROOM HEATER
2. CONTAINER FAN WITH INTAKE & EXHAUST LOUVERS
3. CONTAINER ROOM TEMPERATURE SENSOR SHALL BE WIRED TO PLC FOR REMOTE MONITORING

INSTRUMENTATION SYMBOLS

INSTRUMENT TAGGING

Measurement = instrument name.

ID = The unique number for the instrument.

- MEAS. ID — LOCALY MOUNTED INSTRUMENT
- MEAS ID — BOARD MOUNTED INSTRUMENT
- MEAS ID — SCREENS/DISPLAY SHARED DISPLAY ON OPERATORS CONSOLE
- PLC — BASIC PLC I/O POINT field
- PLC — BASIC PLC I/O panel
- PLC — BASIC PLC I/O distributed
- MEAS ID — FIELD DEVICE LOCAL MOUNTED INSTRUMENT
- MEAS ID ** — LOCAL BOARD MOUNTED INSTRUMENT (**) DENOTES PANEL NUMBER
- MEAS ID — FIELD DISPLAY/SCREENS shared
- MEAS ID — LIGHT panel mounted
- MEAS ID — LIGHT LOCAL
- MEAS ID — LIGHT SCREEN/DISPLAY shared

INSTRUMENT TAG LETTER IDENTIFICATION

	1st LETTER	2nd LETTER	3rd LETTER	4th LETTER	LAST LETTER
A	ANALYZER	ALARM	ALARM	ALARM	ALARM
B	BURNER (FLAME)				
C	CONTROL (LOOP)	CONTROLLER	CLOSED	CONTROLLER	CONTROLLER
D	DENSITY	DIFFERENTIAL *	DEVIATION		DRIVE, OPERATOR
E	VOLTAGE	ELEMENT			ELEMENT
F	FLOW	RATIO *	FLOW	FLOW	
G	GAUGE				GLASS
H	HAND (MANUAL)		HIGH	HIGH	HIGH
I	AMPERES	INDICATOR			INDICATOR
J	POWER				MTR PB & LGT
K	TIME (COUNT)				
L	LEVEL	LEVEL	LOW	LOW	LOW
M	MOTOR				METER
N					
O	OPERATIONAL				
P	PRESSURE	PRESSURE	PRESSURE		PNEUMATIC
Q	SPECIAL	INTEGRATE	INTEGRATE	INTEGRATE	INTEGRATE
R	RELIEF	RECORDER	RELAY	RECORDER	RECORDER
S	SPEED, SOLENOID	SAFETY *, SELECTOR, SWITCH	SWITCH	SWITCH	SWITCH
T	TEMPERATURE	TEMPERATURE	TOTALIZER		TRANSMITTER
U	MULTIVARIABLE	MULTIVARIABLE			MULTIVARIABLE
V	VIBRATION	VALVE	VALVE	VALVE	VALVE
W	WEIGHT				WELL
X					
Y	USERS CHOICE				TRANSDUCER
Z	POSITION				COMPUTER

LEGEND

- CONTINUOUS
- SP. — SAMPLE PORT
- PI — PRESSURE INDICATION INSTRUMENT
- BALL VALVE
- CHECK VALVE
- SAMPLE PORT, DRAIN OR SYSTEM CONNECTION POINT
- FIT 119 — FLOW INDICATOR TRANSMITTER

NOTES–

1. CONTAINER PROVIDES SECONDARY CONTAINMENT TO THE TREATMENT SYSTEM– AND IT SHOULD BE SIZED TO HOLD MINIMUM 350 GAL. (110% OF THE LARGEST VESSEL WHICH IS THE OIL WATER SEPARATOR).
2. LEVEL TRANSMITTERS, PUMP AND VFD IS SCOPE OF SYSTEM VENDOR. HEAT TRACE SHALL BE PROVIDED BY SITE CONTRACTOR. HEAT TRACE MONITORING PANEL SHALL BE PROVIDED BY SYSTEM VENDOR

RW-01
RECOVERY WELL
4" DIA PVC SCH40
WELL DEPTH=17.5 FT

P-01
PISTON PUMP
0.2 GPM AND 20 PSI MIN TDH
ANCHOR MODEL 101 E
230 VAC, 1/2 HP, 3 ø MOTOR
230 VAC, 3 ø, 1/2 HP
VARIABLE SPEED DRIVE

OW-01
OIL WATER SEPARATOR
RATED FLOW 5 GPM
HYDROFLO
MODEL TS-002

P-02
TRANSFER PUMP
MIN. 5 TO 10 GPM, 40 PSI TDH
115 VAC, 1ø MOTOR
CENTRIFUGAL PUMP
DAYTON #4RU77 OR EQUIVALENT

F-01A/B
BAG FILTER
5 MICRON
BAGFILTER BASKET
ROSEDALE MODEL# 4-6-1P-1-150-C
OR EQUIVALENT

F-02 A/B/C
LIQUID PHASE
200 lb CARBON FILTER VESSEL
TERTASOLV AF-250
OR EQUIVALENT

F-03
CARTRIDGE FILTER
5 GPM
0.5 MICRON

S-01
FLOOR SUMP
1'(L)X1'(W)X6"(D)

ISSUED FOR BID

NO	DRWN	DATE	REVISION	CHKD	DATE	APP'D	DATE
0	RCW	06/21/13	ISSUE FOR BID				

AECOM
AECOM
WESTFORD, MASSACHUSETTS
978-589-3000
www.aecom.com

NATIONAL GRID
FORMER CLIFTON
MANUFACTURED GAS PLANT

PROJ. NO.: 60137363-420
DATE: 10/09/14

OU-1 WATER TREATMENT PROCESS FLOW DIAGRAM

DRAWING NUMBER: P-01
SHEET NUMBER:
REVISION 0

File: J:\Rem_Eng\Project Files\National Grid\Clifton MT\CADD\001\Restoration-Issued for Bid\60137363-Rev4-P02.dwg Layout: P-02 User: Shankarank Plotted: Oct 09, 2014 - 1:43pm Xref's:

Appendix B

Equipment Manufacturer’s Manuals

EnviroTrac Submittal #4 Vendor/Subcontractor List

Vendor/Subcontractor	Address	Phone#	Website	Description of materials/services to be supplied
ESD Waste2Water, Inc	495 Oak Road Ocala, FL 34472	1-800-277-3279	waste2water.com	Remedial Control Panel, level transducers, OWS, LGACs
Blackhawk Technology Company	21 W 211 Hill Ave, Glen Ellyn, IL 60137	630-469-4916	blackhawkco.com	Piston Pump/controller
Dwyer Instruments	102 Indiana Hwy. 212, Michigan City, IN 46360	1-800-872-9141	dwyer-inst.com	Level switches, pressure transmitter
Faber Industrial Technologies Inc.	1111 Paulison Ave, Clifton, NJ 07011	976-546-7900	faberinc.com	Heat trace cable and monitors
Gilmour Supply Co.	300 Oser Avenue, Hauppauge, NY 11738	631-694-2800	gilmoursupply.com/	HDPE Pipe/Fittings
Grainger	199 Orville Dr, Bohemia, NY 11716	1-800-GRAINGER	grainger.com	Transfer Pump, filters, containment platform, miscellaneous
Holbrook Pipe Supply Inc.	790 Grundy Ave. Holbrook, NY 11741	631-588-6880	holbrookpipe.com/	PVC Pipe/Fittings
Hunter Electric Inc.	23507 Braddock Avenue, Jamaica, NY 11428	718-740-2970		Electrican
McMaster Carr	200 New Canton Way, Robbinsville, NJ 08691	609-259-8900	mcmaster.com	Gauges, miscellaneous materials
Safety Rail Company LLC	4244 Shoreline Drive, Spring Park, MN 55384	888-434-2720	safetyrailcompany.com	Guardrail

Project: National Grid - Former Clifton MGP Site

EnviroTrac Submittal #8.3 Sub Component Pricing of All Major Equipment

Description	Designation	Vendor	Model	Unit Price	Qty.	Total
Oil Water Seperator	OW-01	ESD/W2W	OWS-10	$4,500.00	1	$4,500.00
Liquid Phase GAC Vessels	F-02A/B	ESD/W2W	LLPS-250	$1,500.00	3	$4,500.00
Water Level Transducers	LT	ESD/W2W	Winters LM3W40	$1,500.00	2	$3,000.00
Transfer Pump	P-02	Grainger	Dayton 4RU77	$500.00	1	$500.00
Cartridge Filter Housing	F-03	Grainger	4BA77	$120.00	1	$120.00
Cartidge Filters - 5 Micron		Grainger	4PCC4	$40.00	10	$400.00
Bag Filter Housing	F-01A/B	Grainger	4BB24	$750.00	2	$1,500.00
Bag Filters 5 Micron (pkg of 20)		Grainger	4BE57	$100.00	5	$500.00
Magnetic Flow Meter	FIT 119	Grainger	2551-310	$1,750.00	1	$1,750.00
Pressure Gauges (0-60 psi)	PI	Wika	21X.53	$30.00	13	$390.00
Blackhawk well pump and controller	P-01	Blackhawk	Anchor 101E	$13,000.00	1	$13,000.00
Pressure Transducer	PT-106	Dwyer	IS626-09-GH-P1-E1-S1	$275.00	1	$275.00
Floor Sump Level Switches	LSHH120/121	Dwyer	L8	$75.00	2	$150.00
Heat Trace - 5W/ft		Chromalox	SRL5-2CR	$12.50	100	$1,250.00
Heat Trace Monitor w/ sensor	TT	Chromalox	DTS-HAZ	$700.00	2	$1,400.00

Project: National Grid - Former Clifton MGP Site

EnviroTrac Submittal #8.4 Remediation Equipment Cut Sheets

Submittal#	Equipment ID	Description	Model #
8.4.1	P-01	Blackhawk Piston Pump	101E
8.4.2	OW-01	ESD/W2W Oil Water Separator	OWS-10
8.4.3	F-02A/B/C	ESD/W2W LGAC Vessels	LLPS-250
8.4.4	P-02	Dayton Centrifugal Transfer Pump	4RU77
8.4.5	F-01A/B	Pentek Bag Filter Housings	15611075
8.4.6	F-03	Pentek Cartridge Filter Housing	150233
8.4.7	S-01	Denios Spill Platform	K42-50-20
8.4.8	LT 100A/B	Winters Pressure Transducers	LM3W40
8.4.9	PI 101/107-118	Wika Pressure Gauges	21X.53
8.4.10	PT 106	Dwyer Pressure Transmitter	626-10-GH-P1-E1-S1
8.4.11	FIT 119	Signet Magnetic Flow Meter/Transmitter	2551-310
8.4.12	LSHH 120/121	Dwyer Liquid Level Switch	L8

BLACKHAWK TECHNOLOGY COMPANY

WHEN PUMPING RESULTS MATTER

ANCHOR ELECTRIC PISTON PUMP®

Patented Top-Head-Drive Piston Pump

TECHNICAL SPECIFICATIONS

Patented, Electric Top-Head Drive Motor

Customizable Downhole Pump

DESCRIPTION

The Anchor Electric Piston Pump Model 101E is powered by electricity. The control motor is located at surface grade for easy installation and maintenance. Top-head drive motor provides linear pumping action from grade through the sucker-rod assembly. The pump removes water and product (e.g., oil, solvents, leachate) from a two (2) inch (4.85 cm) diameter well casing or greater to depths of 804 feet (245 meters) with a 1 hp motor at 50 Hz. The fluid inlet is located at the bottom of the pump intake cylinder and removes water or product to 0 submergence depth.

MODEL 101E

FLOW RANGE
0–1.2 US GPM
4.5 LPM

OPERATIONAL DEPTH
804 Ft.
245 M
with 1 hp motor

WELL CASING SIZE
Minimum 2 In.
4.85 CM

PERFORMANCE AND TECHNICAL DATA

PERFORMANCE

Operational Depth	804 feet/245 m
Flow Range	0 to 1.2 US GPM/ 4.5 LPM 1,730 US GPD/ 6,548 LPD
Discharge per Stroke	.05 US Gallons per stroke Note: flow does not vary with depth
Motor	1/2 or 1 hp
Power Supply	120 or 230 Volt Single Phase or 230 or 460 Volt Three Phase
Maximum Discharge Pressure	348 PSI
Maximum Lift	804 feet of water or 348 PSIG Variable speed (stroke) control adjusts to well conditions; liquid drawn down to top of strainer.

TECHNICAL

Stroke Length	12" (30.48 cm)
Maximum External Diameter	2.9" (7.37 cm)
Total Cylinder Length	30" (76.2 cm)
Connection of Riser Pipe	1-1/4" (3.18 cm)
Connection to Sucker Rod	7/16" - 20
Recommended Internal Diameter of Bore Hole	2–3" (4.85 – 7.62 cm) or greater diameter
Weight of Cylinder	8 lbs.
Discharge Size	2" NPT
Installation	Unit can be installed vertically or horizontally
Driver Weight	40 lbs.
Driver Rod Weight	12 lbs./100'
Foot Valve Assembly Weight	8 lbs.
Minimum Well Casing Size	2"

BLACKHAWK TECHNOLOGY COMPANY • 21W211 HILL AVE., GLEN ELLYN, IL 60137 • P: 800.469.4887 • F: 630.469.4896
www.blackhawkco.com

ANCHOR ELECTRIC PISTON PUMP®
MODEL 101E

TECHNICAL SPECIFICATIONS

MATERIALS OF CONSTRUCTION
(Materials of construction can be modified to meet specific applications)

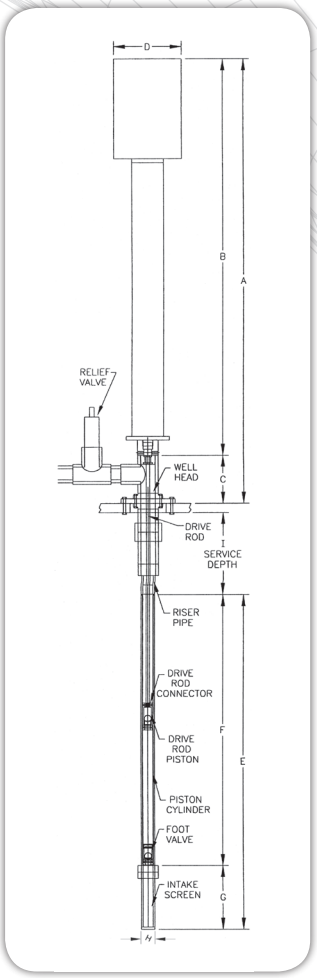
ABOVE GROUND

Drive Motor	Stainless Steel/ Aluminum
Seal Plate	Delrin®
Seal Plate Seals	Nitrile/Viton
Relief Valve	Stainless Steel
Discharge Tee	Stainless Steel
Well Head	Steel

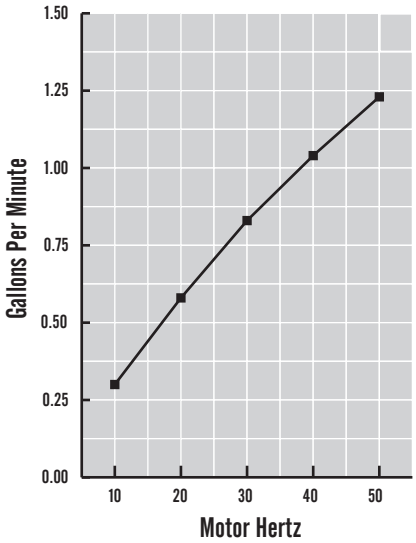
DOWNHOLE

Drive Rod	Fiberglass
Drive Rod Connector	Stainless Steel
Drive Piston Seal	Nitrile/Viton
Drive Piston Check Ball	Stainless Steel
Drive Piston	Delrin®
Piston Cylinder	Stainless Steel/PVC
Foot Valve Check Ball	Stainless Steel
Foot Valve	Delrin® with Stainless seat
Intake Screen	Stainless Steel/PVC

PUMP DIMENSIONS



ANCHOR 101E ELECTRIC PUMP FLOW PERFORMANCE



AVAILABLE OPTIONS

- ✓ Level Control Systems
- ✓ Hazardous Duty Components
- ✓ Metered Flow Control
- ✓ Flow Measurement
- ✓ Variable Frequency Drive
- ✓ SCADA Capability

DIMENSIONS (IN INCHES)

A	Above Well Height	48.5
B	Driver Height	43
C	Discharge Tee & Well Seal Height	5.5
D	Driver Diameter	8
E	Foot Valve Assembly Length	38
F	Foot Valve Length	30
G	Intake Screen Length	8
H	Downhole Diameter	1.9

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www.blackhawkco.com

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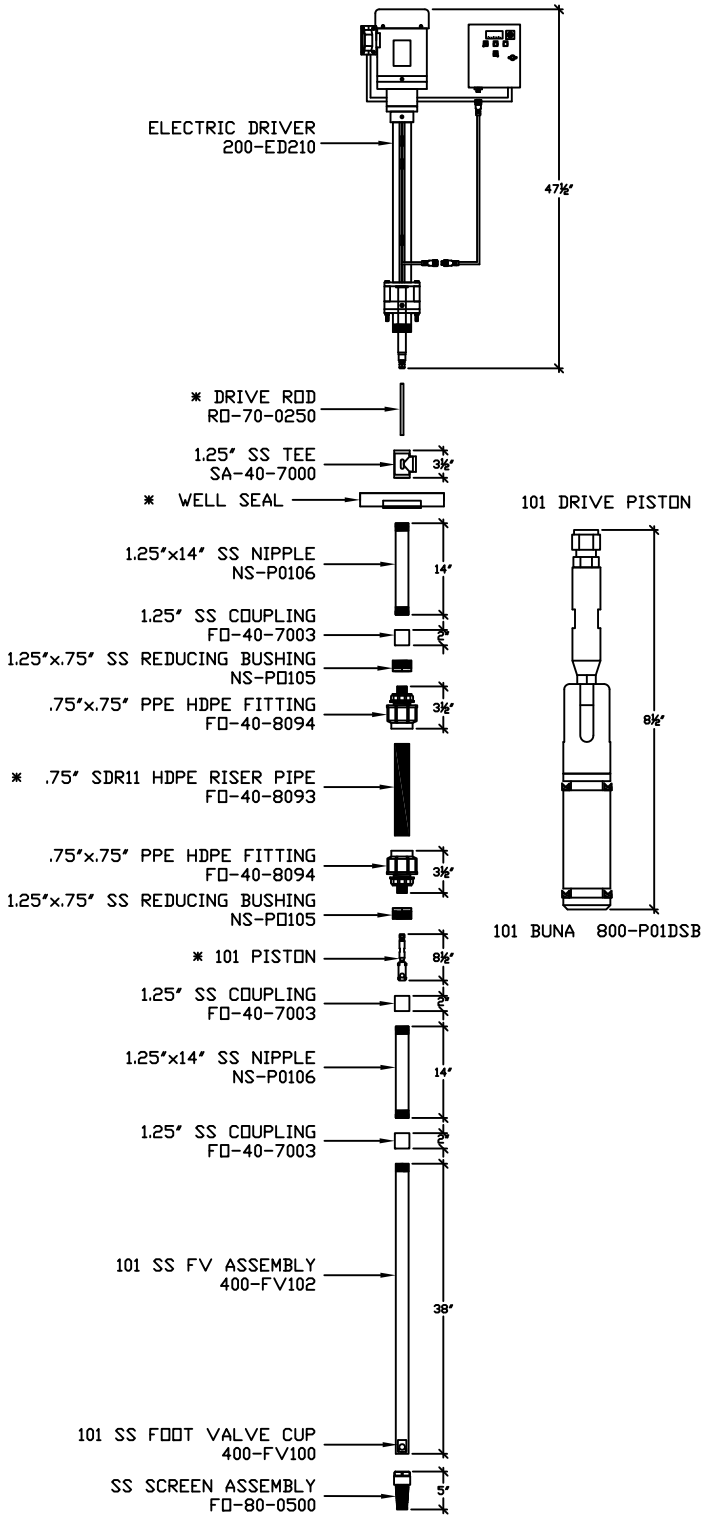
BLACKHAWK
TECHNOLOGY COMPANY

.75PPE HDPE FITTINGS FOR ANCHOR 101 DOWN HOLE



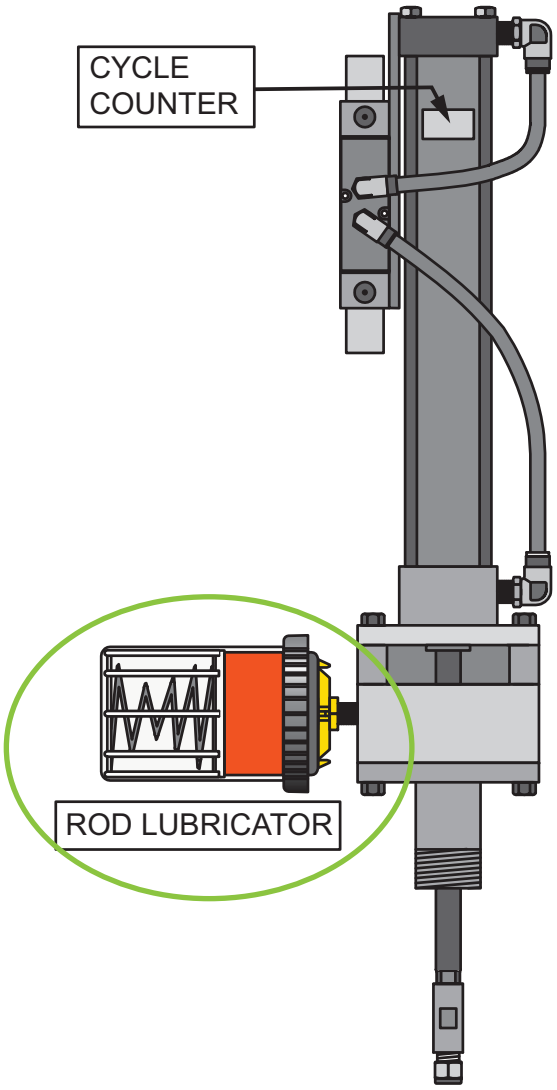
21W211 HILL AVENUE, GLEN ELLYN, IL 60137
PHONE: (630) 469-4916 FAX: (630) 469-4896
www.blackhawkco.com

* AVAILABLE BY ORDER.

(FOR REFERENCE ONLY)

800.469.4887
www.blackhawkco.com

Pneumatic Rod Lubricator



WHAT IS A ROD LUBRICATOR?

The auto-lube is a battery-powered devise that injects minute, pre-set amounts of lubricant, usually oil, to the drive rod over long periods of time. It is attached at the stuffing-box seal plate's lube point.

WHY IS IT IMPORTANT?

All drive rods need light lubrication to reduce friction and to protect the seal-plate cartridge from wear as the cartridge scrapes and wipes the rod of particulate contamination from well liquids.

Failure to lubricate, lubricating only sporadically or over lubricating will likely result in severe damage. Stuffing-box seals will wear out more quickly and require replacement. It is the operator's responsibility to maintain a lube program. Improper lubrication may void Blackhawk's warranty on pumps and pump parts.

HOW TO INSTALL

Blackhawk's lubricator screws in at the seal plate's lube point. To activate, install the alkaline battery pack in the unit. Pre-charge all fittings, lube lines and bearings with lubricant ordered. Install fitting (1, 3, 6 or 12-month), and screw into plate.

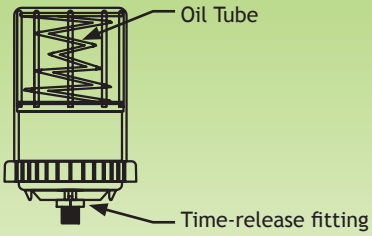
The screw-in cartridge is made from recycled polymer and can be replaced in 60 seconds. Users choose from four time-release settings, up to 12 months. The auto lube operates to 140 psi.

Blackhawk recommends

Also placing a cylinder oiler immediately before air enters the driver. Together, the oiler and the rod lubricator above-ground moving parts are protected from seizing and premature wear to extend pump life.

How It Works

Employing system technology based on positive-displacement pumping and powered by common alkaline batteries, the auto lube ejects tiny amounts of oil or grease from a tube in the unit dome. Users choose one of the four special fittings, tailored for pumping requirements, to program-control the rate of release with each stroke. When empty, the inexpensive cartridge is simply unscrewed and replaced.



Maximize your investment in Blackhawk Pumps

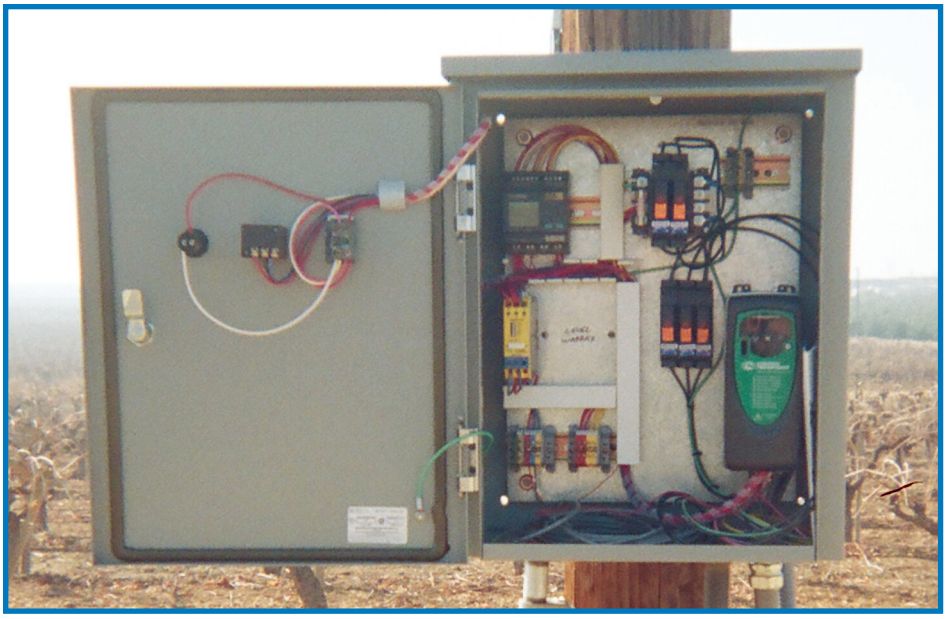
Fact Sheet #3

BLACKHAWK TECHNOLOGY COMPANY | 21W211 HILL AVE. | GLEN ELLYN, IL 60137 | P 800.469.4887 | F 630.469.4896
www.blackhawkco.com | info@blackhawkco.com

02072014

The New Blackhawk Controller

Lower your costs and improve your pump productivity with next-generation technology from the field-proven leader - *The best pumping control in the industry*



Conventional pump controllers run fast, then stop – on and off, like a light switch. As a result, pump production is inconsistent, and operating costs are high. Stop-and-go performance is hard on critical machinery, too. As requirements for pump efficiency and effectiveness continue to rise, operators look to technological improvements to meet their higher performance goals. The new generation is here.

Choose standard model (left) or pump mount

New, state-of-the-art Blackhawk Controller reduces operating costs, boosts productivity and extends pump life

Blackhawk's industry-leading control box has taken another step in controller evolution. Programmed to optimize your individual pumping situation, the Blackhawk Controller acts as the pump's brain.

It senses downwell conditions and environment changes, then adjusts pump dynamics to match well outputs. Advanced software varies stroke counts and running speeds, which eliminates the need for the pump to shut down. The Blackhawk Controller adjusts strokes to reduce rod float, and increases upstrokes to maximize production. The effect of this tightly controlled activity is to boost productivity *while reducing the drive's overall speed.* Slower speeds mean lower horsepower requirements – resulting in reduced energy costs and less wear on vital pump components.

Tune your pump to your well – keep it running and pumping more

The Blackhawk Controller actively varies pump speed throughout the day, even during a single stroke, to run at each well's optimal speed. You get more fluid with less silt, sand and sediment, while eliminating downtime. The controller can be programmed to shut down the pump during hours of peak energy costs, or to run a pump just fast enough to help prevent sand and silt from entering the plunger.

Blackhawk puts you in control of the well and well data

You program productivity and power parameters. Monitoring is easy with useful, simply presented data displays available both at the well and to a SCADA system. The built-in communications port allows easy offsite computer monitoring of many wells by a single field operator.

Reliable, Versatile, Inexpensive

The Blackhawk Controller is built on a hardware platform from Emerson Electric, globally known for reliability. The controller works with virtually any pump in the field, and is the ideal companion to Blackhawk's Vector top-head-drive piston pump.

With increased well production, lower energy consumption, fewer mechanical failures and reduced parts replacement -- in addition to the low purchase price – Blackhawk's Controller is an excellent overall value. And it installs in less than half the time of a conventional controller, a bonus savings.

Let us show you the ROI of your individual situation - for free. We can help your pumps work harder at lower cost.

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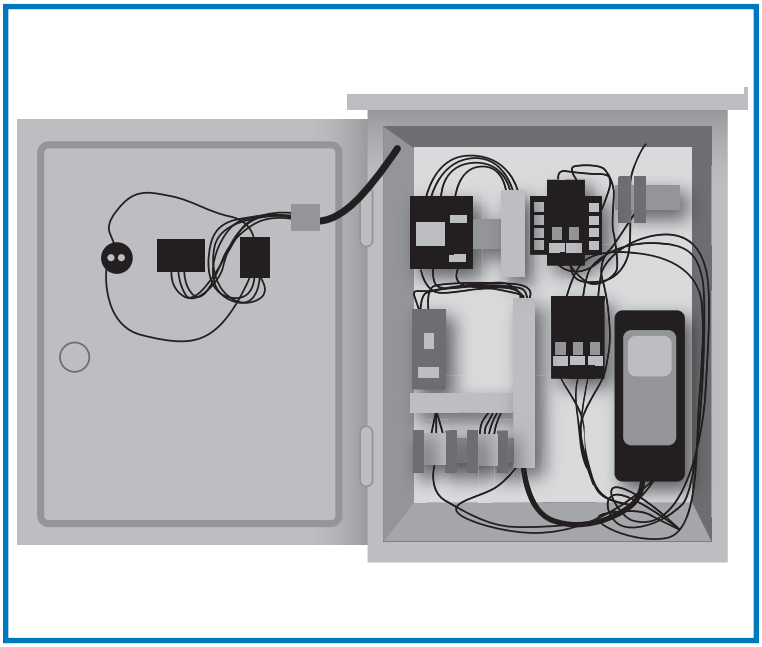
www.blackhawkco.com

The New Blackhawk Controller

Lower your costs and improve your pump productivity with next-generation technology from the field-proven leader - *The best pumping control in the industry*

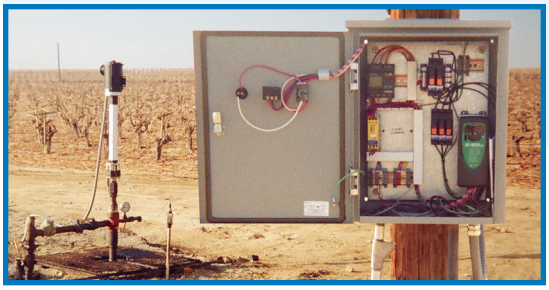


- Choose easy-to-use pump time and dwell set-up with external communication port – allowing you to decide speed, time between pumps, and time of day, week or month to pump
- Pre-program speed, hour run time, stroke count, dwell delay time for both up and down stroke, auto restart if electric service interrupted, time-of-day on/off
- Match production with actual well inflow by changing pump cycle time in the well or through continuous altering of pump speed
- Accurately control rod pumping system, determining when pump needs to run to reduce utility costs
- Built-in communications port allows operator to monitor, manage and optimize pump from a single, off-site control point
- Pump and controls come ready to plumb and plug in

Next-Generation Blackhawk Controller

Technical Specifications

- Nema 3 Enclosure 20x16x8 inches
- Auto restart on power loss
- PLC programmable VFD
- Modbus RTU RS485 via R J45 connector
- Communications upgradeable
- Hour's meter (years, days, hours, and minutes)
- 25 amp disconnect
- Required fusing to meet NEC specification
- Programmable Logic Controller (PLC)
  Adjustable PLC functions at the pump.
- Drive "ON/OFF" switch
- Speed "MIN/MAX" potentiometer
- "Pump running" light

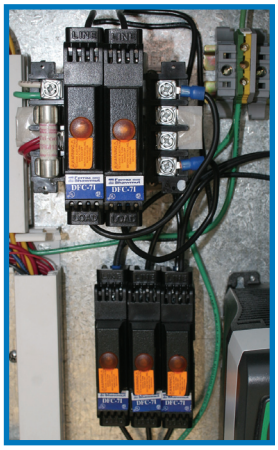


Blackhawk Control Panel Options

- External display (can be mounted up to 100' from control box)
- Stroke counter
- Stroke dwell (needs I/O or real-time clock module)
- Programmable I/O modules
- Real-time clock module for time of day run
- Conductivity level control
- Pressure transducer level control
- IS barriers for explosion-proof applications
- SCADA communication modules
  - DeviceNet
  - PROFIBUS-DP
  - CANopen
  - INTERBUS
  - Ethernet

Notes:

- *Only one module per drive may be used*
- *Functions are stored on a removable reprogrammable logic chip*
- *Functions may not be changed on the chip without a laptop computer*



BLACKHAWK TECHNOLOGY COMPANY • 21W161 HILL AVE., GLEN ELLYN, IL 60137 • P: 630.469.4916 • F: 630.469.4896

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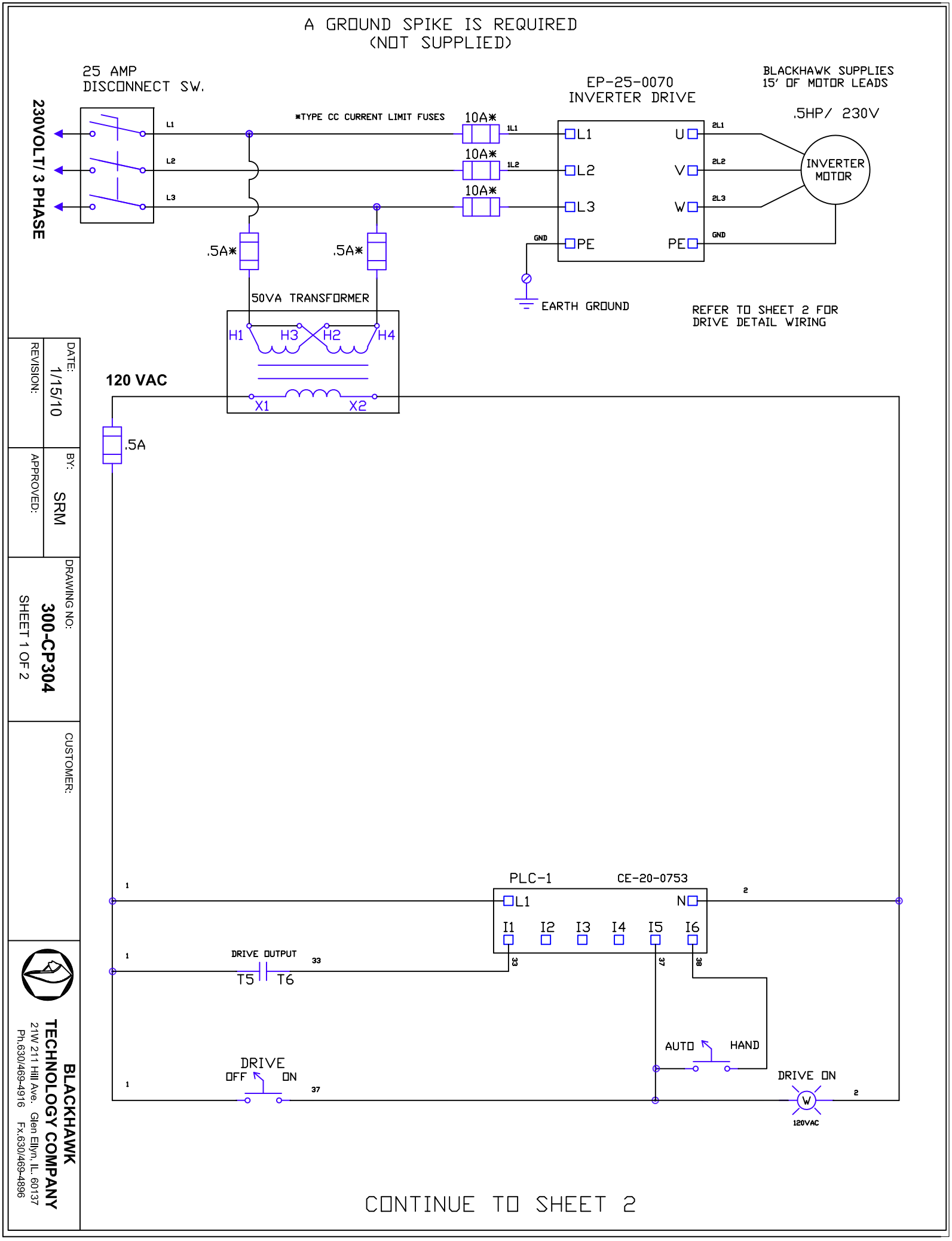
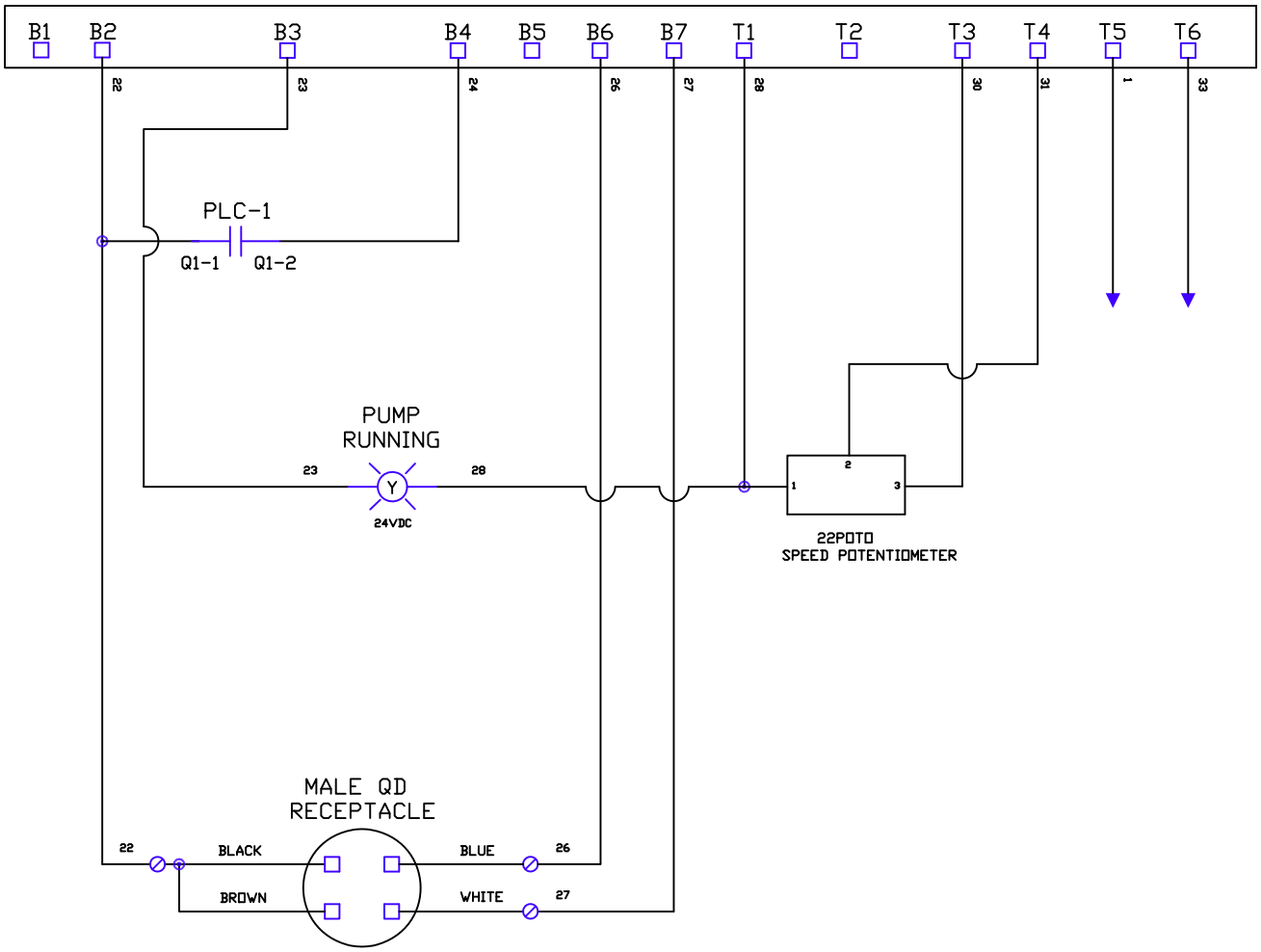


DATE: 1/15/10
REVISION:
BY: SRM
APPROVED:
DRAWING NO: 300-CP304
SHEET 1 OF 2
CUSTOMER:

BLACKHAWK TECHNOLOGY COMPANY
21W 211 Hill Ave. Glen Ellyn, IL. 60137
Ph:630/469-4916 Fx:630/469-4896

CONTINUED FROM SHEET 1

EP-25-0070 INVERTER DRIVE

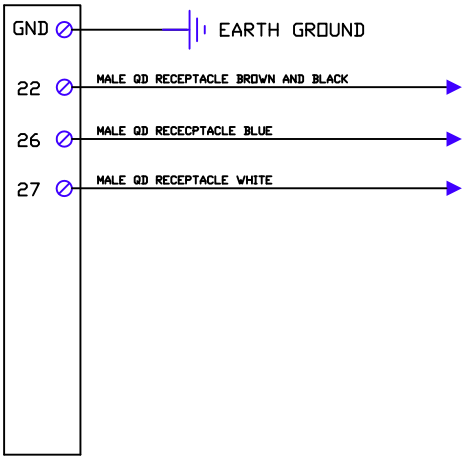


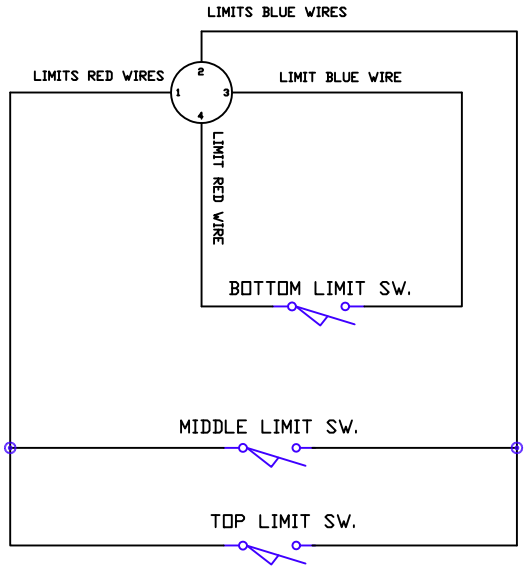
ALL PUMP LIMIT SWITCH WIRING MUST BE ISOLATED FROM ALL OTHER CONTROL AND POWER WIRING. A SEPARATE CONDUIT IS REQUIRED.
ONLY. REFER TO DRIVE MANUAL FOR INSTRUCTIONS.

BLACKHAWK SUPPLIES A 15' JUMPER FOR THE LIMIT SWITCHES

FEMALE QUICK DISCONNECT PLUG

FIELD TERMINAL STRIP CONNECTION SUMMARY





DATE: 1/15/10
REVISION:
BY: SRM
APPROVED:
DRAWING NO: 300-CP304
SHEET 2 OF 2
CUSTOMER:

BLACKHAWK TECHNOLOGY COMPANY
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Ph.630/469-4916 Fx.630/469-4896

ESD Waste2Water, Inc.
Partnership for a Cleaner Tomorrow

Enhanced Oil/Water Separator

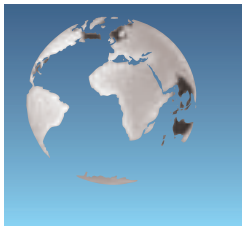
ESD Waste2Water, Inc. manufactures a complete line of above ground corrugated plate enhanced oil/water separators. The separators are designed to remove free and dispersed non-emulsified oil and settable solids in accordance with API 421.

All of the ESD Waste2Water, Inc. oil/water separators are manufactured out of 5052 H32 marine grade aluminum or stainless steel.

Certified to UL-508A Standards

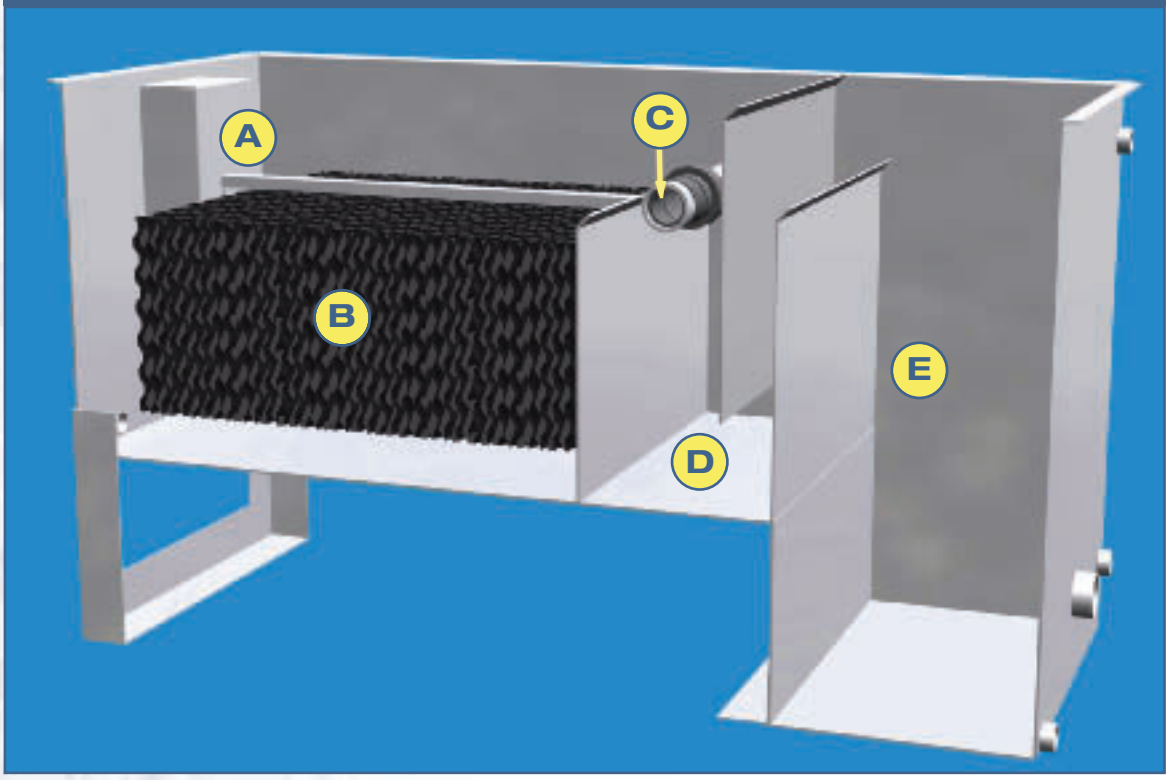
Typical applications:

- Groundwater Treatment
- Equipment and Vehicle Washing
- Aircraft Maintenance Operations
- Oil Field Services
- Food Processing
- Storm Water Runoff
- Floor Drains
- Bulk Storage Facilities



ESD Waste2Water, Inc.
Partnership for a Cleaner Tomorrow

Enhanced Oil/Water Separator Diagram



A Inlet Compartment
The inlet compartment is equipped with a non-clogging diffuser to ensure the untreated water is distributed evenly to the separation chamber. The inlet compartment is designed to ensure no short-circuiting is encountered.

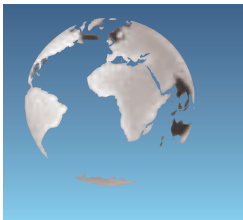
B Separation Chamber
The separation chamber is equipped with inclined parallel plate media for enhanced oil/water separation. The flow through the media is in a cross-flow configuration. This allows for the oil to rise without interfering with falling solids. The plates are installed to allow for easy dismantling, cleaning and re-installation.

C Oil Collection
The separated oil is collected at the end of the separation chamber via a rotary skimmer. The rotary skimmer is easily adjusted for optimum oil collection.

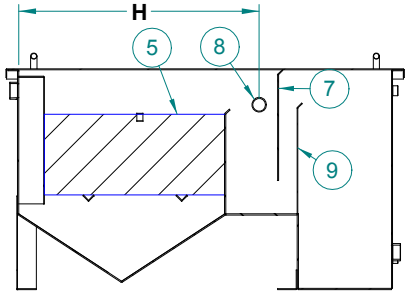
D Clarifier
The clarifier is located after the separation chamber prior to the clean water chamber. The clarifier is equipped w/ a manual drain to facilitate the removal of collected solids.

E Clean Water Chamber
The water will pass through the clarifier and into the clean water chamber. The clean water chamber allows for either gravity or pump discharge.

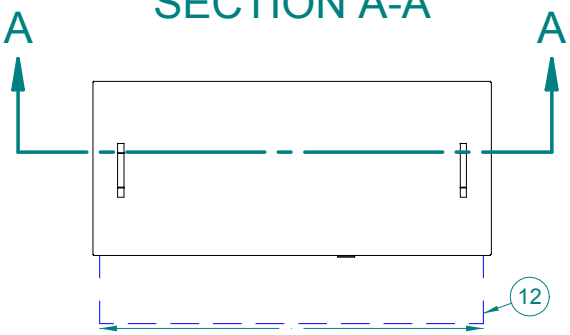
495 Oak Road
Ocala, Florida 34472
Tel: 800.277.3279 • Fax: 352-680-9278
www.waste2water.com



OWS		
ITM	DESCRIPTION	QTY
1	2" FNPT , INLET	1
2	2" FNPT , OUTLET	1
3	OIL OUTLET	1
4	1" FNPT VENT	1
5	COALESCING MEDIA	1
6	ACCESS LID	1
7	OIL STOP WEIR	1
8	PVC OIL SKIMMER	1
9	OVERFLOW BAFFLE	1
10	1" FNPT SIGHT GLASS PORT	2
11	OPT. SIGHT GLASS w/ MULTI LEVEL PROBE	1
12	OPT. PRODUCT TANK	1
13	1 1/2" FNPT SLUDGE DRAIN	1
14	1" FNPT DRAIN	3



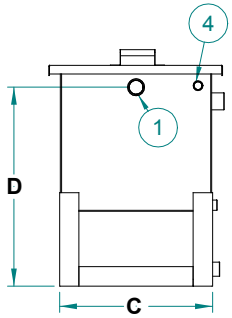
SECTION A-A

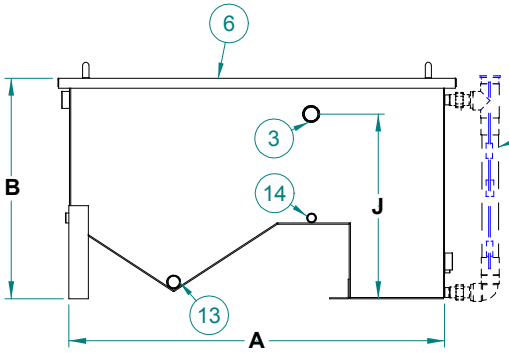


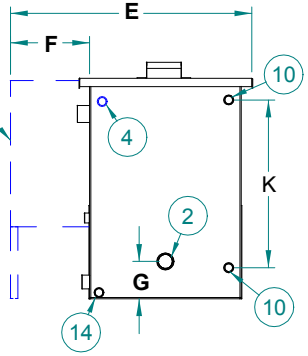
OWS

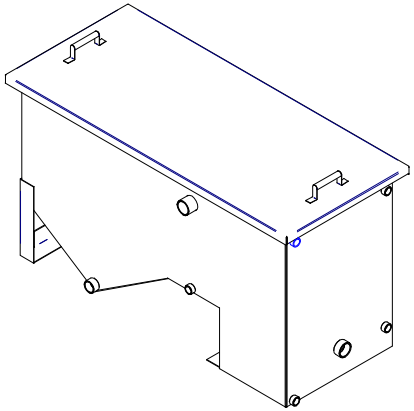
		OWS-10	OWS-25	OWS-50	OWS-80
A	LENGTH	60 1/2"	60 1/2"	83"	83"
B	HEIGHT	35 1/2"	35 1/2"	60"	60"
C	WIDTH	12"	24 1/2"	36"	48"
D	INLET HEIGHT	32"	32"	56"	56"
E	WIDTH (INCLUDING OPT PRODUCT TANK)	21 1/2"	38"	56"	66"
F	WIDTH OF PRODUCT TANK	12"	12"	18	18"
G	OUTLET HEIGHT	12"	12"	12"	12"
H	PRODUCT OUTLET	39"	39"	54"	54"
J	PRODUCT OUTLET HEIGHT	29 3/4"	29 3/4"	53 1/2"	53 1/2"
K	SIGHT TUBE PORTS	27"	27"	49"	49"
	SHIPPING WEIGHT (LBS)	115	175	450	520
	OPERATING WEIGHT (LBS)	650	1300	4500	5300
	SEPARATOR VOLUME (GALLONS)	40	80	280	305
	EFFLUENT VOLUME (GALLONS)	19	38	135	220
	SLUDGE VOLUME (GALLONS)	9	18	76	101
	COALESING AREA (CUBIC FEET)	2.5	5	16	24
	OPT PRODUCT TANK VOLUME (GALLONS)	35	55	160	220

NOTES:
1. MATERIAL : 3/16" ALUMINUM SHT 5052
2. GASKET : NEOPRENE
3. INTERNAL PIPE : SCH 80 PVC









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ESD Waste2Water, Inc.
495 Oak Road
Ocala, FL 34472
Phone (800) 277-3279
Fax (352) 680-0059

SCALE VERIFCATION
THIS BAR REPRESENTS ONE INCH ON ORIGNAL DRAWING
1"
USE TO VERIFY DRAWING

SIZE: B
SHEET #: 1 OF 1
SCALE: NTS
UPDATED BY: J. Andrews
DRAWN BY: J. Andrews
APPROVED BY:
COMPLETED: 6/5/10
UPDATED:

OIL WATER SEPARATOR
GENERAL LAYOUT
SPEC

JOB NUMBER:
PRODUCT NUMBER: OWS
FILE NAME: "OWS ALL MODELS SPEC.dft"

LGAC Vessels (F-02A/B/C) #LLPS-250

Liquid Low Pressure Steel Filters

LLPS 250-10,000 lb. Vessels

The **LLPS** series Liquid Phase Carbon filters are designed for water treatment applications. With a wide range of sizes, the LHPS series can fulfill a wide range of applications. These treatment filters hold 250-10,000 pounds of activated carbons or any variety of media with flow rates of up to 400 GPM.

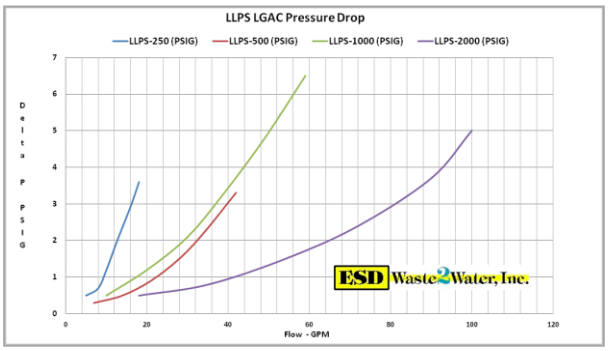
APPLICATIONS:

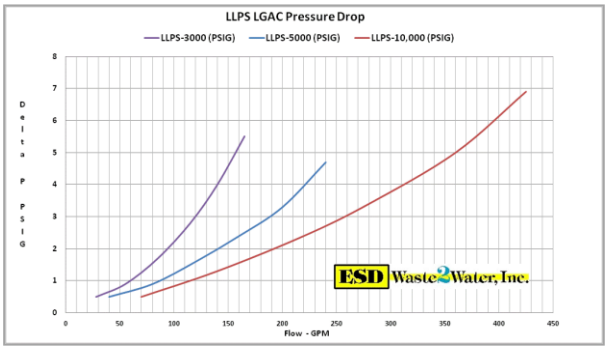
- Wastewater filtration
- Groundwater Remediation
- Underground Storage Tank Cleanup
- Dissolved Organic Removal
- Product Purification
- Tank Cleaning
- Pilot Testing
- Emergency Spill Treatment

FEATURES:

- Simple Installation and Operation
- Flexibility to be used in series of parallel operation
- Can be supplied with various medias
- Modular design for easy and rapid deployment and installation

PRESSURE DROP VS FLOW RATE





Specifications

Liquid Low Pressure Steel Filters	250	500	1000	2000	3000	5000	10,000
Dimensions: diameter x overall height	24" x 48"	30" x 72"	36" x 84"	50" x 101"	60" x 108"	72" x 120"	96" x 130"
Vessel Construction	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
Inlet/Outlet Connection	2 " FNPT/2"MNPT	2 " FNPT	2 " FNPT	3 " FNPT	3 " FNPT	3 " FNPT	6 " Flange
Pounds of Carbon	250	500	1000	2000	3000	5000	10,000
Internal Piping	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC
Interior Coating	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy
Exterior Coating	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic
Carbon Bed Volume (cu.ft.)	8.6	16.5	33	68.5	107	170	350
Cross Section (sq.ft.)	3.1	4.9	7	12.6	19.3	28	50
Vessel Weight (lbs) Shipping Operational	 452 850	 870 1765	 1475 3100	 2985 6400	 4400 9875	 7325 16,550	 13,225 29,050
Flow, GPM (max.)	10	25	50	90	135	200	400
Pressure, PSIG (max.)	40	40	40	40	40	40	40
Temperature, °F (max)	140°	140°	140°	140°	140°	140°	140°

***The information provided in this literature contains merely general descriptions or characteristics of performance, which in actual case of use do not always apply as, described or which may change as a result of further product development. Specifications provided herein are subject to change without prior notice.*

ESD Waste2Water, Inc.
495 Oak Road, Ocala, FL 34472
Toll Free (800) 277-3279 • (352) 680-0400 • Fax (352) 680-9278
www.waste2water.com

Transfer Pump (P-02)

How can we improve our **Product Images**?

Compare

Centrifugal Pump, 3/4hp, 1-Ph, 115/230V

DAYTON

Price
$437.85 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

+Add to list

Availability for Qty 1 Go

Shipping Pick Up

Expected to arrive **Thu. Mar 5**

Ship to: **11710** (Change)

Add **Repair & Replacement Coverage** for **$89.95 each.**

Be the first to write a review | **Ask & Answer**

Item # **4RU77** Mfr. Model # **4RU77** UNSPSC # **40151503**

Catalog Page # **N/A** Shipping Weight **31.0 lbs.**

Country of Origin **USA** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Centrifugal Pump**
Close Couple	**Yes**
Housing Material	**Cast Iron**
HP	**3/4**
Phase	**1**
Voltage	**115/230VAC**
Amps	**12.4/6.2**
Hz	**60**
Inlet	**1-1/4"**
Outlet	**1"**
Motor Enclosure	**ODP**
NEMA/IEC Frame	**48Y**
Motor RPM	**3450**
Service Factor	**1.27**
Impeller Type	**Closed**
Impeller Material	**Noryl**
Impeller Dia.	**5"**

Back to Top

GPM of Water @ 50 Ft. of Head	**35**
GPM of Water @ 60 Ft. of Head	**31**
GPM of Water @ 70 Ft. of Head	**26**
GPM of Water @ 80 Ft. of Head	**21**
GPM of Water @ 90 Ft. of Head	**14**
Max. Head	**100 ft.**
Min. GPM @ Head	**14 @ 90 ft.**
Max. GPM @ Head	**43 @ 20 ft.**
Best Efficiency GPM @ Head	**28 @ 65 ft.**
Best Efficiency Range GPM @ Head	**16-38 gpm @ 85-58 ft.**
Max. Specific Gravity	**1**
Wetted Materials	**Stainless Steel, Carbon, Cast Iron, Noryl, Ceramic, Buna-N**
Max. Case Pressure	**100 psi**
Max. Fluid Viscosity	**1 cP**
Max. Pressure	**125 psi**

Shaft Material	**Stainless Steel**
Seal Type	**Type 21**
Seal Material	**Buna-N Elastomers, Carbon/Ceramic Face, 316 Stainless Steel Metal Parts**
Max. Liquid Temp.	**140 Degrees F**
GPM of Water @ 20 Ft. of Head	**46**
GPM of Water @ 30 Ft. of Head	**43**
GPM of Water @ 40 Ft. of Head	**40**

Bearing Type	**Ball**
Number of Port Positions	**4**
Drain Plug Position	**4 Position**
Manufacturers Warranty Length	**1 yr.**
Liquid Compatibility	**Nonflammable, Non Abrasive**
Length	**12-3/8"**
Width	**7-13/16"**
Height	**8-5/8"**

Bag Filter Housings (F-01A/B)

How can we improve our **Product Images**?

Compare

Bag Filter Housing, Alum, 1 1/4 In FNPT

PENTEK

Price
$567.00 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 **Add to Cart**

+Add to list

Availability for Qty 1 Go

Shipping | Pick Up

Expected to arrive **Thu. Mar 5**

Ship to: **11710** (Change)

Be the first to write a review | **Ask & Answer**

Item # **4BB24** Mfr. Model # **156110-75** UNSPSC # **40161525**

Catalog Page # **3800** Shipping Weight **12.55 lbs.**

Country of Origin **USA** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Bag Filter Housing**	Connection	**1-1/4" (F)NPT**
Series	**GP**	Seal Material	**Viton**
Filter Bag Size	**4**	Basket Material	**Stainless Steel**
Housing Material	**Aluminum**	Max. Pressure	**150 psi**
Outlet	**Bottom**	Flow Rate	**40 gpm**
Height	**20-1/2"**	Max. Water Temp.	**300 Degrees F**
Housing Dia.	**5"**	Cover Type	**Speed Bar Closure**

Back to Top

Cartridge Filter Housing (F-03) Pentek#150233

PENTEK® BIG BLUE® HEAVY DUTY SERIES FILTER HOUSINGS

FOR LARGE-CAPACITY, HIGH FLOW APPLICATIONS

Big Black not shown

Pentair® Pentek® Big Blue® and Big Black Heavy Duty Filter Housings offer the versatility to meet all of your large-capacity filtration needs, including high-flow and heavy-sediment applications. The extra large housing allows for greater cartridge capacity, reducing the number of vessels required for high flow-rate applications. Sumps are available in both 10" and 20" lengths.

The High-Flow Polypropylene (HFPP) cap is available with 3/4", 1" or 1-1/2" NPT inlet and outlet ports. The 1-1/2" internal port allows a greater volume of liquid to pass through the HFPP cap more rapidly.

Big Blue and Big Black Housings are compatible with a broad range of chemicals and are available with or without a pressure relief button. They accept a wide variety of 4-1/2" diameter cartridges.

FEATURES/BENEFITS

Large capacity housing suitable for high flow applications

Available in 10" and 20" lengths

Pressure relief/bleed on inlet side of cap

Accepts up to 4-1/2" diameter cartridges

SPECIFICATIONS

Housing – Polypropylene

Cap – Polypropylene (HFPP)

Button Assembly – 300-Series stainless steel, EPDM, and polypropylene

O-Ring – Buna-N®

Temperature Rating-
40-100°F (4.4-37.8°C)

Maximum Pressure-
10": 100 psi (6.9 bar)
20" : 90 psi (6.2 bar)

NSF COMPONENT

The 150233, 150234, 150235, 150236, 150237, 150238, 150239, 150240, 150467, 150468, 150469, and 150470 are Tested and Certified by NSF International to NSF/ANSI Standard 42 for material and structural integrity requirements.

SPECIFICATIONS AND PERFORMANCE

PART #	DESCRIPTION	MAXIMUM DIMENSIONS	INITIAL ΔP (PSI) @ FLOW RATE (GPM)
150469*	3/4" #10 Big Blue® Black/Blue HFPP w/PR	12.75" x 7.38" (324 x 187 mm)	2 psi @ 15 gpm (0.14 bar @ 57 Lpm)
150470*	3/4" #10 Big Blue Black/Blue HFPP w/o PR	12.75" x 7.38" (324 x 187 mm)	2 psi @ 15 gpm (0.14 bar @ 57 Lpm)
150467*	3/4" #20 Big Blue Black/Blue HFPP w/PR	23.04" x 7.38" (585 x 187 mm)	2 psi @ 15 gpm (0.14 bar @ 57 Lpm)
150468*	3/4" #20 Big Blue Black/Blue HFPP w/o PR	23.04" x 7.38" (585 x 187 mm)	2 psi @ 15 gpm (0.14 bar @ 57 Lpm)
158799*	3/4" #20 Big Blue Black/White HFPP w/PR	23.04" x 7.38" (585 x 187 mm)	2 psi @ 15 gpm (0.14 bar @ 57 Lpm)
150237*	1" #10 Big Blue Black/Blue HFPP w/PR	13.30" x 7.45" (338 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)
150238*	1" #10 Big Blue Black/Blue HFPP w/o PR	13.30" x 7.45" (338 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)
150233*	1" #20 Big Blue Black/Blue HFPP w/PR	23.22" x 7.45" (590 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)
150234*	1" #20 Big Blue Black/Blue HFPP w/o PR	23.22" x 7.45" (590 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)
150239*	1-1/2" #10 Big Blue Black/Blue HFPP w/PR	13.45" x 7.45" (342 x 189 mm)	1 psi @ 20 gpm (0.07 bar @ 76 Lpm)
150240*	1-1/2" #10 Big Blue Black/Blue HFPP w/o PR	13.45" x 7.45" (342 x 189 mm)	1 psi @ 20 gpm (0.07 bar @ 76 Lpm)
150235*	1-1/2" #20 Big Blue Black/Blue HFPP w/PR	23.74" x 7.45" (603 x 189 mm)	1 psi @ 20 gpm (0.07 bar @ 76 Lpm)
150236*	1-1/2" #20 Big Blue Black/Blue HFPP w/o PR	23.74" x 7.45" (603 x 189 mm)	1 psi @ 20 gpm (0.07 bar @ 76 Lpm)
150671	1" #10 Big Blue Black/Black HFPP w/o PR	13.30" x 7.45" (338 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)
150426	1" #10 Big Blue Black/Black HFPP w/PR	13.30" x 7.45" (338 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)
150383	1" #20 Big Blue Black/Black HFPP w/PR	23.22" x 7.45" (590 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)
150672	1" #20 Big Blue Black/Black HFPP w/o PR	23.22" x 7.45" (590 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)
150639	1-1/2" #20 Big Blue Black/Black HFPP w/o PR	23.74" x 7.45" (603 x 189 mm)	1 psi @ 15 gpm (0.07 bar @ 57 Lpm)

*NSF component listed

CAUTION: Protect against freezing to prevent cracking of the filter and water leakage.

ACCESSORIES

PART #	DESCRIPTION
150296	SW-3 Wrench for 10" Big Blue®
144368	SW-4 Wrench for 20" Big Blue
SH144229	Cartridge Coupler for 4-1/2" Cartridges
151122	Buna-N® O-ring for Big Blue
244718	WB-ZP - Zinc Plated Bracket ONLY
150061	WB-ZP Kit - Zinc Plated Bracket
357639	WB-SS - Stainless Steel Bracket ONLY
357640	WB-SS Kit - Stainless Steel Bracket
144928	WB-PC Kit - Powder Coated White Bracket
144258	Two-Housing Bracket
144259	Three-Housing Bracket
160210	Big Blue /Big White/Big Clear Skid, Fiberglass Hardware Kit (Assembly Required)

PENTAIR

FILTRATION & PROCESS
5730 NORTH GLEN PARK ROAD, MILWAUKEE, WI 53209
262.238.4400, CUSTOMER CARE: 800.279.9404, WWW.PENTAIRAQUA.COM

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Large Volume Dispensing Platforms

Designed to contain large volume spills from dispensing or pumping operations as well as storage applications.

- Single unit construction provides large uniform storage platform
- Large sump volumes allow for compliant spill containment even when storing multiple tanks, IBC's or stacked drums
- High load capacity of 225 psf allow placement of heavy equipment or tanks
- Sumps are coated with chemical resistant mastic epoxy
- Custom configurations and load ratings available. Call for quotation

exclusive DENIOS

$ 2,360.00

10' x 7' Platform with 246-gallon sump. Order No. K42-5020

Containment Sump S-01

All equipment to be mounted on properly sized support bases to ensure loading capacity does not exceed 225 psf.
e.g. LGAC vessels to be mounted on 2'x2' steel base. (850# /4ft²), OWS to be mounted on two (2) 1.5'x1' aluminum bases (650#/3ft²).

Description		7' x 3'	10' x 7'	16' x 7'	13' x 9'
Dimension - L x D x H	(in)	87 x 41 x 9	120 x 88 x 9	197 x 88 x 9	157 x 110 x 9
Approx. Floor Space	(sq ft)	22	69	114	115
Gross Spill Capacity	(gal)	66	246	422	430
Load Capacity	(psf)	225	225	225	225
Shipping Weight	(lbs)	365	1016	1863	1898
Order No.		K42-5010	K42-5020	K42-5030	K42-5040
Price		**$ 1,625.00**	**$ 2,360.00**	**$ 4,016.00**	**$ 4,314.00**

LM3 Slim Line All-Purpose Submersible Transmitter

Level Transducers (LT100A/B) Winters #LM3W40

Description & Features:

- Slimline probe is especially suited for applications with restricted space
- Designed for continuous level measurement in water or other liquids with low viscosity
- 316L SS probe with stainless steel sensor for ease in cleaning
- Available ranges from H_2O up to 300 psi
- ±0.35% accuracy rating
- NEMA 6P / IP68
- Approved for outdoor use
- Customizable
- 1 year warranty

Applications:

- Appropriate for all hazardous areas where an intrinsically safe rating is required, including oil & gas and chemical installations

Specifications	
Output Signal	Standard 2-wire: 4-20 mA / Vs = 12-36 Vdc
Accuracy	±0.35% FSO BFSL Optional nominal pressure > 5 psi: <±0.25% FSO BFSL
Permissible Load	Rmax = [(Vs - Vs min) / 0.02] Ohm
Influence Effects	Supply: 0.05% FSO / 10 V Load: 0.05% FSO / kOhm
Long-term Stability	<±0.1% FSO/yr
Response Time	<10 ms
Permissible Temperatures	Medium: 14°F to 158°F (-10°C to 70°C) Storage: -13°F to 158°F (-25°C to 70°C)
Reverse Polarity Protection	No damage. No function.
Electromagnetic Protection	Emission and immunity according to EN 61326
Electrical Connection	Cable with sheath material*: PVC grey, PUR black, FEP black
Housing	316Ti SS
Seals	FKM (Viton®, Kalrez®) / EPDM (Nordel®)
Diaphragm	316L SS
Weight	100 g (without cable)
Current Consumption	25 mA max
Connecting Cables	Cable capacitance: Signal line/shield and signal line/signal line: 160 pF/m Cable inductance: Signal line/shield and signal line/signal line: 1 µH/m
Enclosure Rating	NEMA 6P / IP68

Thermal Errors (Offset and Span)					
Nominal Pressure (psi)	<1	<4	<5	<15	>15
Tolerance Band (% FSO)	<±2	<±1.5	<±1	<±1	<±0.75
TC, Average (% FSO/10K)	±0.3	±0.2	±0.14	±0.1	±0.07
Compensated Range	32°F to 122°F 0°C to 50°C			32°F to 158°F 0°C to 70°C	

Pin Configuration		
Electrical Connection		Cable Colours
2-wire system	Supply + Supply -	White Brown
	Ground	Yellow/green (shield)

* Cable with integrated air tube for atmosphere pressure reference

Order Codes

Range	Over-pressure	Burst Pressure	Code
0/50" water	15 psi	22 psi	LM3W05
0/100" water	15 psi	22 psi	LM3W10
0/150" water	15 psi	22 psi	LM3W15
0/200" water	15 psi	22 psi	LM3W20
0/300" water	15 psi	22 psi	LM3W30
0/400" water	15 psi	22 psi	LM3W40
0/5 psi	15 psi	44 psi	LM3005
0/10 psi	44 psi	109 psi	LM3010
0/15 psi	44 psi	109 psi	LM3015
0/25 psi	87 psi	218 psi	LM3025
0/50 psi	290 psi	218 psi	LM3050
0/100 psi	290 psi	725 psi	LM3100
0/200 psi	870 psi	1,740 psi	LM3200
0/300 psi	1,450 psi	1,740 psi	LM3300

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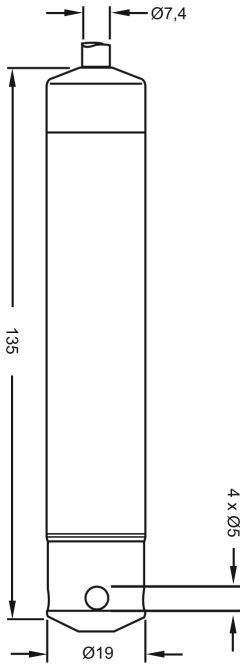
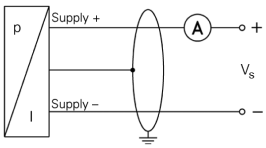


Wiring Diagram

2-wire-system (current)



Note: Measurements are in mm

Bourdon Tube Pressure Gauge
Model 21X.53 Stainless Steel Construction

Applications

- Intended for adverse service conditions where pulsating or vibration exists (with liquid filling)
- Hydraulics & compressors
- Suitable for gaseous or liquid media that will not obstruct the pressure system

Special features

- Vibration and shock resistant (with liquid filling)
- Stainless steel case
- Pressure ranges up to 15,000 psi

Bourdon Tube Pressure Gauge Model 21X.53

Standard Features

Design
ASME B40.100 & EN 837-1

Sizes
2”, 2½” & 4” (50, 63 & 100 mm)

Accuracy class
2” & 2½”: ± 2/1/2% of span (ASME B40.100 Grade A)
4”: ± 1% of span (ASME B40.100 Grade 1A)

Ranges
Vacuum / Compound to 200 psi
Pressure from 15 psi to 15,000 psi
Pressure from 15 psi to 10,000 psi - 2” size
or other equivalent units of pressure or vacuum

Working pressure

2 & 2½”:	Steady:	3/4 scale value
	Fluctuating:	2/3 full scale value
	Short time:	full scale value
4”:	Steady:	full scale value
	Fluctuating:	0.9 x full scale value
	Short time:	1.3 x full scale value

Operating temperature
Ambient: -40°F to +140°F (-40°C to +60°C) - dry
-4°F to +140°F (-20°C to +60°C) - glycerine filled
-40°F to +140°F (-40°C to +60°C) - silicone filled
Medium: +140°F (+60°C) maximum

Temperature error
Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% for every 18°F (10°C) rising or falling. Percentage of span.

Weather protection
Weather resistant (NEMA 3 / IP 54) - dry case
Weather tight (NEMA 4X / IP 65) - liquid-filled case

Pressure connection
Material: copper alloy
Lower mount (LM) or center back mount (CBM) - 2” & 2½”
Lower mount (LM) or lower back mount (LBM) - 4”
1/8” NPT, 1/4” NPT or 1/2” NPT limited to wrench flat area

Bourdon tube
2½” Size- Material: Copper alloy
30” Hg (VAC) to 800 PSI- C-type (soldered)
1000PSI to 15,000PSI- helical type (soldered)
Changes to stainless steel at 7,500 PSI brazed
4”Size- Material: Copper alloy ≤ 1,000 PSI
316 stainless steel ≥ 1,500 PSI
30” Hg (Vac) to 1,000 PSI- C-type (soldered)
1,500 PSI to 15,000 PSI- helical type (brazed)
Changes to stainless steel at 1,500 PSI

Movement
Copper alloy

Dial
White ABS with stop pin and with black lettering

Pointer
Black aluminum

WIKA
Part of your business

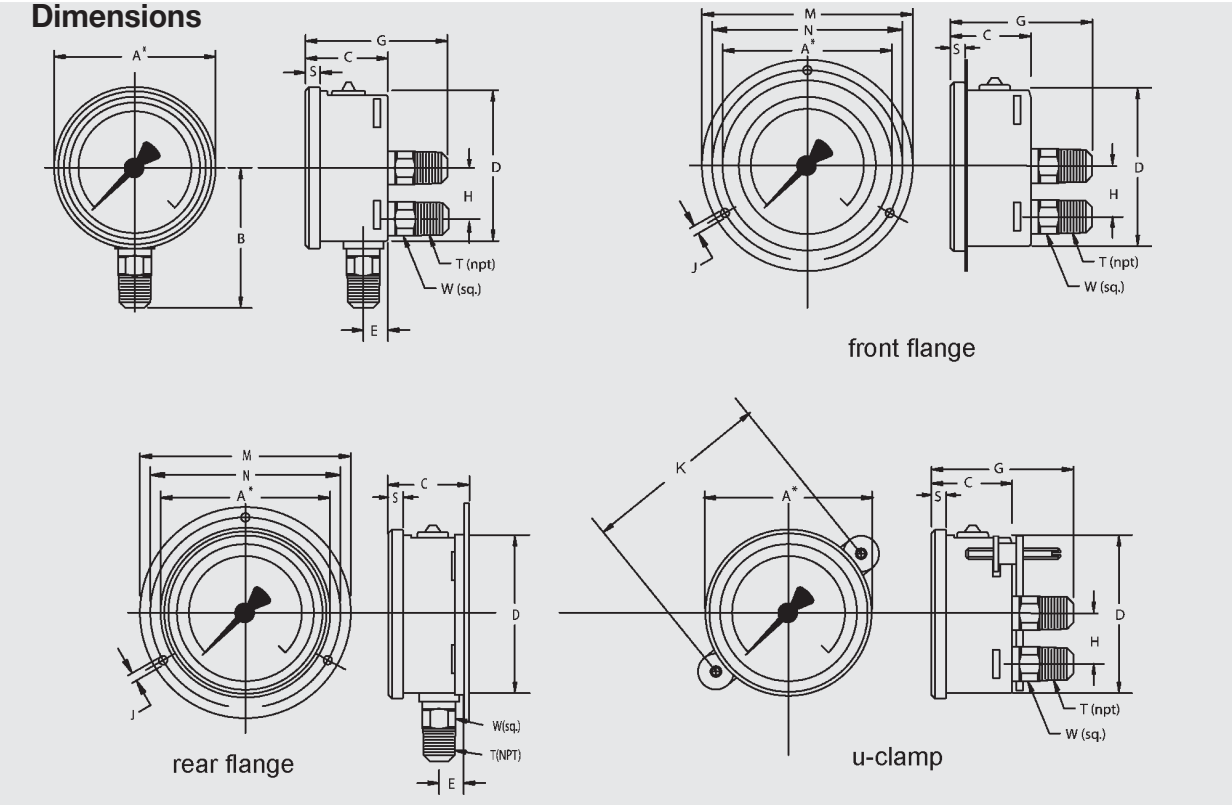
Case
304 stainless steel with vent plug and stainless steel crimp ring. Suitable for liquid filling. Case connection sealed with EPDM o-ring (glycerine filled) or Viton o-ring (dry or silicone filled).

Window
Polycarbonate with Buna-N gasket

Case fill
Glycerine 99.7% - Type 213.53

Optional extras
- Brass restrictor
- Stainless steel front or rear flange - 2½" & 4"
- Zinc-plated steel or SS u-clamp bracket (field installable)
- External zero adjustment (2½" only)
- Red drag pointer or mark pointer
- Silicone or Fluorolube case filling
- Special connections limited to wrench flat area
- Custom dial layout
- Other pressure scales available
  bar, kPa, MPa, kg/cm² and dual scales

Dimensions



Size		A	B	C	D	E	G	H	J	K	L	M	N	S	T	W	Weight	
2"	mm	55	48	30	50	12	53	-	3.6	n/a	6.5	71	60	5.5		14	0.27 lb.	dry
	in	2.17	1.89	1.18	1.97	0.47	2.09	-	0.14	n/a	0.26	2.80	2.36	0.22	1/4"	0.55	0.33 lb.	filled
2.5"	mm	69	54	32	62	13	54	-	3.6	72	7.5	85	75	6.5		14	0.36 lb.	dry
	in	2.69	2.13	1.26	2.45	0.51	2.13	-	0.14	2.83	0.30	3.35	2.95	0.26	1/4"	0.55	0.44 lb.	filled
4"	mm	107	87	48	100	15.5	79.5	30	4.8	109	9	132	116	8		22	1.10 lb.	dry
	in	4.21	3.43	1.89	3.91	0.61	3.13	1.18	0.19	4.29	0.35	5.20	4.57	0.31	1/2"	0.87	1.76 lb.	filled

Note: For 1/4" NPT connections on 4" gauges, reduce B dimension by 5mm/0.2"

Recommended panel cut-out:
2"- U-clamp: 51mm
front flange: n/a

2½"- U-clamp: 63mm
front flange: 65mm

4"- u-clamp: 101mm
front flange: 104mm

4½"- panel mount adapter 104mm minimum (not shown)

Ordering information
Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.
Modifications may take place and materials specified may be replaced by others without prior notice.

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Fax (770) 338-5118
E-Mail info@wika.com
www.wika.com

Pressure Transmitter (PT106) Dwyer#626-10-GH-P1-E1-S1

Series
626 & 628

Industrial Pressure Transmitter

Complete Offering of Ranges, Connections and Outputs

General Purpose Housing (-GH)

General Purpose Housing (-GH) with DIN C

626 with LED Display (CH housing only)

Conduit Housing (-CH)

Scan here to watch product video

*Please see our website for dimensional drawings.

The Series 626 Pressure Transmitters possess a highly precise 0.25% full scale accuracy piezo-resistive sensor contained in a compact, rugged, NEMA 4X (IP66) stainless steel general purpose housing or cast aluminum conduit housing.

The Series 628 Pressure Transmitters are ideal for OEMs with 1% full scale accuracy sensors. The transmitter is also available in the general purpose stainless steel housing and the cast aluminum conduit housing.
The corrosion resistant 316L stainless steel wetted parts allow the Series 626 and 628 transmitters to measure the pressure in a multitude of processes from hydraulic oils to chemicals. The Series 626 and 628 are available in absolute and pressure ranges with a variety of optional outputs, process connections and electrical terminations to allow you to select the right transmitter for your application.

APPLICATIONS
- Compressors
- Pumping systems
- Irrigation equipment
- Hydraulic
- Industrial process monitoring

FEATURES
- Metal conduit housing option
- Robust 316 SS oil filled sensor
- Compact design

SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Type 316L SS.
Accuracy:
626 : 0.25% F.S.;
: 0.20% RSS;
628 : 1.0% F.S.;
: 0.5% RSS;
626 Absolute Ranges: 0.5% F.S.;
: 0.30% RSS.
(Includes linearity, hysteresis, and repeatability.)
Temperature Limit: 0 to 200°F (-18 to 93°C).
Compensated Temperature Range: 0 to 175°F (-18 to 79°C).
Thermal Effect: ±0.02% FS/°F (includes zero and span).
Pressure Limits: See table.
Power Requirements: 10-30 VDC (for 4-20 mA, 0-5, 1-5, 1-6 VDC outputs); 13-30 VDC (for 0-10, 2-10 VDC outputs); 5 VDC ±0.5 VDC (for 0.5-4.5 VDC ratio-metric output).
Output Signal: 4-20 mA, 0-5 VDC,1-5 VDC, 0-10 VDC, or 0.5-4.5 VDC.
Response Time: 50 ms.
Loop Resistance: 0-1000 Ohms max. R max = 50 (Vps-10) Ohms (4-20 mA output), 5K Ohms (0-5, 1-5, 1-6, 0-10, 2-10, 0.5-4.5 VDC output).
Stability: 1.0% FS/year (Typ.).
Current Consumption: 38 mA maximum (for 4-20 mA output); 10 mA maximum (for 0-5, 1-5, 1-6, 0-10, 2-10, 0.5-4.5 VDC output); 140 mA maximum (for all 626/628/629-CH with optional LED).
Electrical Connections: Conduit Housing (-CH): terminal block, 1/2″ female NPT conduit; General Purpose Housing (-GH): cable DIN EN 175801-803-C.
Process Connection: 1/4″ male or female NPT and BSPT.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Mount in any position.
Weight: 10 oz (283 g).
Agency Approvals: CE.

Pressure Limits

Range Number	Pressure Range	Maximum Pressure (psig)	Over Pressure (psig)	Range Number	Pressure Range (psig)	Maximum Pressure (psig)	Over Pressure (psig)
00	0-15 psia	30	45	12	0-200	400	1000
30	15-0 psia	30	45	13	0-300	600	1500
06	0-5 psig	10	50	14	0-500	1000	2500
07	0-15 psig	30	150	15	0-1000	2000	5000
08	0-30 psig	60	300	16	0-1500	3000	5000
09	0-50 psig	100	300	18	0-3000	6000	7500
10	0-100 psig	200	500	19	0-5000	7500	10000
11	0-150	300	750	26	0-8000	10000	12000

Ordering Chart

Accuracy	626							0.25% Full-Scale Accuracy
	628							1.0% Full-Scale Accuracy
Range		-00						0-15 psia
		-01						0-30 psia
		-02						0-50 psia
		-03						0-100 psia
		-04						0-200 psia
		-05						0-300 psia
		-06						0-5 psi
		-07						0-15 psi
		-08						0-30 psi
		-09						0-50 psi
		-10						0-100 psi
		-11						0-150 psi
		-12						0-200 psi
		-13						0-300 psi
		-14						0-500 psi
		-22						0-600 psi
		-15						0-1000 psi
		-16						0-1500 psi
		-18						0-3000 psi
		-19						0-5000 psi
		-26						0-8000 psi
		-67						0-0.5 bar
		-71						0-2.5 bar
		-75						0-10 bar
		-81						0-40 bar
Housing			-CH					Conduit Housing
			-GH					General Purpose Housing
Process Connection				-P1				1/4″ male NPT
				-P2				1/4″ female NPT
				-P3				1/4″ male BSPT
				-P5				1/4″ female SAE with Refrigerant Valve Depressor ①
				-P9				1/2″ male NPT ①
Electrical Connection					-E1			Cable Gland with 3' of Prewired Cable
					-E3			Cable Gland with 9' of Prewired Cable
					-E4			DIN EN 175801-803-C ①
					-E5			1/2″ female NPT Conduit ②
					-E6			M-12 4 Pin Connector
					-E8			Packard Connector
Signal Output						-S1		4-20 mA
						-S2		1-5 VDC
						-S4		0-5 VDC
						-S5		0-10 VDC
						-S7		0.5-4.5 VDC ①
Options							-AT	Aluminum Tag
							-NIST	NIST Traceable Certificate
							-LED	Bright Red LED display ②③

①Available with -GH Housing only
②Available with -CH Housing only
③LED option is not NEMA 4X (IP66)
④Power Requirement: 5 VDC ±10%

ACCESSORIES
A-164, 16.4´ (5 m) cable with M-12 4-pin female connector
A-960, 3´ packard cable
A-961, 9´ packard cable
A-962, 20´ packard cable

Signet 2551 Magmeter Flow Sensor

Magnetic Flow Meter/Transmitter (FIT119) #3-2551-P0-21

Available in a variety of wetted materials and ideal for pipe sizes up to DN900 (36 in.)

The Signet 2551 Magmeter is an insertion style magnetic flow sensor that features no moving parts. The patented* sensor design is available in corrosion-resistant materials to provide long-term reliability with minimal maintenance costs. Material options include PP with stainless steel, PVDF with Hastelloy-C, or PVDF with Titanium. Utilizing the comprehensive line of Signet installation fittings, sensor alignment and insertion depth is automatic. These versatile, simple-to-install sensors deliver accurate flow measurement over a wide dynamic range in pipe sizes ranging from DN15 to DN900 (½ to 36 inches), satisfying the requirements of many diverse applications.

Signet 2551 Magmeters offer many output options of frequency/digital (S^3L) or 4 to 20 mA which are available on both the blind and display versions. The frequency or digital (S^3L) sensor output can be used with Signet's extensive line of flow instruments while the 4 to 20 mA output can be used for a direct input to PLCs, chart recorders, etc. Both the 4 to 20 mA output and digital (S^3L) sensor interface is available for long distance signal transmission. An additional benefit is the empty pipe detection which features a zero flow output when the sensors are not completely wetted. Also, the frequency output is bi-directional while the 4 to 20 mA output can be set for uni- or bi-directional flow using the display or the 3-0250 USB to Digital (S^3L) Configuration/Diagnostic setup tool which connects to PCs for programming capabilities.

In addition the display version of the 2551 Magmeter is available with relays and features permanent and resettable totalizer values which can be stored and seen on the display. Also, the display contains multi-languages with English, Spanish, German, French, Italian and Portuguese menu options.

Features

- **Test certificate included for -X0, -X1**
- **Patented Magmeter technology***
- **No moving parts**
- **Bi-directional flow**
- **Empty pipe detection**
- **Installs into pipe sizes DN15 to DN900 (0.5 to 36 in.)**
- **Operating range 0.05 to 10 m/s (0.15 to 33 ft/s)**
- **Accurate measurement even in dirty liquids**
- **Polypropylene or PVDF retaining nuts**
- **Blind 4 to 20 mA, digital (S^3L), frequency, relay output**
- **No pressure drop**
- **Corrosion resistant materials; PP or PVDF with SS, Hastelloy-C, or Titanium**
- **Multi-language display menu available**

LISTED
MEASURING EQUIPMENT
77CJ

Applications

- **Chemical Processing**
- **Water and Wastewater Monitoring**
- **Metal Recovery and Landfill Leachate**
- **Commercial Pools, Spas, and Aquariums**
- **HVAC**
- **Irrigation**
- **Scrubber Control**
- **Neutralization Systems**
- **Industrial Water Distribution**

* U.S. Patent No: 7,055,396 B1

Specifications

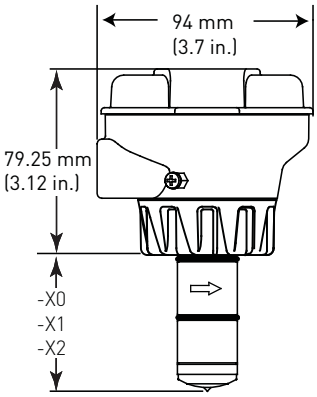
General			
Operating Range	0.05 to 10 m/s	0.15 to 33 ft/s	
Pipe Size Range	DN15 to DN900	½ in. to 36 in.	
Linearity	± 1% reading plus 0.1% of full scale		
Repeatability	±0.5% of reading @ 25 °C (77 °F)		
Minimum Conductivity	20 µS/cm		
Wetted Materials			
Sensor Body/Electrodes and Grounding Ring	-P0, -P1, -P2: PP/316L SS		
	-T0, -T1, -T2: PVDF/Titanium		
	-V0, -V1, -V2: PVDF/Hastelloy-C		
O-rings	FPM (standard) EPR (EPDM), FFPM (optional)		
Case	PBT		
Display Window	Polyamide (transparent nylon)		
Protection Rating	NEMA 4X/IP65		
Electrical			
Power Requirements	4 to 20 mA	24 VDC ±10%, regulated, 22.1 mA max.	
	Frequency	5 to 24 VDC ±10%, regulated, 15 mA max.	
	Digital (S^3L)	5 to 6.5 VDC, 15 mA max.	
Auxiliary (only required for units with relays)		9 to 24 VDC, 0.4 A max.	
Reverse Polarity and Short Circuit Protected			
Current Output 4 to 20 mA	Loop Accuracy	32 µA max. error (25 °C @ 24 VDC)	
	Isolation	Low voltage < 48 VAC/DC from electrodes and auxiliary power	
	Maximum Cable	300 m (1000 ft)	
	Error condition	22.1 mA	
	Max. Loop Resistance	300 Ω	
	Compatible with PLC, PC or similar equipment		
	4 to 20 mA load needed		
Frequency Output	Output Modes	Freq., or Mirror Relay (display version only)	
	Max. Pull-up Voltage	30 VDC	
	Max. Current Sink	50 mA, current limited	
	Maximum Cable	300 m (1000 ft)	
	Compatible with Signet Model 8550, 8900, 9900, 9900-1BC		
Digital (S^3L) Output	Serial ASCII, TTL level 9600 bps		
	Compatible with Model Signet 8900 controller		
Relay Specifications			
#1, #2 Type	Mechanical SPDT		
Rating	5 A @ 30 VDC max., 5 A @ 250 VDC max.		
#3 Type	Solid State		
	50 mA @ 30 VDC, 50 mA @ 42 VAC		
Hysteresis	User adjustable for exiting alarm condition		
Alarm On Trigger Delay	Adjustable (0 to 9999.9 sec.)		
Relay Modes	Off, Low, High, Window, and Proportional Pulse		
Relay Source	Flow Rate, Resettable Totalizer		
Error Condition	Selectable; Fail Open or Closed		
Display			
Characters		2 x 16	
Contrast		User-set in four levels	
Backlighting (only on relay versions)		Requires external 9-24 VDC, 0.4 mA max.	
Max. Temperature/Pressure Rating			
Storage Temperature		-20 °C to 70 °C	-4 °F to 158 °F
Relative Humidity		0 to 95% (non-condensing)	
Operating Temperature	Ambient	-10 °C to 70 °C	14 °F to 158 °F
	Media	0 °C to 85 °C	32 °F to 185 °F
Maximum Operating Pressure		10.3 bar @ 25 °C	150 psi @ 77 °F
		1.4 bar @ 85 °C	20 psi @ 185 °F
Shipping Weight			
	0.680 kg	1.50 lb	
Standards and Approvals			
	CE, FCC, UL, CUL (for display versions with relays)		
	RoHS compliant, China RoHS		
	NEMA 4X / IP65 Enclosure (with cap installed)		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

Dimensions

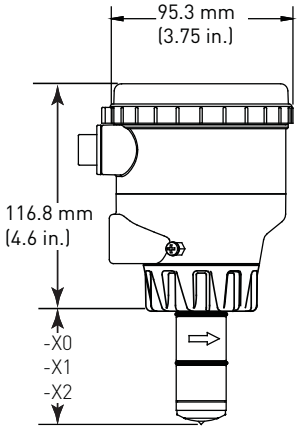
Pipe Range	
1/2 to 4 in.	-X0 = 58 mm (2.3 in.)
5 to 8 in.	-X1 = 91 mm (3.6 in.)
10 to 36 in.	-X2 = 167 mm (6.6 in.)

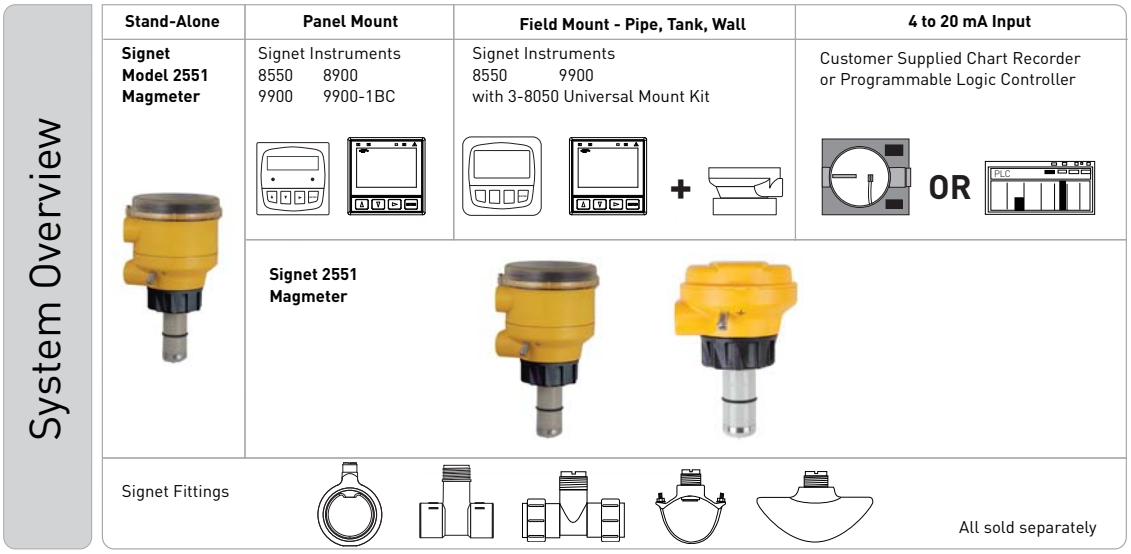
X = Sensor Body P, T, or V

Blind version

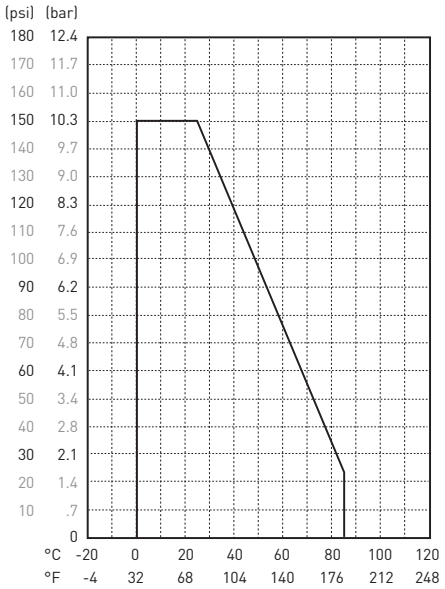


Display version





Operating Temperature/Pressure Graphs

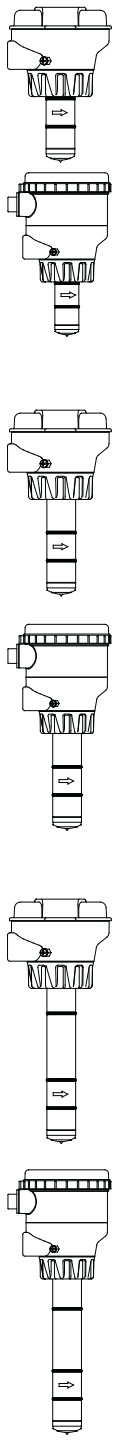


Note:
The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.

Application Tips
- Note minimum process liquid conductivity requirement is 20 µs/cm.
- Install sensor using standard Signet installation fittings for best results.
- Sensor is capable of retrofitting into existing 515 and 2536 fittings.

Please refer to Wiring, Installation, and Accessories sections for more information.

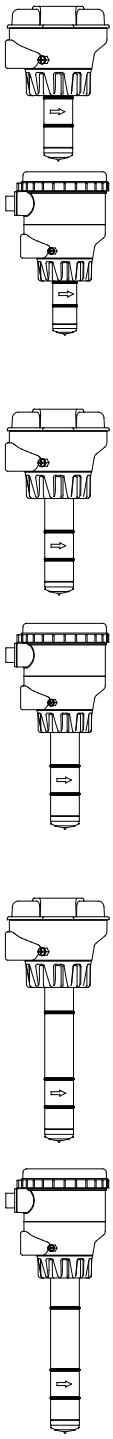
Ordering Information



Pipe Size	Mfr. Part No.	Code	Sensor Body
Frequency or Digital (S³L) output programmable open collector for use with any Signet Flow Instrument or the 8900 or 9900 Instruments**			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-11	**159 001 105**	Polypropylene and 316L SS
	3-2551-T0-11	**159 001 108**	PVDF and Titanium
	3-2551-V0-11	**159 001 257**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-21	**159 001 267**	Polypropylene and 316L SS
	3-2551-T0-21	**159 001 436**	PVDF and Titanium
	3-2551-V0-21	**159 001 269**	PVDF and Hastelloy-C
with display			
	3-2551-P0-41	**159 001 261**	Polypropylene and 316L SS
	3-2551-T0-41	**159 001 433**	PVDF and Titanium
	3-2551-V0-41	**159 001 263**	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-11	**159 001 106**	Polypropylene and 316L SS
	3-2551-T1-11	**159 001 109**	PVDF and Titanium
	3-2551-V1-11	**159 001 258**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-21	**159 001 268**	Polypropylene and 316L SS
	3-2551-T1-21	**159 001 437**	PVDF and Titanium
	3-2551-V1-21	**159 001 270**	PVDF and Hastelloy-C
with Display			
	3-2551-P1-41	**159 001 262**	Polypropylene and 316L SS
	3-2551-T1-41	**159 001 434**	PVDF and Titanium
	3-2551-V1-41	**159 001 264**	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-11	**159 001 107**	Polypropylene and 316L SS
	3-2551-T2-11	**159 001 448**	PVDF and Titanium
	3-2551-V2-11	**159 001 450**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-21	**159 001 435**	Polypropylene and 316L SS
	3-2551-T2-21	**159 001 454**	PVDF and Titanium
	3-2551-V2-21	**159 001 456**	PVDF and Hastelloy-C
with Display			
	3-2551-P2-41	**159 001 432**	Polypropylene and 316L SS
	3-2551-T2-41	**159 001 460**	PVDF and Titanium
	3-2551-V2-41	**159 001 462**	PVDF and Hastelloy-C

**This option is a programmable open collector output that is available with display versions only.

Ordering Information (continued)



Pipe Size	Mfr. Part No.	Code	Sensor Body
4 to 20 mA output for use with PLC, PC or similar equipment			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-12	**159 001 110**	Polypropylene and 316L SS
	3-2551-T0-12	**159 001 113**	PVDF and Titanium
	3-2551-V0-12	**159 001 259**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-22	**159 001 273**	Polypropylene and 316L SS
	3-2551-T0-22	**159 001 439**	PVDF and Titanium
	3-2551-V0-22	**159 001 275**	PVDF and Hastelloy-C
with Display			
	3-2551-P0-42	**159 001 279**	Polypropylene and 316L SS
	3-2551-T0-42	**159 001 442**	PVDF and Titanium
	3-2551-V0-42	**159 001 281**	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-12	**159 001 111**	Polypropylene and 316L SS
	3-2551-T1-12	**159 001 114**	PVDF and Titanium
	3-2551-V1-12	**159 001 260**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-22	**159 001 274**	Polypropylene and 316L SS
	3-2551-T1-22	**159 001 440**	PVDF and Titanium
	3-2551-V1-22	**159 001 276**	PVDF and Hastelloy-C
with Display			
	3-2551-P1-42	**159 001 280**	Polypropylene and 316L SS
	3-2551-T1-42	**159 001 443**	PVDF and Titanium
	3-2551-V1-42	**159 001 282**	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-12	**159 001 112**	Polypropylene and 316L SS
	3-2551-T2-12	**159 001 449**	PVDF and Titanium
	3-2551-V2-12	**159 001 451**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-22	**159 001 438**	Polypropylene and 316L SS
	3-2551-T2-22	**159 001 455**	PVDF and Titanium
	3-2551-V2-22	**159 001 457**	PVDF and Hastelloy-C
with Display			
	3-2551-P2-42	**159 001 441**	Polypropylene and 316L SS
	3-2551-T2-42	**159 001 461**	PVDF and Titanium
	3-2551-V2-42	**159 001 463**	PVDF and Hastelloy-C

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
O-Rings		
1220-0021	**198 801 000**	O-ring, FPM (2 required per sensor)
1224-0021	**198 820 006**	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	**198 820 007**	O-ring, FFPM (2 required per sensor)
Replacement Transducers		
3-2551-P0	**159 001 211**	PP/316L SS, DN15 to DN100 (½ to 4 in.) pipe
3-2551-P1	**159 001 212**	PP/316L SS, DN125 to DN200 (5 to 8 in.) pipe
3-2551-P2	**159 001 444**	PP/316L SS, DN250 to DN900 (10 to 36 in.) pipe
3-2551-T0	**159 001 213**	PVDF/Titanium, DN15 to DN100 (½ to 4 in.) pipe
3-2551-T1	**159 001 214**	PVDF/Titanium, DN125 to DN200 (5 to 8 in.) pipe
3-2551-T2	**159 001 445**	PVDF/Titanium, DN250 to DN900 (10 to 36 in.) pipe
3-2551-V0	**159 001 376**	PVDF/Hastelloy-C, DN15 to DN100 (½ to 4 in.) pipe
3-2551-V1	**159 001 377**	PVDF/Hastelloy-C, DN125 to DN200 (5 to 8 in.) pipe
3-2551-V2	**159 001 446**	PVDF/Hastelloy-C, DN250 to DN900 (10 to 36 in.) pipe
Replacement Electronics Module		
3-2551-11	**159 001 215**	Magmeter electronics, frequency or digital (S^3L) output
3-2551-12	**159 001 216**	Magmeter electronics, 4 to 20 mA output
3-2551-21	**159 001 372**	Magmeter display electronics, frequency or digital (S^3L) output, with relays
3-2551-22	**159 001 373**	Magmeter display electronics, 4 to 20 mA output w/relays
3-2551-41	**159 001 374**	Magmeter display electronics, frequency or digital (S^3L) output
3-2551-42	**159 001 375**	Magmeter display electronics, 4 to 20 mA output
Other		
P31536	**198 840 201**	Sensor plug, Polypropylene
7310-1024	**159 873 004**	24 VDC Power Supply, 0.42 A, 10W
7310-2024	**159 873 005**	24 VDC Power Supply, 1.0 A , 24W
7310-4024	**159 873 006**	24 VDC Power Supply, 1.7 A, 40W
7310-6024	**159 873 007**	24 VDC Power Supply, 2.5 A, 60W
7310-7024	**159 873 008**	24 VDC Power Supply, 4.0 A, 96W
3-8050.390-1	**159 001 702**	Retaining Nut Replacement Kit, NPT, Valox
3-8050.390-3	**159 310 116**	Retaining Nut Replacement Kit, NPT, PP
3-8050.390-4	**159 310 117**	Retaining Nut Replacement Kit, NPT, PVDF
3-8551.521	**159 001 378**	Clear plastic cap for display
1222-0042	**159 001 379**	O-ring for clear plastic cap, EPR (EPDM)
3-0250	**159 001 538**	USB to digital (S^3L) Configuration/Diagnostic tool

3-2551.099 Rev F (04/13)
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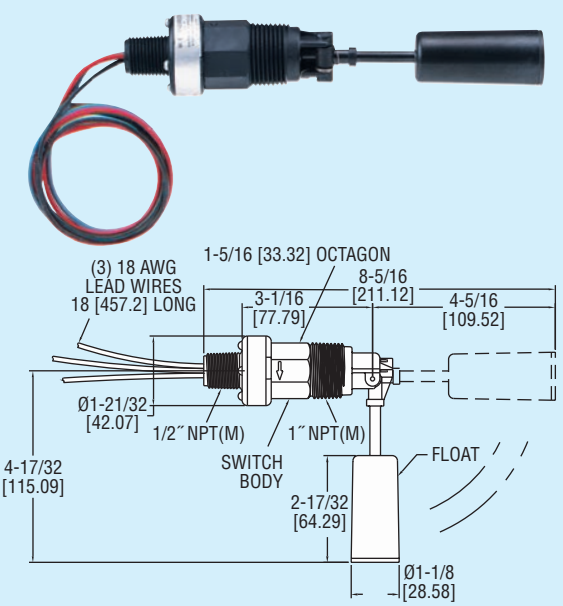
Series L8

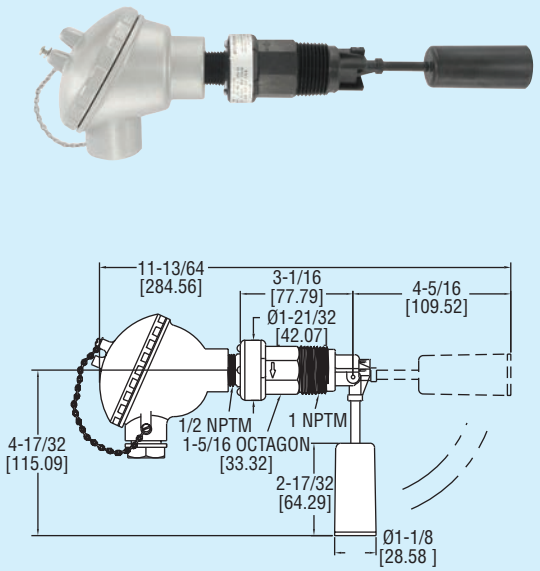
FLOTECT® Liquid Level Switch

Low Cost, Leak Proof Body, Excellent Chemical Resistance

L8



L8-WP2



Scan here to watch product video

Model L8 Flotect® Liquid Level Switch features a leak proof body and float constructed from tough, durable polyphenylene sulfide which has excellent chemical resistance. Because the liquid level snap switch is magnetically actuated, there is no direct mechanical linkage to leak or fail, assuring longer life and decreased maintenance costs. This inexpensive unit is ideal for liquid level alarm, indication or control. Installation is quick and easy – simply install in a horizontal position with the index arrow pointing down. The L8 Flotect® Liquid Level Switch is UL recognized as an industrial motor controller per UL standard 508, suitable for mounting in a protected environment. This lightweight switch can be used in numerous chemical processes, industrial systems and similar applications where process conditions are compatible with polyphenylene sulfide, ceramic 8 and 316 SS. This liquid level switch provides accurate setpoint control of liquids with specific gravities as low as 0.6. This compact and reliable control is designed to handle temperatures up to 212°F (100°C) and pressures to 150 psig (10 bar).

APPLICATIONS

The Model L8 Flotect® Liquid Level Switch is ideal for predetermined liquid levels in tanks through pump control or solenoid valve control. It provides excellent liquid level alarm or indication when combined with the Series AN14 Indicating Annunciator.

- Environmental control
- Chemical/Petroleum processing
- Waste water
- Plating and washing tanks
- Scrubber systems
- Sewage treatment
- Holding tanks
- Car washes
- Cooling towers
- Remediation systems

SPECIFICATIONS

Service: Compatible liquids.
Wetted Materials:
Float and body: Polyphenylene sulfide (PPS);
Pin and spring: 316 SS or Inconel®;
Magnet: Ceramic 8.
Temperature Limit: 212°F (100°C).
Pressure Limit: 150 psig (10.34 bar).
Enclosure Rating: General purpose. WP/WP2 option is weatherproof.
Switch Type: SPDT snap switch. MV option is a SPDT gold contact snap switch.
Electrical Rating: 5A @ 125/250 VAC, 5A resistive, 3A inductive @ 30 VDC. MV option: 1A @ 125 VAC, 1A resistive, 0.5A inductive @ 30 VDC.
Electrical Connections: 18 AWG, 18˝ (460 mm) long.
Conduit Connection: 1/2˝ male NPT, 1/2˝ female NPT on WP and WP2.
Process Connection: 1˝ male NPT.
Mounting Orientation: Horizontal with index arrow pointing down.
Weight: 5 oz (0.142 kg).
Agency Approvals: CE, cUR, UR.
Specific Gravity: 0.6 minimum.

Series L8, Level Switch

OPTIONS

Gold Plated Contacts, for dry circuits. Rated 1A @ 125 VAC; 1A resistive, 0.5A inductive @ 30 VDC. To order add suffix -MV.
Example: **L8-MV**
Inconel® Alloy Option. Inconel® Alloy replaces standard 316 SS wetted parts. Wetted parts are Inconel® Alloy, ceramic 8, and Polyphenylene Sulfide. To order add suffix -INC.
Example: **L8-INC**
Weatherproof Enclosure. Optional housing is phenylpolioxide and provides weatherproof protection for electrical wiring. To order add suffix -WP. (Not UL approved)
Example: **L8-WP**
Weatherproof Enclosure. Optional housing is aluminum and provides weatherproof protection for electrical wiring. To order add suffix -WP2. (Not UL approved)
Example: **L8-WP2**

Inconel® is a registered trademark of Huntington Alloys Corporation

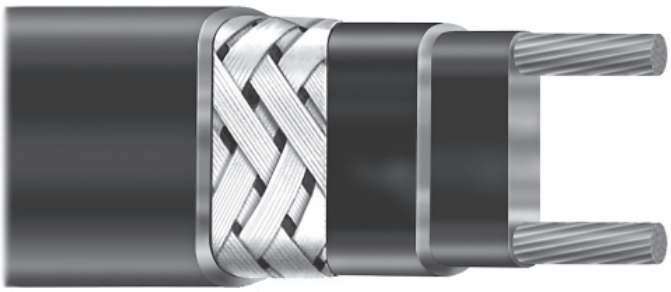
Project: National Grid - Former Clifton MGP Site

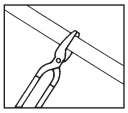
EnviroTrac Submittal #9 Heat Tracing Cut Sheets

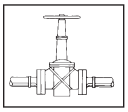
Submittal#	Description	Model #
9.1	Chromalox Self Regulating Heat Trace Cable	SRL5-2CR
9.2	Chromalox Heat Trace Monitor	DTS-HAZ

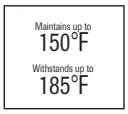
SRL

Self-Regulating Low Temperature Heating Cable

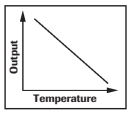



Cut to Any Length in Field


Can be Single Overlapped



Low Temperature



Self Regulating

- **Self-Regulating, Energy Efficient**
- **16 AWG Buss Wire**
- **Circuit Lengths to 660 Feet**
- **Process Temperature Maintenance to 150°F (65°C)**
- **Maximum Continuous Exposure Temperature (Power Off) 185°F (85°C)**
- **Industrial Freeze Protection Applications**
- **Freeze Protection of Fire Protection System Piping**
- **Field Splicing Without Disrupting Heat Output**
- **3, 5, 8 and 10 Watts per Foot**
- **120 and 208-277 Volts Available From Stock**
- **Approximate Size 3/8" x 1/8"**
- **Minimum Bend Radius is 1-1/8"**

UL ◀FM▶ CSA

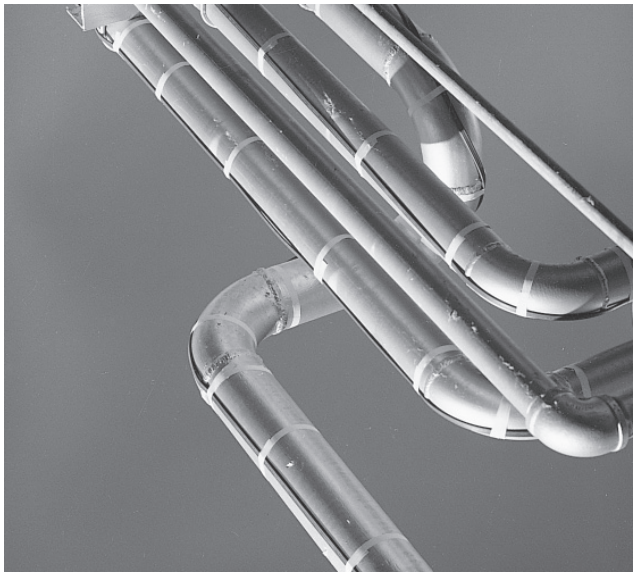
Chromalox®
PRECISION HEAT AND CONTROL

Description

Chromalox SRL self-regulating heating cable provides safe, reliable heat tracing for freeze protection of pipes, valves, tanks and similar applications. Constructed of industrial grade 16 AWG buss wire with a tinned copper braid and optional overjacketing, SRL ensures operating integrity in Div. 2 hazardous environments as well as certain corrosive industrial environments. SRL heating cable has a maximum maintenance temperature rating of 150°F (65°C).

Features

- Energy efficient, self-regulating SRL uses less energy when less heat is required.
- Easy to install, SRL can be cut to any length (up to maximum circuit length) in the field.
- Field splices can be performed easily in minutes with no scrap or wasted cold sections.
- SRL features lower installed cost than steam tracing, less maintenance expense, and less downtime.
- SRL can be single overlapped without burnout, which simplifies heat tracing of in-line process equipment such as valves, elbows and pumps.
- Because SRL is self-regulating, overtemperature conditions are virtually impossible.
- Chromalox termination, splice, tee and end seal kits reduce installation time.
- UL listed for use on fire protection System piping



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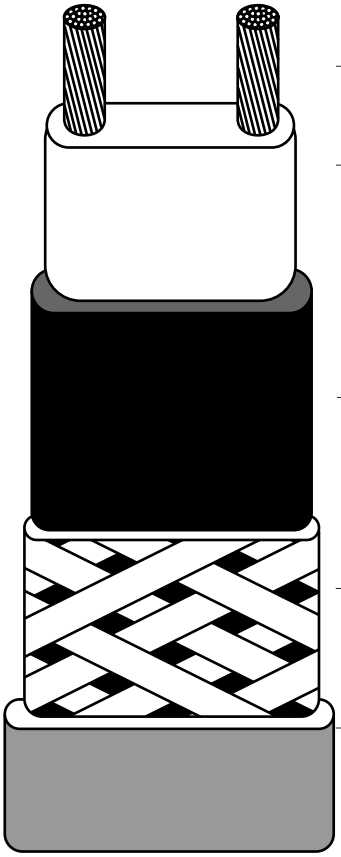
SRL — Self-Regulating Low Temperature Heating Cable

Construction



Twin 16 AWG Copper Buss Wires ..... Provide reliable electrical current capability.

Semiconductive Polymer Core Matrix ..... "Self-Regulating" component of the cable, its electrical resistance varies with temperature. As process temperature drops, the core's heat output increases; as process temperature rises, the heat output decreases.

Water Resistant Polyolefin Jacket ..... Flame retardant, electrically insulates the matrix and buss wires and provides resistance to water and some inorganic chemical solutions.

Tinned Copper Braid ..... Provides additional mechanical protection in any environment, and a positive ground path.

High Temperature Fluoropolymer or TPR Overjacket (Optional) ..... Corrosion resistant, flame retardant overjacket is highly effective in many environments. TPR coatings protect against certain inorganic chemical solutions. Fluoropolymer coatings are used for exposure to organic or corrosive solutions. These coatings also protect against abrasion and impact damage.

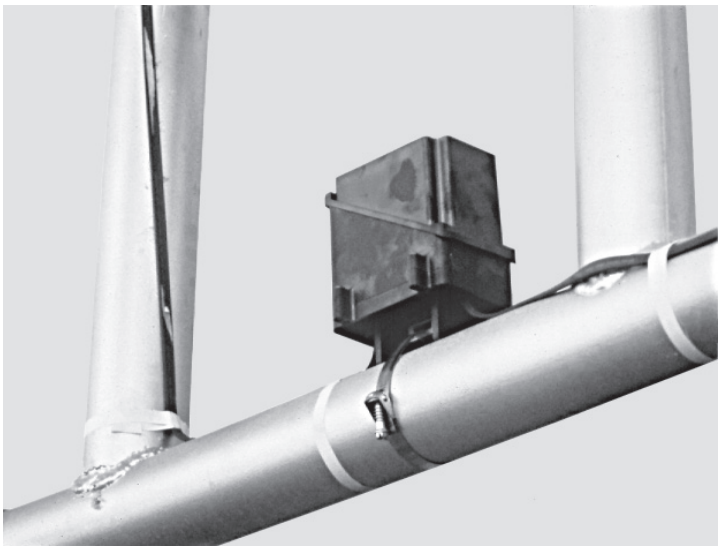
Approvals

FM - Factory Mutual approved for ordinary areas.
UL Listed, CSA Certified for ordinary areas.
UL Listed for fire protection system piping
FM approved for hazardous (classified) areas when used with Chromalox accessories:

- Class I, Div. 2, Groups B, C, D (gases, vapors)
- Class II, Div. 2, Groups F, G (combustible dust)
- Class III, Div. 2 (easily ignitable fibers and filings)
- 3 Watt rated T6 temperature class
- 5 and 8 Watt rated T5 temperature class
- 10 Watt rated T4A temperature class

CSA Certified for hazardous (classified) areas when used with Chromalox accessories:

- Class I, Div. 2, Groups A, B, C, D;
- Class II, Div. 2, Groups F, G



Applications

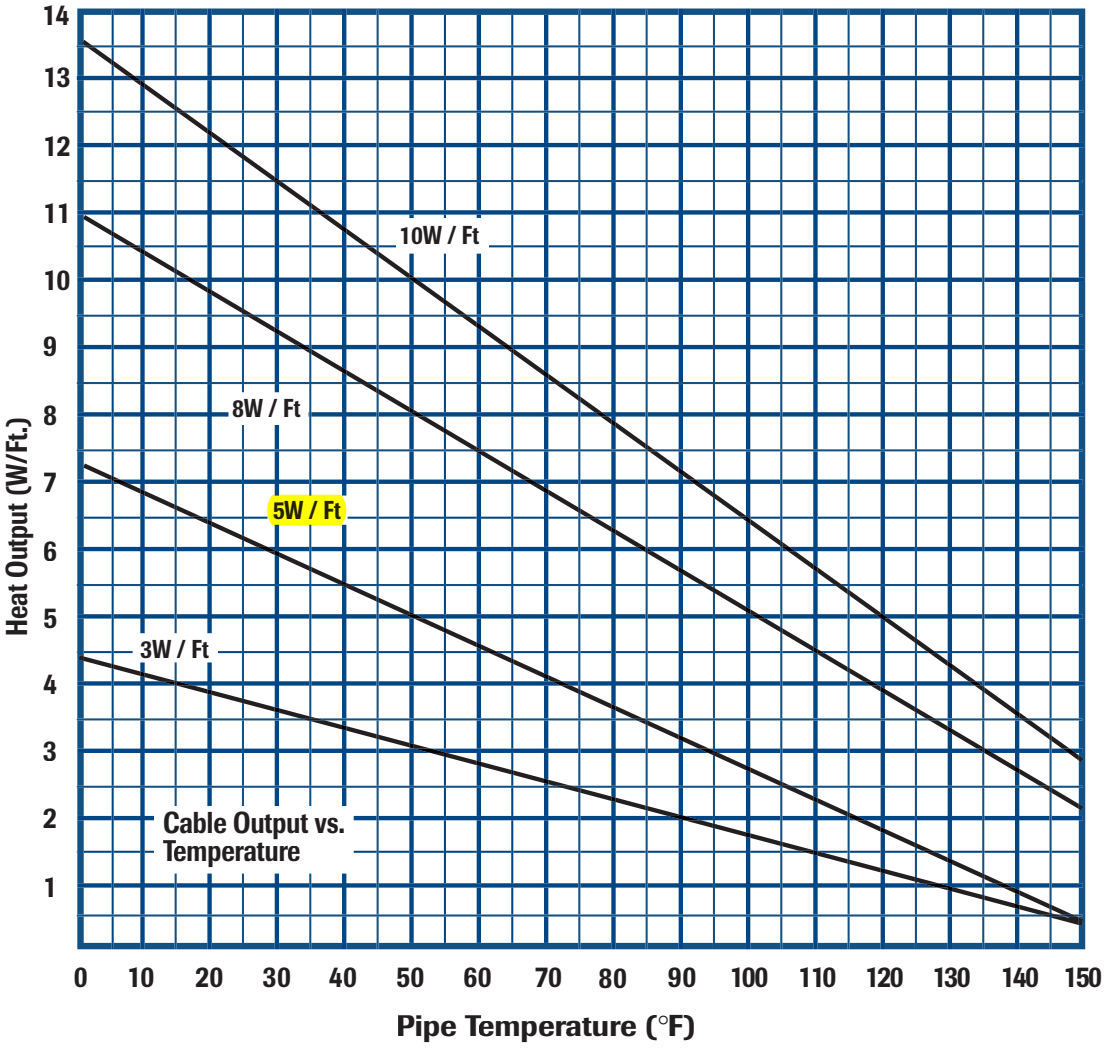
- Process Temperature Maintenance
- Freeze Protection of Pipes
- Freeze Protection of Fire Protection System Piping
- Fluid Flow and Viscosity Maintenance

Heating Cable System Design

1. **Calculate Heat Loss**
   Using the Chromalox Design Guide (PJ 304) for Heat Tracing, calculate the heat loss of the system. To calculate the heat loss (Watts) you will need to know pipe diameter, insulation type and thickness, minimum ambient temperature and the pipe maintenance temperature.

2. **Select Cable Rating**
   After calculating the heat loss in the pipe and adjusting for any application deviations, you may determine which cable rating to choose. Using the SRL Thermal Output Ratings graph, select the lowest cable rating that will provide the pipe maintenance temperature. Adjust the cable output for line voltage if necessary. See figures from output wattage at alternative voltages table on page 5.

Thermal Output Ratings On Insulated Metal Pipe



3. Determine Total Cable Length

In addition to the system piping, in-line equipment such as valves, flanges and pipe supports require additional heat tracing to maintain the system operating temperatures.

Total feet of traced pipe + Cable allowance for components = Total cable length

Component Cable Allowances

Component	Cable Allowance (Ft.)		# of Components		Total Additional Cable
Flange Pair	1.5	x	_____	=	_____
Pipe Support	2.0	x	_____	=	_____
Butterfly Valve	2.5	x	_____	=	_____
Ball Valve	2.7	x	_____	=	_____
Globe Valve	4.0	x	_____	=	_____
Gate Valve	5.0	x	_____	=	_____

If spiral wrapping or multiple runs of cable are being used, adjust the allowance by multiplying by the wrapping factor or the number of runs being used on the pipe.
Guidelines for tracing tanks and vessels are also given in the Chromalox Design Guide (PJ304).

4. Determine Circuits/Circuit Protection

Circuit protection depends on the breaker size being used and the start-up temperature. The National Electric Code (NEC 1999) requires the use of ground fault protection breakers for heating cable. The following chart shows the maximum circuit length for a given breaker rating. To determine the number of circuits required for each pipe, divide the total cable (circuit) length found in Step 3 by the maximum circuit length found in the chart. Round up to the next higher number.

$$\textit{Number of Circuits} = \frac{\textit{Heater Length}}{\textit{Maximum Circuit Length}}$$

Maximum Circuit Length (Ft.) by Start-up Temperature (°F) and Breaker Size (Amps)

Cable Rating	50°F Start-Up (Ft.) Circuit Breaker 10 A	15 A	20 A	25 A	30 A	40 A	0°F Start-Up (Ft.) Circuit Breaker 10 A	15 A	20 A	25 A	30 A	40 A	-20°F Start-Up (Ft.) Circuit Breaker 10 A	15 A	20 A	25 A	30 A	40 A
SRL3-1C	205	305	360	NR	NR	NR	135	200	270	330	360	NR	120	185	245	300	360	NR
SRL3-2C	400	600	660	NR	NR	NR	275	415	555	660	NR	NR	245	370	495	600	660	NR
SRL5-1C	125	185	250	270	NR	NR	90	135	180	225	270	NR	80	120	160	205	245	270
SRL5-2C	250	375	505	540	NR	NR	180	270	360	450	540	NR	160	245	325	405	490	540
SRL8-1C	100	150	200	215	NR	NR	70	110	145	180	215	NR	65	100	130	165	200	210
SRL8-2C	185	285	375	420	NR	NR	135	200	265	335	395	420	120	175	235	300	350	420
SRL10-1C	60	95	130	160	180	NR	50	80	105	130	155	180	45	70	95	120	140	180
SRL10-2C	100	160	210	260	315	360	80	125	170	210	255	340	75	120	160	195	240	320

*Thermal magnetic circuit breakers are recommended since magnetic circuit breakers could "nuisance trip" at low temperature.
NR = Not Required. Maximum circuit length has been reached in a smaller breaker size.

Specifications

Cable Ratings

Model Number	Output @ 50°F (W/Ft.)	Nominal Voltage (Vac)	Maximum Circuit Length* (Ft.)
SRL3-1C	3	120	360
SRL3-2C	3	208-277	660
SRL5-1C	5	120	270
SRL5-2C	5	208-277	540
SRL8-1C	8	120	215
SRL8-2C	8	208-277	420
SRL10-1C	10	120	180
SRL10-2C	10	208-277	360

*See chart on page 4 for maximum circuit lengths by start-up temperature and circuit breaker size

Output Wattage at Alternate Voltages (50°F) W/Ft.

Cable Rating	208 Volts	% Change In Output	220 Volts	% Change In Output	277 Volts	% Change In Output
SRL3	2.4	-20	2.6	-13	3.4	+15
SRL5	4.1	-18	4.5	-10	5.6	+13
SRL8	6.88	-14	7.28	-9	8.96	+12
SRL10	8.7	-13	9.2	-8	11.1	+10

Ordering Information

Output (W/Ft.)	Voltage (Vac)	Model Number	PCN
3	120	SRL3 - 1C	382678
		SRL3 - 1CR	382731
		SRL3 - 1CT	383400
	208-277	SRL3 - 2C	382686
		SRL3 - 2CR	382740
		SRL3 - 2CT	383419
5	120	SRL5 - 1C	382694
		SRL5 - 1CR	382758
		SRL5 - 1CT	383443
	208-277	SRL5 - 2C	382707
		SRL5 - 2CR	382766
		SRL5 - 2CT	383451

Output (W/Ft.)	Voltage (Vac)	Model Number	PCN
8	120	SRL8 - 1C	382555
		SRL8 - 1CR	382598
		SRL8 - 1CT	383460
	208-277	SRL8 - 2C	382563
		SRL8 - 2CR	382600
		SRL8 - 2CT	383478
10	120	SRL10 - 1C	382820
		SRL10 - 1CR	382846
		SRL10 - 1CT	383486
	208-277	SRL10 - 2C	382838
		SRL10 - 2CR	382854
		SRL10 - 2CT	383494

To Order: Specify length, Model Number, PCN and Installation Accessories.

SRL — Self-Regulating Low Temperature Heating Cable

Model Numbers

SRL 5 - 1 C T

Overcoat Options
T = Fluoropolymer corrosion resistant overjacket over braid for hostile/corrosive environments
R = TPR overjacket over braid for protection against certain inorganic chemical solutions

Braid
C = Standard tinned-copper metallic braid for ground path

Voltage
1 = 120 Volts
2 = 208-277 Volts

Output (watts)
3, 5, 8, 10 Watts per Foot

SRL
Self-Regulating, Low Temperature Heating Cable

Accessories

Chromalox has a complete line of accessories specifically designed for use with SRL cable. Use only Chromalox accessories to ensure the performance of the heat trace system.

	Model	Description
Thermostat	RTAS	DL Series air-sensing thermostat with Microswitch® for local control of circuit.
	RTBC	DL Series pipewall-sensing thermostat with Microswitch® for local control of circuit.
Power Connection	RTPC	DL Series power connection set kit.
	RTST	DL Series splice and tee set kit.
	RTES	DL Series end seal kit.
Pipe Straps	PS-1, PS-3, PS-10	Pipe straps to affix thermostat and power connection splice kits to pipes.
Fiberglass Tape	FT-2	Tape to affix cable to pipe, 66' x 1/2" roll, install on 12" centers.
Aluminum Tape	AT-1	Tape to aid heat transfer, 180 foot roll. Apply over cable along entire length of circuit.
Caution Labels	CL-1	"Electrical Heat Tracing" caution labels, 5 per package. Install every 10 feet.
Control Panels		Contact your Chromalox representative for Control Panel information.

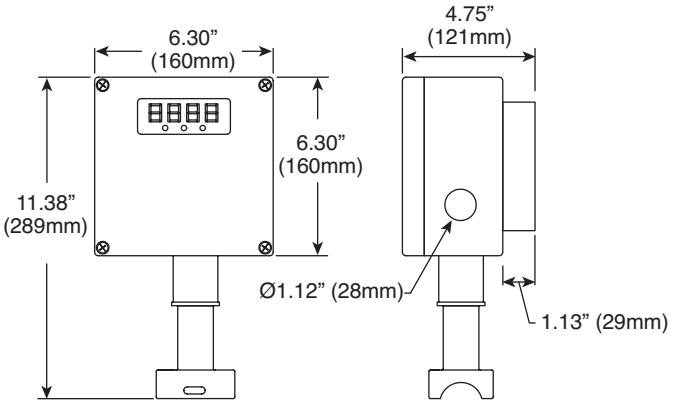
Note - For PCN's, refer to the DL Series connection system accessories product data sheet.

PJ320-2
PDS SRL
APRIL 04

DTS Series

Heat Trace Digital Thermostat

- **30 Amp Solid State Relay (SSR) Output**
- **On/Off Control With 100 Degree Deadband Programmable In One Degree Increments**
- **Selectable Soft-Start Feature – Eliminates SR Cable In-Rush**
- **LED Indication for Power, Alarm and Load**
- **Large LED Display for Process Variables**
- **Programmable High & Low Temperature Alarms**
- **Solid State Alarm for Remote Indication of Alarm Status –**
  - AC Alarm: DTS-HAZ
  - DC Alarm: DTS-HAZ-DC
- **NEMA 4X Enclosure**
- **Integral Pipe Stand**
- **100 Ohm Platinum RTD - Included**
- **Enclosure Serves as Heating Cable, A/C Power & Sensor Connection**
- **Works with SR, CWM and MI Cable**
- **100 to 277 VAC Operation**
- **RoHS Compliant**
- **UL, cUL Listed, CE Approved**
- **C1D2 Hazardous Area Approval**
- **IECEx/ATEX Zone II**
- **Optional Wall Mount**



Description

The DTS-HAZ digital thermostat is a microprocessor based temperature control and power connection kit. It is used for freeze protection or process temperature maintenance of pipes or tanks protected by heat tracing products. This thermostat can be used with Constant Wattage, Mineral Insulated or Self-Regulating heating cables in Ordinary area or Class 1, Division 2 and IECEx/ATEX Zone II hazardous area locations.

This unit is designed to provide local temperature control and monitoring for heat traced pipes or tanks across a variety of industries and applications and will switch 30 amperes of current.

The DTS-HAZ provides easy programming of the temperature set point, high and low temperature alarms, the deadband, the temperature units, the soft start function and the alarm state through the front panel push buttons. LED lights are provided for indication of power to the unit, heater power on (load) and alarm status. A Fail Safe solid state alarm is included for wiring to your building management system to indicate alarm status. This alarm may be set to open or close on all alarm conditions including loss of power, high or low temperature alarm and RTD failure. The loss of power indication qualifies this unit to be used to sense temperature and control heat trace when used in fire protection systems. Choose either the DC or the AC customer supplied voltage alarm variation. The minimum operating ambient temperature is -40°F (-40°C). This unit has programmable high and low temperature alarm set points from -80°F (-62°C) to 1150°F (621°C).

The DTS-HAZ employs a Soft Start feature that uses a proprietary software algorithm which eliminates the inherent self-regulating in-rush current, resulting in less nuisance tripping at cold temperatures. For added flexibility, the user may disable the soft start feature for non-heat trace applications. The alarm contact may be either normally open or normally closed.

A 100 Ohm platinum RTD is provided with a 3 foot (1 M) lead resulting in flexible mounting options for the user.

DTS Series
Heat Trace Digital Thermostat *(cont'd.)*

PCN	Model
387364	DTS-HAZ
316187	DTS-HAZ-DC

Accessories

PCN	Model
318043	DTS Wall Mount Kit
308144	RTD Extension Wire (50 ft/15m)

Applications

- Freeze Protection of Piping
- Process Temperature Maintenance
- Tank Freeze Protection
- Tank Process Temperature Maintenance

Environments

- Hazardous Areas, Class I, Div 2, Groups A,B,C,D – Temperature Rating: T4A
- IECEx/ATEX Zone II, Temperature Rating: T4

Sensors

- 100 OHM PT RTD
- Probe Length = 4" (10.2 cm)
- Probe Diameter = 1/4" (6.35 mm)
- Leadwire Length = 3ft (1 M)*

* The maximum allowable length of the RTD wire is 50ft (15m) in order to remain UL/cUL compliant.

Markets

- Agriculture
- Alternative Fuels
- Chemical Processing
- Food Processing
- Oil / Gas
- Pharmaceutical
- Power Generation
- Water Treatment
- Building and Construction
- Transportation
- HVAC/Refrigeration

Features

- User Selectable Soft-Start Program
- Small Enclosure. The 6.25 inch by 6.25 inch enclosure houses the temperature control and monitoring unit along with terminals for connecting instrument power, heating cable and RTD.
- 100 Ohm platinum RTD which can be pipe mounted or can be used to sense ambient air temperature.
- Pipe stand-off mount for direct pipe mounting.
- Integral wiring. The wiring of the heating cable, alarm, AC power line and the RTD sensor are all accomplished within the enclosure. This feature reduces both labor and material costs by eliminating the need for an additional heat trace power connection kit as well as the time for the additional wiring.

Specifications

Operating Voltage	100 to 277 VAC, 50/60 Hz, Single Phase
Operating Temperature	
- Hazardous Areas	-40°F to 104°F (-40°C to 40°C)
- Ordinary Areas	-40°F to 140°F (-40°C to 60°C)
Input	100 Ohm platinum RTD
Output	30 amp solid state relay
Alarms	High temp to 1150°F (621°C) Low temp to -80°F (-62°C) RTD Failure Red LED alarm status indicator on front panel
Solid State Alarm Rating - AC	12-277 VAC, 1.8 Amps RMS - Customer Supplied
Solid State Alarm Rating - DC	0-42 Vdc, 1.8 Amps RMS- Customer Supplied

Alarm Function:

Mode	Default	Optional
Normal Operation	Closed	Open
Alarm Condition	Open	Closed
Power Off	Open	Open

Deadband	1°F (or ˚C) to 100°F (or ˚C), programmable
Set Points	-80°F to 1100°F programmable (-62˚C to 593˚C)
Units of Temperature	˚F or ˚C, selectable
Control Mode	On/Off control
Soft Start	User selectable integral soft start, patent pending software algorithm, which eliminates nuisance breaker tripping associated with self-regulating cable in-rush

Current Approvals

- CE, UL, cUL Listed
- Ordinary Areas
- Hazardous Area
- Class I, Div. 2 – Groups A, B, C, D
- ATEX/IECEx Zone II (Ex nA IIC)

Approvals Pending

- GOST

Submittal#8.4.4

How can we improve our **Product Images**?

Compare

Pump, Centrifugal, 1/2hp

GOULDS WATER TECHNOLOGY

Price
$653.85 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

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Availability for Qty 1 Go

Shipping Pick Up

Expected to arrive **Fri. Mar 13**

Ship to: **11710** (Change)

Add **Repair & Replacement Coverage** for **$129.00 each.**

Be the first to write a review | Ask & Answer

Item # **4XW72** Mfr. Model # **1MC1C5E0** UNSPSC # **40151503**

Catalog Page # **3715** Shipping Weight **36.0 lbs.**

Country of Origin **USA** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Centrifugal Pump**
HP	**1/2**
Phase	**3**
Voltage	**208-230/460**
Amps	**2.7-2.6/1.3**
Duty	**Continuous**
Inlet	**1-1/4" NPT**
Outlet	**1" NPT**
Motor Enclosure	**TEFC**
NEMA/IEC Frame	**48**
Service Factor	**1.15**
Wetted Materials	**ANSI 316L Stainless Steel,Carbon,Ceramic,Buna N**
Impeller Material	**ANSI 316L Stainless Steel**
Housing Material	**Cast Iron**
Volute Material	**ANSI 316L Stainless Steel**
Shaft Material	**300 Stainless Steel**
Screw Material	**316L Stainless Steel**

Port Rotation	**Top**
Drain Plug	**3/8"**
Manufacturers Warranty Length	**1 yr.**
Best Efficiency GPM @ Head	**29 gpm @ 52 ft.**
Best Efficiency Range GPM @ Head	**18-40 gpm @ 62-35 ft.**
Impeller Dia.	**4-7/16"**
Inlet Pressure	**50 psi**
Max. Dia. Solids	**1/16"**
Max. GPM @ Head	**44 gpm @ 25 ft.**
Max. Head	**71 ft.**
Max. Liquid Temp.	**212 Degrees F**
Max. Pressure	**75 psi**
Min. GPM @ Head	**10 gpm @ 68 ft.**
RPM	**3500**
Shaft Size	**5/8"**
Height	**10-3/4"**

Back to Top

Seal Type	**Type 6**
Seal Material	**Standard, Carbon Ceramic Faces, Buna Elastomer and Stainless Steel Parts**
Seal Application	**Water**
Max. Specific Gravity	**1.0**
Max. Fluid Viscosity	**40 SSU**
Impeller Type	**Closed**

Length	**18-5/8"**
Width	**8-1/2"**
GPM of Water @ 30 Ft. of Head	**44**
GPM of Water @ 40 Ft. of Head	**36**
GPM of Water @ 50 Ft. of Head	**30**
GPM of Water @ 60 Ft. of Head	**20**

Transfer Pump (P-02) Model #1MC1C5E0

TECHNICAL BROCHURE

BMCC

MCC

END SUCTION CENTRIFUGAL PUMPS

BOMBAS CENTRÍFUGAS DE SUCCIÓN FINAL SERIE MCC

GOULDS WATER TECHNOLOGY

a xylem brand

A Full Range of Product Features
Un producto con una amplia gama de características

Superior Materials of Construction: AISI 316L stainless steel impeller and seal housing for corrosion resistance, and improved strength and ductility. Cast iron casing for strength and durability.

High Efficiency Impeller: Enclosed impeller in 316L stainless steel maintains maximum efficiencies over the life of the pump without adjustment.

Casing: Cast iron construction with NPT threaded, centerline connections, easily accessible vent, prime and drain connections. Nine position casing rotation for easy piping.

Mechanical Seal: Standard John Crane seal with carbon ceramic faces, BUNA elastomers, and stainless metal parts. Optional high temperature and chemical duty seals available.

Motors: NEMA standard open drip- proof, totally enclosed fan cooled enclosures. Rugged ball bearing design for continuous duty under all operating conditions.

Materiales de construcción superiores: impulsor y caja de sello de acero inoxidable AISI 316L para mayor resistencia a la corrosión y más solidez y ductilidad. Carcasa de hierro fundido para mayor solidez y durabilidad.

Impulsor de alta eficiencia: impulsor encerrado en acero inoxidable 316L mantiene una eficiencia máxima durante toda la vida útil de la bomba sin requerir ajuste.

Carcasa: construcción de hierro fundido con conexiones de línea central NPT roscadas, orificio de ventilación fácilmente accesible, conexiones de purga y drenaje. Nueve posiciones de rotación de la carcasa para facilitar la conexión de las tuberías.

Sello mecánico: sello John Crane estándar con superficies cerámicas de carbón, elastómeros BUNA y piezas metálicas de acero inoxidable. Sellos opcionales para alta temperatura y para aplicaciones químicas disponibles.

Motores: Gabinetes NEMA estándar a prueba de goteo abierto, totalmente encerrados, enfriados por ventilador. Diseño de rodamientos resistentes para un servicio continuo bajo todas las condiciones de funcionamiento.

The various versions of the MCC are identified by a product code number on the pump label. This number is also the catalog number for the pump. The meaning of each digit in the product code number is shown at right.

Las diferentes versiones de la MCC se identifican con un número de código de producto en la etiqueta de la bomba. Este número es también el número de catálogo de la bomba. El significado de cada dígito en el código del producto se muestra a la derecha.

MCC Product Line Numbering System
Sistema de numeración de la línea de productos MCC

Example Product Code,
Ejemplo código del producto

1 MC 1 C 1 E 0

Mechanical Seal and O-ring
0 = Pre-engineered standard
For optional mechanical seal modify catalog order no. with seal code listed below.

Sello mecánico y anillo 'O'
0 = Estándar aprobado
Para sello mecánico opcional modificar el número de orden del catálogo con el código del sello según la siguiente tabla.

Mechanical Seal (⅝" seal), *Sello Mecánico (sello de ⅝")*					
Seal Code, *Código del Sello*	Rotary, *Rotativo*	Stationary, *Estacionario*	Elastomers, *Elastómeros*	Metal Parts, *Partes Metálicas*	Part No., *Pieza Número*
0	Carbon	Ceramic, *Cerámica*	BUNA	18-8 SS	10K10
2		Sil-Carbide, *Carburo de silicona*	EPR	Type 316 SS *Tipo 316 SS*	10K18
4			Viton		10K55*
5	Sil-Carbide, *Carburo de silicona*		EPR		10K81
6			Viton		10K62

Note: * replaces obsolete 10K24,
*Nota: * reemplace la obsoleta 10K24.*

Impeller Option Code
Código del Impulsor Opcional

Impeller Code, *Código del Impulsor*	Pump Size, *Tamaño de la Bomba* 1MC 1 x 1¼ – 6 Diameter	2MC 1¼ x 1½ – 6 Diameter	3MC 1½ x 2 – 6 Diameter
K	–	6⅛	–
G	–	5 15/16	5⅜
H	–	5½	5
A	6⅛	5¼	4¾
B	5¾	5 1/16	4⅝
C	5 3/16	4⅞	4⅜
D	4¾	4⅝	4 1/16
E	4 7/16	4¼	3⅝
F	4 1/16	3⅞	–

Driver, *Motor*
1 = 1 PH, ODP
2 = 3 PH, ODP
3 = 3 PH, 575V ODP
4 = 1 PH, TEFC
5 = 3 PH, TEFC
6 = 3 PH, 575V TEFC

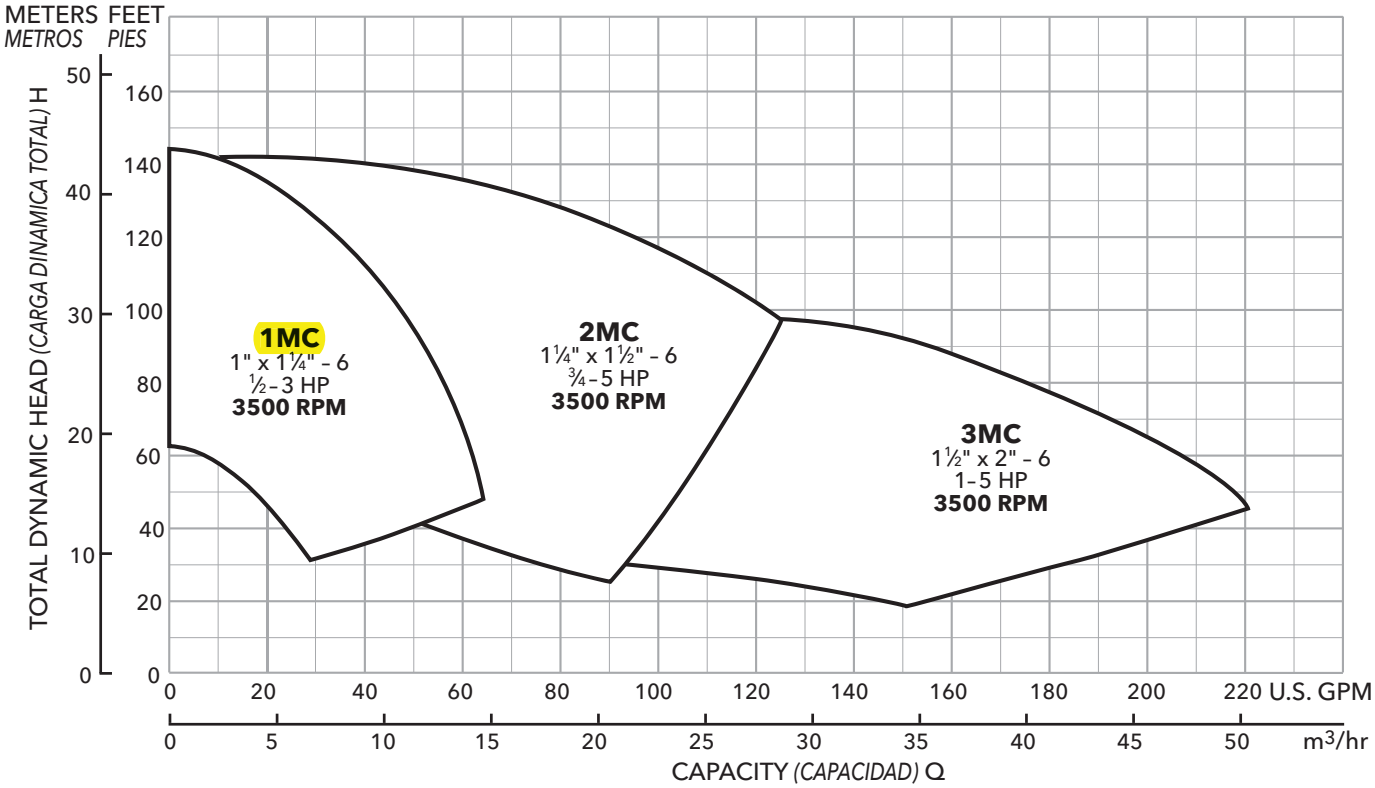
HP Rating, *Capacidad en HP*
C = ½ HP E = 1 HP G = 2 HP J = 5 HP
D = ¾ HP F = 1½ HP H = 3 HP

Driver: Hertz/Pole/RPM,
Motor: Hercios/Polo/RPM
1 = 60 Hz, 2 pole, 3500 RPM
4 = 50 Hz, 2 pole, 2900 RPM

Material
MC = Cast iron, *Hierro fundido*

Pump Size, *Tamaño de la bomba*
1 = 1 x 1¼ – 6 2 = 1¼ x 1½ – 6 3 = 1½ x 2 – 6

Performance Coverage (60 Hz)
Rango de operación (60 Hz)



NOTES:
Not recommended for operation beyond printed H-Q curve.

For critical application conditions consult factory.

Not all combinations of motor, impeller and seal options are available for every pump model. Please check with Goulds Water Technology on non-cataloged numbers.

All standard 3500 RPM ODP and TEFC motors supplied by Goulds Water Technology, have minimum of 1.15 service factor. Standard catalog units may utilize available service factor.

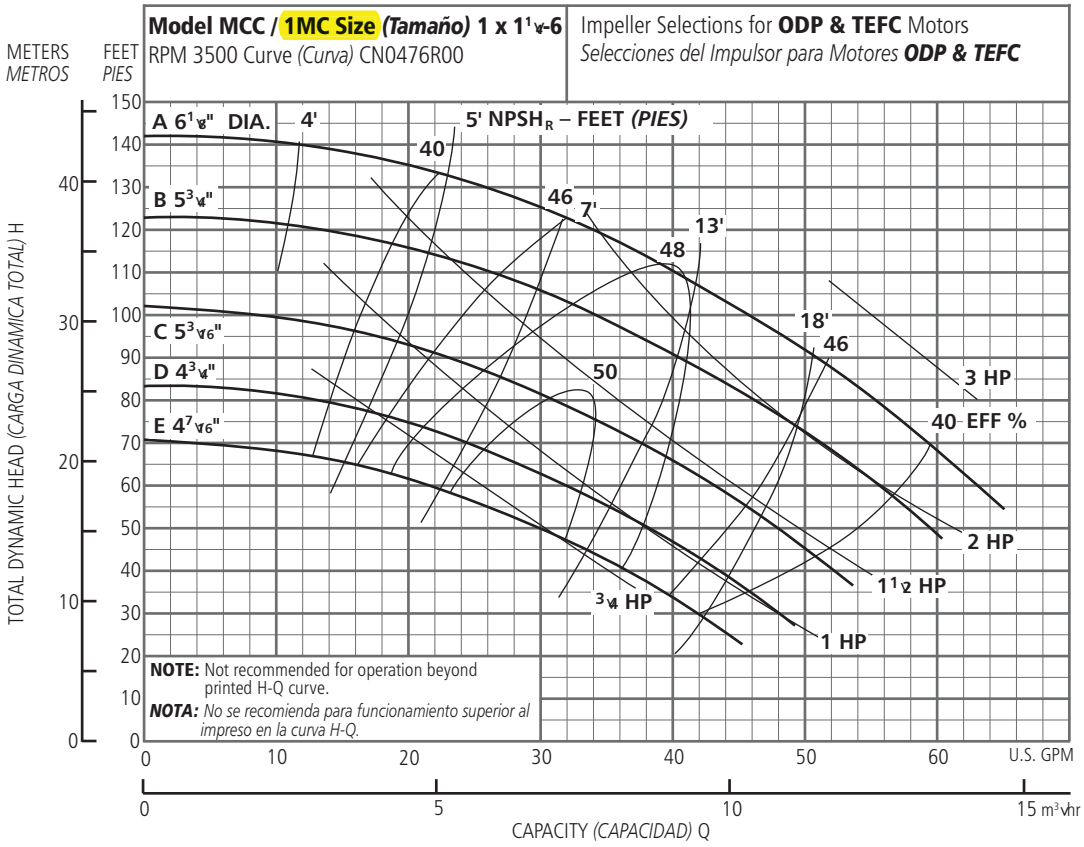
NOTAS:
No se recomienda para funcionamiento superior al indicado en la curva H-Q.

Para condiciones de aplicaciones críticas consultar con la fábrica.

No todas las combinaciones de motor, impulsor y sellos se encuentran disponibles para todos los modelos de bomba. Por favor consultar con Goulds Water Technology sobre los números no catalogados.

Todos los motores estándar de 3500 RPM, ODP (abiertos resguardados) y TEFC (totalmente encerrados con enfriamiento forzado) provistos por Goulds Water Technology tienen un factor mínimo de servicio de 1,15. Las unidades estándar de catálogo pueden utilizar el factor de servicio disponible.

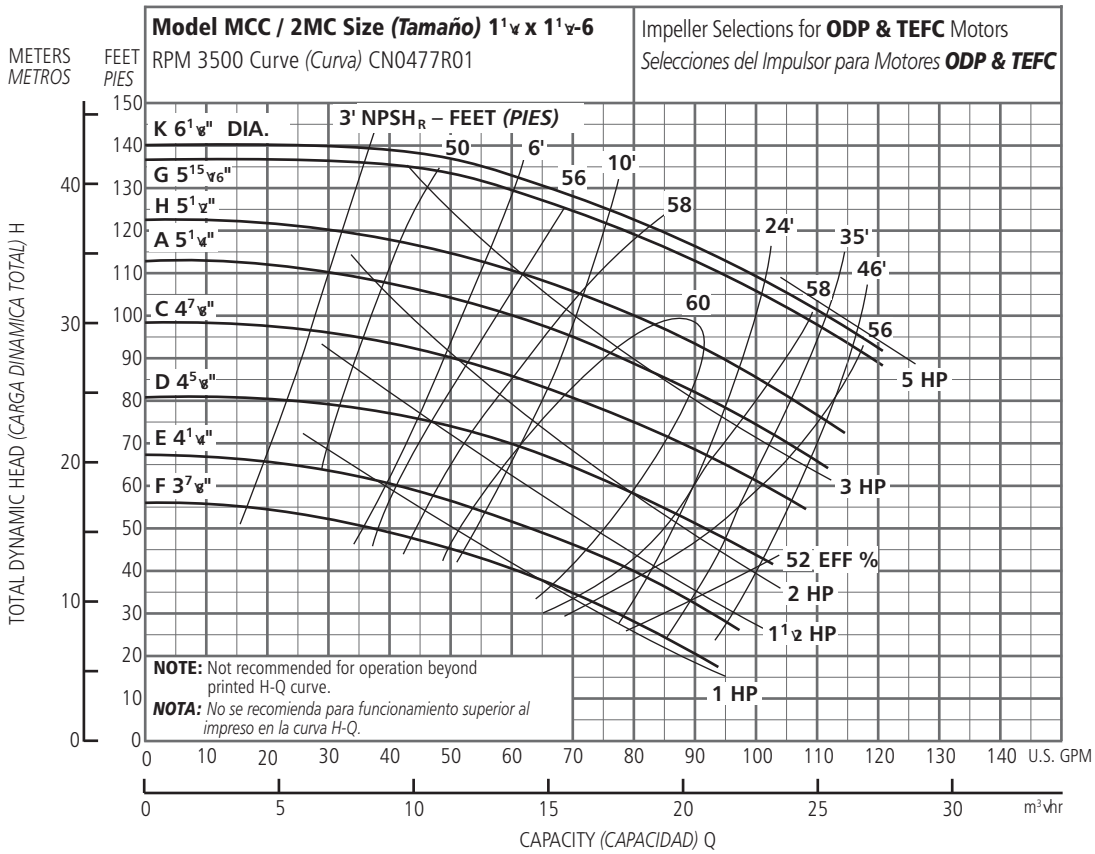
Performance Curves – 60 Hz, 3500 RPM
Curvas de desempeño – 60 Hz, 3500 RPM



Ordering Code, *Código de Pedido*	Standard HP Rating, *Capacidad HP estándar*	Imp. Dia.
E	½	4 7/16
D	¾	4¾
C	1	5 3/16
B	1½	5¾
A	2	6⅛

NOTE: Although not recommended, the pump may pass a 1/16" sphere.

NOTA: Si bien no se recomienda, la bomba puede pasar una esfera de 1/16".



Ordering Code, *Código de Pedido*	Standard HP Rating, *Capacidad HP estándar*	Imp. Dia.
F	¾	3 7/8"
E	1	4¼
D	2	4⅝
C	3	4⅞
A	3	5¼
H	5	5½
G	5	5 15/16
K	5	6⅛

NOTE: Although not recommended, the pump may pass a 3/16" sphere.

NOTA: Si bien no se recomienda, la bomba puede pasar una esfera de 3/16".

Signet 2551 Magmeter Flow Sensor

Magnetic Flow Meter/Transmitter (FIT-119) #3-2551-P0-41

Submittal#8.4.11

Available in a variety of wetted materials and ideal for pipe sizes up to DN900 (36 in.)

The Signet 2551 Magmeter is an insertion style magnetic flow sensor that features no moving parts. The patented* sensor design is available in corrosion-resistant materials to provide long-term reliability with minimal maintenance costs. Material options include PP with stainless steel, PVDF with Hastelloy-C, or PVDF with Titanium. Utilizing the comprehensive line of Signet installation fittings, sensor alignment and insertion depth is automatic. These versatile, simple-to-install sensors deliver accurate flow measurement over a wide dynamic range in pipe sizes ranging from DN15 to DN900 (½ to 36 inches), satisfying the requirements of many diverse applications.

Signet 2551 Magmeters offer many output options of frequency/digital (S^3L) or 4 to 20 mA which are available on both the blind and display versions. The frequency or digital (S^3L) sensor output can be used with Signet's extensive line of flow instruments while the 4 to 20 mA output can be used for a direct input to PLCs, chart recorders, etc. Both the 4 to 20 mA output and digital (S^3L) sensor interface is available for long distance signal transmission. An additional benefit is the empty pipe detection which features a zero flow output when the sensors are not completely wetted. Also, the frequency output is bi-directional while the 4 to 20 mA output can be set for uni- or bi-directional flow using the display or the 3-0250 USB to Digital (S^3L) Configuration/Diagnostic setup tool which connects to PCs for programming capabilities.

In addition the display version of the 2551 Magmeter is available with relays and features permanent and resettable totalizer values which can be stored and seen on the display. Also, the display contains multi-languages with English, Spanish, German, French, Italian and Portuguese menu options.

Features

- **Test certificate included for -X0, -X1**
- **Patented Magmeter technology***
- **No moving parts**
- **Bi-directional flow**
- **Empty pipe detection**
- **Installs into pipe sizes DN15 to DN900 (0.5 to 36 in.)**
- **Operating range 0.05 to 10 m/s (0.15 to 33 ft/s)**
- **Accurate measurement even in dirty liquids**
- **Polypropylene or PVDF retaining nuts**
- **Blind 4 to 20 mA, digital (S^3L), frequency, relay output**
- **No pressure drop**
- **Corrosion resistant materials; PP or PVDF with SS, Hastelloy-C, or Titanium**
- **Multi-language display menu available**

LISTED
MEASURING EQUIPMENT
77CJ

Applications

- **Chemical Processing**
- **Water and Wastewater Monitoring**
- **Metal Recovery and Landfill Leachate**
- **Commercial Pools, Spas, and Aquariums**
- **HVAC**
- **Irrigation**
- **Scrubber Control**
- **Neutralization Systems**
- **Industrial Water Distribution**

* U.S. Patent No: 7,055,396 B1

Specifications

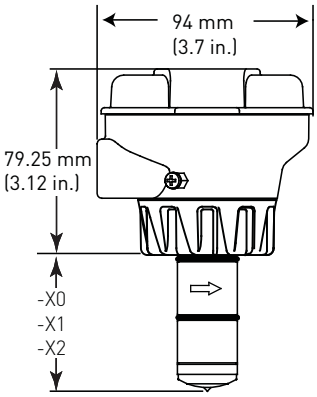
General			
Operating Range	0.05 to 10 m/s	0.15 to 33 ft/s	
Pipe Size Range	DN15 to DN900	½ in. to 36 in.	
Linearity	± 1% reading plus 0.1% of full scale		
Repeatability	±0.5% of reading @ 25 °C (77 °F)		
Minimum Conductivity	20 µS/cm		
Wetted Materials			
Sensor Body/Electrodes and Grounding Ring	-P0, -P1, -P2: PP/316L SS		
	-T0, -T1, -T2: PVDF/Titanium		
	-V0, -V1, -V2: PVDF/Hastelloy-C		
O-rings	FPM (standard) EPR (EPDM), FFPM (optional)		
Case	PBT		
Display Window	Polyamide (transparent nylon)		
Protection Rating	NEMA 4X/IP65		
Electrical			
Power Requirements	4 to 20 mA	24 VDC ±10%, regulated, 22.1 mA max.	
	Frequency	5 to 24 VDC ±10%, regulated, 15 mA max.	
	Digital (S^3L)	5 to 6.5 VDC, 15 mA max.	
Auxiliary (only required for units with relays)		9 to 24 VDC, 0.4 A max.	
Reverse Polarity and Short Circuit Protected			
Current Output 4 to 20 mA	Loop Accuracy	32 µA max. error (25 °C @ 24 VDC)	
	Isolation	Low voltage < 48 VAC/DC from electrodes and auxiliary power	
	Maximum Cable	300 m (1000 ft)	
	Error condition	22.1 mA	
	Max. Loop Resistance	300 Ω	
	Compatible with PLC, PC or similar equipment		
	4 to 20 mA load needed		
Frequency Output	Output Modes	Freq., or Mirror Relay (display version only)	
	Max. Pull-up Voltage	30 VDC	
	Max. Current Sink	50 mA, current limited	
	Maximum Cable	300 m (1000 ft)	
	Compatible with Signet Model 8550, 8900, 9900, 9900-1BC		
Digital (S^3L) Output	Serial ASCII, TTL level 9600 bps		
	Compatible with Model Signet 8900 controller		
Relay Specifications			
#1, #2 Type	Mechanical SPDT		
Rating	5 A @ 30 VDC max., 5 A @ 250 VDC max.		
#3 Type	Solid State		
	50 mA @ 30 VDC, 50 mA @ 42 VAC		
Hysteresis	User adjustable for exiting alarm condition		
Alarm On Trigger Delay	Adjustable (0 to 9999.9 sec.)		
Relay Modes	Off, Low, High, Window, and Proportional Pulse		
Relay Source	Flow Rate, Resettable Totalizer		
Error Condition	Selectable; Fail Open or Closed		
Display			
Characters		2 x 16	
Contrast		User-set in four levels	
Backlighting (only on relay versions)		Requires external 9-24 VDC, 0.4 mA max.	
Max. Temperature/Pressure Rating			
Storage Temperature		-20 °C to 70 °C	-4 °F to 158 °F
Relative Humidity		0 to 95% (non-condensing)	
Operating Temperature	Ambient	-10 °C to 70 °C	14 °F to 158 °F
	Media	0 °C to 85 °C	32 °F to 185 °F
Maximum Operating Pressure		10.3 bar @ 25 °C	150 psi @ 77 °F
		1.4 bar @ 85 °C	20 psi @ 185 °F
Shipping Weight			
	0.680 kg	1.50 lb	
Standards and Approvals			
	CE, FCC, UL, CUL (for display versions with relays)		
	RoHS compliant, China RoHS		
	NEMA 4X / IP65 Enclosure (with cap installed)		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

Dimensions

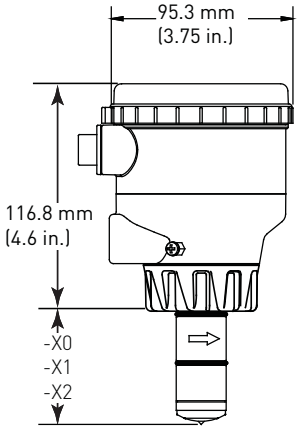
Pipe Range	
1/2 to 4 in.	-X0 = 58 mm (2.3 in.)
5 to 8 in.	-X1 = 91 mm (3.6 in.)
10 to 36 in.	-X2 = 167 mm (6.6 in.)

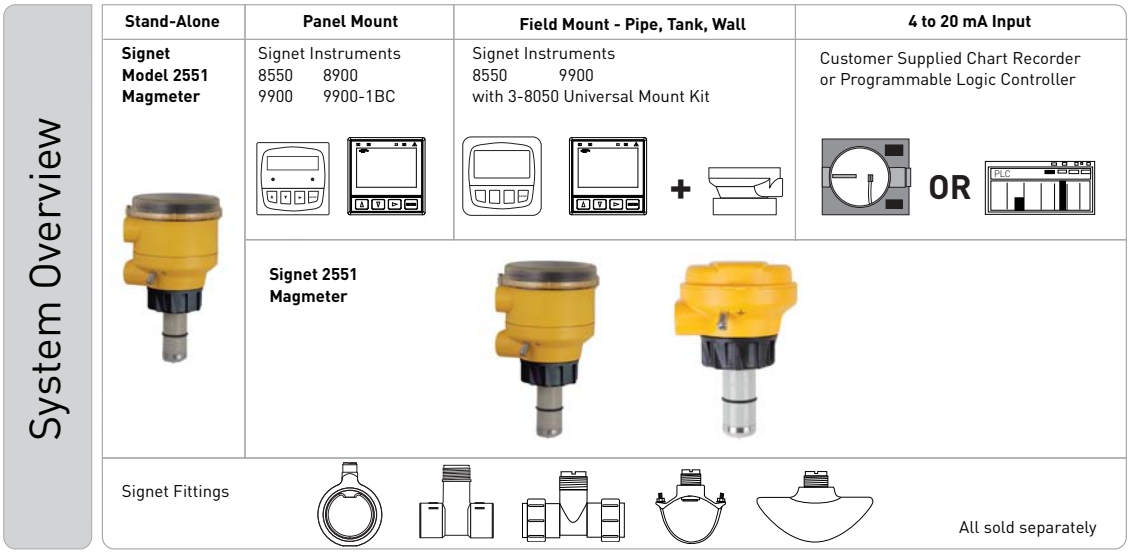
X = Sensor Body P, T, or V

Blind version

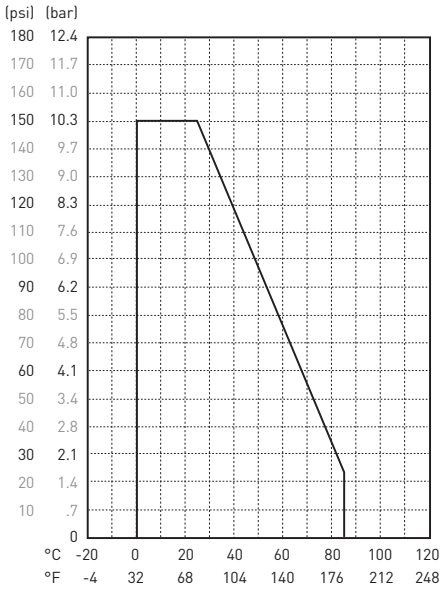


Display version





Operating Temperature/Pressure Graphs

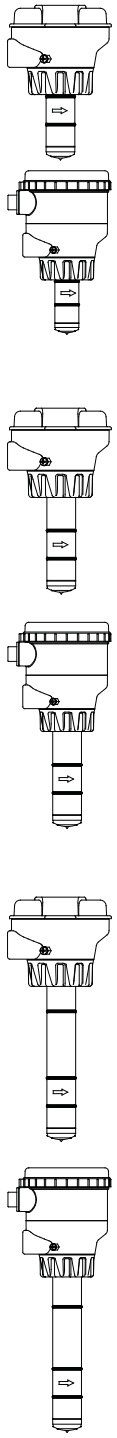


Note:
The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.

Application Tips
- Note minimum process liquid conductivity requirement is 20 µs/cm.
- Install sensor using standard Signet installation fittings for best results.
- Sensor is capable of retrofitting into existing 515 and 2536 fittings.

Please refer to Wiring, Installation, and Accessories sections for more information.

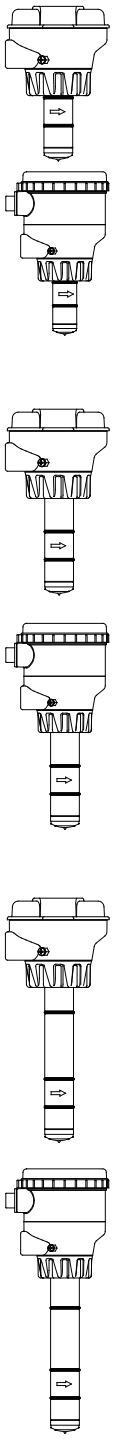
Ordering Information



Pipe Size	Mfr. Part No.	Code	Sensor Body
Frequency or Digital (S³L) output programmable open collector for use with any Signet Flow Instrument or the 8900 or 9900 Instruments**			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-11	**159 001 105**	Polypropylene and 316L SS
	3-2551-T0-11	**159 001 108**	PVDF and Titanium
	3-2551-V0-11	**159 001 257**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-21	**159 001 267**	Polypropylene and 316L SS
	3-2551-T0-21	**159 001 436**	PVDF and Titanium
	3-2551-V0-21	**159 001 269**	PVDF and Hastelloy-C
with display			
	3-2551-P0-41	**159 001 261**	Polypropylene and 316L SS
	3-2551-T0-41	**159 001 433**	PVDF and Titanium
	3-2551-V0-41	**159 001 263**	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-11	**159 001 106**	Polypropylene and 316L SS
	3-2551-T1-11	**159 001 109**	PVDF and Titanium
	3-2551-V1-11	**159 001 258**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-21	**159 001 268**	Polypropylene and 316L SS
	3-2551-T1-21	**159 001 437**	PVDF and Titanium
	3-2551-V1-21	**159 001 270**	PVDF and Hastelloy-C
with Display			
	3-2551-P1-41	**159 001 262**	Polypropylene and 316L SS
	3-2551-T1-41	**159 001 434**	PVDF and Titanium
	3-2551-V1-41	**159 001 264**	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-11	**159 001 107**	Polypropylene and 316L SS
	3-2551-T2-11	**159 001 448**	PVDF and Titanium
	3-2551-V2-11	**159 001 450**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-21	**159 001 435**	Polypropylene and 316L SS
	3-2551-T2-21	**159 001 454**	PVDF and Titanium
	3-2551-V2-21	**159 001 456**	PVDF and Hastelloy-C
with Display			
	3-2551-P2-41	**159 001 432**	Polypropylene and 316L SS
	3-2551-T2-41	**159 001 460**	PVDF and Titanium
	3-2551-V2-41	**159 001 462**	PVDF and Hastelloy-C

**This option is a programmable open collector output that is available with display versions only.

Ordering Information (continued)



Pipe Size	Mfr. Part No.	Code	Sensor Body
4 to 20 mA output for use with PLC, PC or similar equipment			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-12	**159 001 110**	Polypropylene and 316L SS
	3-2551-T0-12	**159 001 113**	PVDF and Titanium
	3-2551-V0-12	**159 001 259**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-22	**159 001 273**	Polypropylene and 316L SS
	3-2551-T0-22	**159 001 439**	PVDF and Titanium
	3-2551-V0-22	**159 001 275**	PVDF and Hastelloy-C
with Display			
	3-2551-P0-42	**159 001 279**	Polypropylene and 316L SS
	3-2551-T0-42	**159 001 442**	PVDF and Titanium
	3-2551-V0-42	**159 001 281**	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-12	**159 001 111**	Polypropylene and 316L SS
	3-2551-T1-12	**159 001 114**	PVDF and Titanium
	3-2551-V1-12	**159 001 260**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-22	**159 001 274**	Polypropylene and 316L SS
	3-2551-T1-22	**159 001 440**	PVDF and Titanium
	3-2551-V1-22	**159 001 276**	PVDF and Hastelloy-C
with Display			
	3-2551-P1-42	**159 001 280**	Polypropylene and 316L SS
	3-2551-T1-42	**159 001 443**	PVDF and Titanium
	3-2551-V1-42	**159 001 282**	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-12	**159 001 112**	Polypropylene and 316L SS
	3-2551-T2-12	**159 001 449**	PVDF and Titanium
	3-2551-V2-12	**159 001 451**	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-22	**159 001 438**	Polypropylene and 316L SS
	3-2551-T2-22	**159 001 455**	PVDF and Titanium
	3-2551-V2-22	**159 001 457**	PVDF and Hastelloy-C
with Display			
	3-2551-P2-42	**159 001 441**	Polypropylene and 316L SS
	3-2551-T2-42	**159 001 461**	PVDF and Titanium
	3-2551-V2-42	**159 001 463**	PVDF and Hastelloy-C

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
O-Rings		
1220-0021	**198 801 000**	O-ring, FPM (2 required per sensor)
1224-0021	**198 820 006**	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	**198 820 007**	O-ring, FFPM (2 required per sensor)
Replacement Transducers		
3-2551-P0	**159 001 211**	PP/316L SS, DN15 to DN100 (½ to 4 in.) pipe
3-2551-P1	**159 001 212**	PP/316L SS, DN125 to DN200 (5 to 8 in.) pipe
3-2551-P2	**159 001 444**	PP/316L SS, DN250 to DN900 (10 to 36 in.) pipe
3-2551-T0	**159 001 213**	PVDF/Titanium, DN15 to DN100 (½ to 4 in.) pipe
3-2551-T1	**159 001 214**	PVDF/Titanium, DN125 to DN200 (5 to 8 in.) pipe
3-2551-T2	**159 001 445**	PVDF/Titanium, DN250 to DN900 (10 to 36 in.) pipe
3-2551-V0	**159 001 376**	PVDF/Hastelloy-C, DN15 to DN100 (½ to 4 in.) pipe
3-2551-V1	**159 001 377**	PVDF/Hastelloy-C, DN125 to DN200 (5 to 8 in.) pipe
3-2551-V2	**159 001 446**	PVDF/Hastelloy-C, DN250 to DN900 (10 to 36 in.) pipe
Replacement Electronics Module		
3-2551-11	**159 001 215**	Magmeter electronics, frequency or digital (S^3L) output
3-2551-12	**159 001 216**	Magmeter electronics, 4 to 20 mA output
3-2551-21	**159 001 372**	Magmeter display electronics, frequency or digital (S^3L) output, with relays
3-2551-22	**159 001 373**	Magmeter display electronics, 4 to 20 mA output w/relays
3-2551-41	**159 001 374**	Magmeter display electronics, frequency or digital (S^3L) output
3-2551-42	**159 001 375**	Magmeter display electronics, 4 to 20 mA output
Other		
P31536	**198 840 201**	Sensor plug, Polypropylene
7310-1024	**159 873 004**	24 VDC Power Supply, 0.42 A, 10W
7310-2024	**159 873 005**	24 VDC Power Supply, 1.0 A , 24W
7310-4024	**159 873 006**	24 VDC Power Supply, 1.7 A, 40W
7310-6024	**159 873 007**	24 VDC Power Supply, 2.5 A, 60W
7310-7024	**159 873 008**	24 VDC Power Supply, 4.0 A, 96W
3-8050.390-1	**159 001 702**	Retaining Nut Replacement Kit, NPT, Valox
3-8050.390-3	**159 310 116**	Retaining Nut Replacement Kit, NPT, PP
3-8050.390-4	**159 310 117**	Retaining Nut Replacement Kit, NPT, PVDF
3-8551.521	**159 001 378**	Clear plastic cap for display
1222-0042	**159 001 379**	O-ring for clear plastic cap, EPR (EPDM)
3-0250	**159 001 538**	USB to digital (S^3L) Configuration/Diagnostic tool

3-2551.099 Rev F (04/13)
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Sump Float Switch #F6-SS

Series F6 & F7

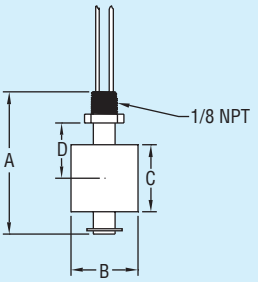
Level Switches - Vertical

Submittal#8.4.12

Low Cost, Reliable and Compact, Hermetically Sealed Contacts

F7-SB

F7-ST713



Series F6 & F7 compact level switches combine low cost and reliability with fast, simple installation. Hermetically sealed reed switches are actuated by magnets permanently bonded inside the float and can be easily adapted to open or close a circuit on rising or falling levels. Vertical mount models are shipped with normally open switch contacts which close as the float rises toward the mounting threads. Reverse switch action by removing the float, rotating it end-for-end and replacing it on the stem. Vertical models mount internally, oriented within 30° of vertical, or select optional fittings for external mounting. Switch ratings are suitable for many solid state control systems and monitors or alarms. Simple relay interfaces can be used for higher current applications.

Dimensions in Inches (mm)

Model	(A) Stem Length	(B) Float Diameter	(C) Float Height	(D) Actuation from Hex①
F7-SB	2.75 (70)	1.38 (35)	1.13 (29)	1.2 (31)
F7-SS2	2.06 (52)	1.0 (25)	1.0 (25)	0.73 (19)
F6-SS	2.17 (55)	1.11 (28)	1.11 (28)	–
F7-MPP	1.63 (41)	0.63 (16)	0.63 (16)	0.47 (12)
F7-PP	2.18 (55)	1.18 (30)	1.0 (25)	0.69 (18)
F7-BT	2.18 (55)	1.18 (30)	1.0 (25)	0.69 (18)
F7-K	2.13 (54)	1.0 (25)	1.0 (25)	0.65 (17)
F7-C11	2.06 (52)	1.0 (25)	1.0 (25)	0.56 (14)
F7-C21	2.06 (24)	1.0 (25)	1.0 (25)	0.56 (14)
F7-BB	3.19 (81)	1.88 (48)	1.81 (46)	1.19 (30)
F7-PS	3.38 (86)	1.88 (48)	1.88 (48)	1.25 (32)
F7-PVC	3.44 (87)	1.5 (38)	1.81 (46)	0.75 (19)
F7-T1	3.47 (88)	2.13 (54)	1.94 (49)	0.92 (22)
F7-ST713	3.38 (86)	2.06 (52)	2.06 (52)	1.09 (28)
F7-ST714	3.38 (86)	2.06 (52)	2.06 (52)	1.09 (28)

Model	Applications	Material Float/Stem	Temp. Limits	Press. Limits	Min. S.G.	Electrical Rating	Wire Leads	Mtg NPT (M)	Weight oz (g)
F7-SB	General purpose	Buna-N & Epoxy/ 316 SS	220°F (105°C)	150 psig 10 bar	0.60	25 VA: 1A @ 220 VAC	22 AWG 18″ (45 cm)	1/8″	2 (58)
F7-SS2	High temp/pressure, corrosives	316 SS (CYC)/ 316 SS	300°F (149°C)	450 psig 31 bar	0.75	25 VA: 1A @ 200 VAC	22 AWG 18″ (45 cm)	1/8″	1.2 (34)
F6-SS	Corrosives	316 SS/ 316 SS	257°F (125°C)	218 psig 15 bar	0.65	20 VA: 0.08A @ 240 VAC	20 AWG 11.8″ (30 cm)	1/8″	1.59 (45)
F7-MPP**	Broad chemical compatibility	Polypropylene/ Polypropylene	180°F (82°C)	100 psig 6.89 bar	0.90	10 VA: 0.1A @ 100 VAC	22 AWG 24″ (61 cm)	1/8″	0.8 (23)
F7-MPP-NO**	Broad chemical compatibility	Polypropylene/ Polypropylene	176°F (80°C)	100 psig 6.89 bar	0.90	50 VA: 0.2A @ 240 VAC	22 AWG 24″ (61 cm)	1/8″	0.8 (23)
F7-PP	Broad chemical compatibility	Polypropylene & Epoxy/Polypropylene	220°F (105°C)	100 psig 6.89 bar	0.60	30 VA: 0.14A @ 220 VAC	22 AWG 24″ (61 cm)	1/8″	0.8 (23)
F7-BT	Oils & Fuels	Buna-N & Epoxy/ PBT*	220°F (105°C)	150 psig 10 bar	0.45	30 VA: 0.14A @ 220 VAC	22 AWG 24″ (61 cm)	1/8″	0.7 (20)
F7-K	Food/beverage, corrosives	PVDF/ PVDF	180°F (82°C)	100 psig 6.89 bar	1.00	50 VA: 0.25A @ 150 VAC	22 AWG 24″ (61 cm)	1/8″	1.5 (43)
F7-C11	General purpose	Buna-N/ Brass	180°F (82°C)	150 psig 10 bar	0.45	20 VA: 0.08A @ 240 VAC	22 AWG 24″ (61 cm)	1/8″	1.5 (43)
F7-C21	Oils & water, general purpose	Buna-N/ 316 SS	180°F (82°C)	150 psig 10 bar	0.45	20 VA: 0.08A @ 240 VAC	22 AWG 24″ (61 cm)	1/8″	1.5 (43)
F7-BB	High viscosity liquids	Buna-N/ Brass	180°F (82°C)	150 psig 10 bar	0.55	20 VA: 0.08A @ 240 VAC	22 AWG 24″ (61 cm)	1/4″	5 (140)
F7-PS	Water-based liquids, complies with FDA	Polysulfone/ Polysulfone†	225°F (107°C)	50 psig 3 bar	0.55	20 VA: 0.08A @ 240 VAC	22 AWG 24″ (61 cm)	1/4″	4 (110)
F7-PVC	Chemical & plating	CPVC/ CPVC	180°F (82°C)	15 psig 1 bar	0.85	20 VA: 0.08A @ 240 VAC	22 AWG 24″ (61 cm)	1/4″	5 (140)
F7-T1	Viscous, sticky or corrosive liquids	PTFE/ TFE	300°F (149°C)	30 psig 2 bar	0.80	20 VA: 0.08A @ 240 VAC	22 AWG 24″ (61 cm)	1/4″	6 (170)
F7-ST713	Oils, water & chemicals	316 SS/ 316 SS	300°F (149°C)	750 psig 52 bar	0.80	20 VA: 0.08A @ 240 VAC	22 AWG 24″ (61 cm)	1/4″	6 (170)

①Distance between hex and liquid (S.G. = 1.0) level at actuation point will vary with specific gravity changes.
*PBT - Polybutylene Terephthalate.
†Incudes 316 SS clip.
‡Spherical floats.
** F7-MPP is normally closed/F7-MPP-NO is normally open

UL Listed

OPTIONAL FITTINGS — For external mounting of vertical models
A-347, 1/8″ x 1-1/4″ NPT carbon steel adapter
A-347-SS, 1/8″ x 1-1/4″ NPT 316 SS adapter
A-348, 1/8″ x 1-1/2″ NPT carbon steel adapter

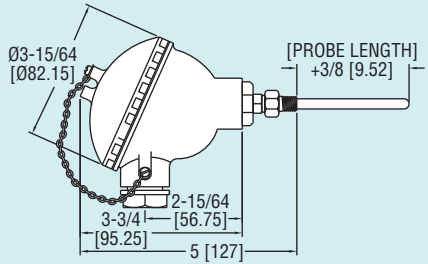
Series
TTW

Weatherproof Immersion Temperature Transmitter

Submittal#8.4.13

Pt100 RTD, PC Programmable Transmitter

Scan here
to watch
product video



The Series TTW Immersion Temperature Transmitter combines three popular products into a single package. Our TBU series head mounted temperature transmitter is factory mounted into our A-709 enclosure. A Pt100 RTD version of our TE series is wired to the transmitter, giving insertion lengths up to 18″. Each transmitter is factory programmed and calibrated to output a 4 to 20 mA signal proportional to the 32 to 212°F (0 to 100°C) temperature range.

Model	Probe Length
TTW-104	4″
TTW-106	6″
TTW-108	8″
TTW-112	12″
TTW-118	18″

SPECIFICATIONS

Temperature Sensor
Accuracy: ±3°F (±1.7°C).
Temperature Limits: Operating: -40 to 302°F (-40 to 150°C).
Sensor Curves: Pt100 RTD (TE Series Curve D).

Temperature Transmitter
Input Range: -328 to 986°F (-200 to 530°C).
Output: Two-wire 4 to 20 mA.
Output Impedance: 600 Ω @ 24 VDC.
Power Requirements: 12 to 35 VDC.
Accuracy: ±0.2% FS.
Temperature Limits: -40 to 185°F (-40 to 85°C).
Response Time: <100 msec.

Enclosure
Temperature Limits: -40 to 212°F (-40 to 100°C).
Rating: NEMA 4X (IP65).
Material: Painted aluminum housing.

ACCESSORY
TBU-90, Programming Cable and Software

Submittal#8.4.14

How can we improve our **Product Images**?

Compare

Exhaust Fan, 18 In, 115V, 1/4hp, 1725rpm

DAYTON

Your Price
$318.48 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

+Add to list

Availability for Qty 1 Go

Shipping | Pick Up

Expected to arrive **Fri. Mar 13**

Ship to: **11710** (Change)

Add **Repair & Replacement Coverage** for **$89.95 each.**

View Repair Parts for this item

2.0 of 5 | 1 review | Write a Review | Ask & Answer

Item # **1HLA5** Mfr. Model # **1HLA5** UNSPSC # **40101502**

Catalog Page # **4094** Shipping Weight **30.0 lbs.**

Country of Origin **USA** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Shutter Mount Exhaust Fan**
Blade Dia.	**18"**
Number of Speeds	**1**
Voltage	**115V**
CFM @ 0.000-In. SP	**2590**
Motor HP	**1/4**
Square Opening Required	**19"**
CFM @ 0.125-In. SP	**2190**
CFM @ 0.250-In. SP	**1705**
Sones @ 0.000-In. SP @ 5 Ft.	**14.3**
Motor RPM	**1725**
Hz	**60**
Phase	**1**
Full Load Amps	**4.5**
Max. Ambient Temp.	**104 Degrees F**

Motor Enclosure	**Totally Enclosed Air-Over**
Motor Insulation	**Class A**
Bearing Type	**Ball**
Height	**21-1/8"**
Width	**21-1/8"**
Max. Depth	**18-1/4"**
Frame Material	**Cold Rolled Steel**
Frame Finish	**Galvanized Steel**
Blade Material	**Stamped Aluminum**
Guard Material	**Steel**
Wire Guard Finish	**Gray Polyester**
Number of Blades	**3**
Thermal Protection	**Auto**
Standards	**UL Listed for US and Canada**
Includes	**Shutter**

Back to Top

Submittal#8.4.15

QMARK®
A Marley Engineered Products Brand

TYPE MUH
UNIT HEATER

FILE #E21609

- Unit mounts either horizontally or vertically. Totally versatile. For factories, warehouses, garages, stores, shipping rooms, power stations, aircraft hangers. Can be used for primary, supplementary, spot, or dual-system heating.
- Wide range of optional control kits are field installable, increasing the MUH adaptability to the specification market.
- Forced air unit heater with 10 power ratings; from 3KW to 50 KW heating output; 208, 240, 277 and 480V, 10,230 to 170,500 BTU/hr.
- 32 compatible models (no need to try to assemble a heating system from 70 or 80 models!)
- Heavy gauge die-formed steel housing. Two-toned, smartly styled.
- Advanced pull-through air flow design draws air across heating element for more even air distribution and cooler element operation.
- Specially designed venturi outlet to meet that added throw as required in vertical position.
- Branch circuit fusing (when required).
- Completely enclosed fan motor.
- 1- or 3-phase wiring on 5 through 10 KW 208/240V and 15 KW 208V units (field interchangeable).
- Aluminum-finned, copper clad steel sheath heating element has longer useful life, because of cooler sheath temperature and faster heat dissipation.
- 24V control transformer standard on most models, providing a safer and more accurate means of temperature control. 3KW and 5KW, 208-277V, have line voltage controls as standard (24V control available on made-to-order basis).
- Automatic reset linear thermal cut-out, capillary type, provides protection over entire length of element areas (Manual reset protection available on made-to-order basis).
- 2-speed fan selector switch (25 to 50 KW models).
- Fan delay feature eliminates cold drafts. Element heats up before fan cuts in, then fan continues to distribute heat after element shuts off.
- Ruggedly built, yet lighter weight for easier installation. No piping flues, valves, or traps.
- Individually adjustable discharge louvers to control air flow.
- Choice of optional diffusers for variety of air patterns, maximizing heat concentration and coverage in the vertical position.
- Meets all UL, NEC, and OSHA requirements.

SELECTION CHART

CAT. NO.	VOLTS	ELECTRICAL DATA				CONTROL VOLT (1)	2 STAGE ELEMENT CONTROL	AIR DELIVERY DATA			FAN MOTOR DATA			MAXIMUM EFFECTIVE MOUNTING HEIGHT		HORI. AIR THROW	WIRE SIZE	INSTALLED WEIGHT (LBS.) W/BRACK.
		PHASE	KW	BTU/HR. 000	AMPS (3)			CFM(2)	FPM(2)	ΔT(°F)	VOLTS	RPM(2)	HP	HORIZ.	VERT.			
MUH03-81	208	1Ø	3.0	10.2	14.5	208	N/A	350	800	27 °	208	1600	1/100	8	9	12	AWG 12	27
MUH03-21	208/240	1Ø	2.2/3.0	7.5/10.2	11.0/12.5	208/240	N/A	350	800	27 °	208/240	1600	1/100	8	9	12	AWG 12	27
MUH03-71	277	1Ø	3.0	10.2	11.0	277	N/A	350	800	27 °	277	1600	1/100	8	9	12	AWG 14	27
MUH03-31	347	1Ø	3.0	10.2	8.6	347	N/A	350	800	27 °	347	1600	1/100	8	9	12	AWG 14	27
MUH03-41	480	3Ø	3.0	10.2	3.6	24	N/A	350	800	27 °	480	1600	1/100	8	9	12	AWG 14	27
MUH03-61	600	3Ø	3.0	10.2	2.9	600	N/A	350	800	27 °	600	1600	1/100	8	9	12	AWG 14	27
MUH05-81	208	1-3Ø	5.0	17.0	24.0	208	5A	350	800	45 °	208	1600	1/100	8	9	12	AWG 10	27
MUH05-21	208/240	1-3Ø	3.7/5.0	12.6/17.0	18.0/21.0	208/240	5A	350	800	45 °	208/240	1600	1/100	8	9	12	AWG 10	27
MUH05-71	277	1Ø	5.0	17.0	18.0	277	N/A	350	800	45 °	277	1600	1/100	8	9	12	AWG 10	27
MUH05-31	347	1Ø	5.0	17.0	14.4	347	N/A	350	800	45 °	347	1600	1/100	8	9	12	AWG 10	27
MUH05-41	480	3Ø	5.0	17.0	6.0	24	N/A	350	800	45 °	480	1600	1/100	8	9	12	AWG 14	27
MUH05-61	600	3Ø	5.0	17.0	4.8	600	N/A	350	800	45 °	600	1600	1/100	8	9	12	AWG 10	27
MUH-07-8	208	1-3Ø	7.5	25.6	36.0	24	5B	650	970	37 °	208	1600	1/30	9	14	18	AWG 6	38
MUH-07-2	208/240	1-3Ø	5.6/7.5	19.1/25.6	27.0/31.3	24	5B	650	970	37 °	208/240	1600	1/30	9	14	18	AWG 8	38
MUH-07-7	277	1Ø	7.5	25.6	27.0	24	5B	650	970	37 °	277	1600	1/30	9	14	18	AWG 8	38
MUH-07-3	347	1Ø	7.5	25.6	21.6	24	5B	650	970	37 °	347	1600	1/30	9	14	18	AWG 14	38
MUH-07-4	480	3Ø	7.5	25.6	9.0	24	5B	650	970	37 °	480	1600	1/30	9	14	18	AWG 14	38
MUH-07-6	600	3Ø	7.5	25.6	7.3	24	5B	650	970	37 °	600	1600	1/30	9	14	18	AWG 14	38
MUH-10-8	208	1-3Ø	10.0	34.1	48.0	24	5B	650	970	49 °	208	1600	1/30	9	14	18	AWG 4	38
MUH-10-2	208/240	1-3Ø	7.5/10.0	25.6/34.1	36.0/42.0	24	5B	650	970	49 °	208/240	1600	1/30	9	14	18	AWG 6	38
MUH-10-7	277	1Ø	10.0	34.1	36.0	24	5B	650	970	49 °	277	1600	1/30	9	14	18	AWG 6	38
MUH-10-3	347	1Ø	10.0	34.1	28.8	24	5B	650	970	49 °	347	1600	1/30	9	14	18	AWG 14	38
MUH-10-4	480	3Ø	10.0	34.1	12.0	24	5B	650	970	49 °	480	1600	1/30	9	14	18	AWG 14	38
MUH-10-6	600	3Ø	10.0	34.1	9.7	24	5B	650	970	49 °	600	1600	1/30	9	14	18	AWG 14	38
MUH-15-8	208	1-3Ø	15.0	51.2	72.0	24	5A	910	1640	52 °	208	1530	1/20	11	20	35	AWG 2	53
MUH-15-2	208/240	3Ø	11.2/15.0	38.2/51.2	31.3/36.1	24	5C	910	1640	52 °	208/240	1530	1/20	11	20	35	AWG 6	53
MUH-15-4	480	3Ø	15.0	51.2	18.0	24	5C	910	1640	52 °	480	1530	1/20	11	20	35	AWG 10	53
MUH-15-6	600	3Ø	15.0	51.2	14.5	24	5C	910	1640	52 °	600	1530	1/20	11	20	35	AWG 12	53
MUH-20-8	208	3Ø	20.0	68.2	56.0	24	5A	1320	2060	48 °	208	1500	1/10	12	23	41	AWG 4	60
MUH-20-2	208/240	3Ø	15.0/20.0	51.2/68.2	41.2/48.0	24	5C	1320	2060	48 °	208/240	1500	1/10	12	23	41	AWG 4	60
MUH-20-4	480	3Ø	20.0	68.2	24.0	24	5C	1320	2060	48 °	480	1500	1/10	12	23	41	AWG 10	60
MUH-20-6	600	3Ø	20.0	68.2	19.3	24	5C	1320	2060	48 °	600	1500	1/10	12	23	41	AWG 12	60
MUH-25-2	208/240	3Ø	18.7/25.0	63.8/85.2	52.0/60.0	24	5A	2100/1800	2100/2030	38 °/44 °	208/240	1600/1375	1/4	13	23	50	AWG 3	93
MUH-25-4	480	3Ø	25.0	85.2	30.0	24	5C	2100/1800	2100/2030	38 °/44 °	480	1600/1375	1/4	13	23	50	AWG 8	93
MUH-25-6	600	3Ø	25.0	85.2	24.2	24	5C	2100/1800	2100/2030	38 °/44 °	600	1600/1375	1/4	13	23	50	AWG 10	93
MUH-30-8	208	3Ø	30.0	102.3	84.0	24	5A	2100/1800	2100/2030	45 °/53 °	208	1600/1375	1/4	12	20	50	AWG 1	93
MUH-30-2	208/240	3Ø	22.5/30.0	76.7/102.3	63.0/72.3	24	5A	2100/1800	2100/2030	45 °/53 °	208/240	1600/1375	1/4	12	20	50	AWG 2	93
MUH-30-4	480	3Ø	30.0	102.3	36.0	24	5C	2100/1800	2100/2030	45 °/53 °	480	1600/1375	1/4	12	20	50	AWG 6	93
MUH-30-6	600	3Ø	30.0	102.3	29.0	24	5C	2100/1800	2100/2030	45 °/53 °	600	1600/1375	1/4	12	20	50	AWG 8	93
MUH-40-2	208/240	3Ø	30.0/40.0	102.3/136.4	83.4/96.4	24	5A	3000/2600	3260/2900	42 °/49 °	208/240	1525/1420	1/2	15	28	60	AWG 1/0	114
MUH-40-4	480	3Ø	40.0	136.4	48.0	24	5A	3000/2600	3260/2900	42 °/49 °	480	1525/1420	1/2	15	28	60	AWG 4	114
MUH-40-6	600	3Ø	40.0	136.4	38.7	24	5A	3000/2600	3260/2900	42 °/49 °	600	1525/1420	1/2	15	28	60	AWG 6	114
MUH-50-8	208	3Ø	50.0	170.5	139.0	24	5A	3000/2600	3260/2900	53 °/61 °	208	1525/1420	1/2	15	25	60	AWG 4/0	114
MUH-50-2	208/240	3Ø	37.5/50.0	127.3/170.5	104.2/120.4	24	5A	3000/2600	3260/2900	53 °/61 °	208/240	1525/1420	1/2	15	25	60	AWG 3/0	114
MUH-50-4	480	3Ø	50.0	170.5	60.2	24	5A	3000/2600	3260/2900	53 °/61 °	480	1525/1420	1/2	15	25	60	AWG 4	114
MUH-50-6	600	3Ø	50.0	170.5	48.3	24	5A	3000/2600	3260/2900	53 °/61 °	600	1525/1420	1/2	15	25	60	AWG 3	114

Note:

1. All standard units are supplied with a low voltage control transformer and contactor (24V) except MUH-03 & 05, 208, 240 & 277 volt models. Low voltage control on these units are available on made to order. All units are also available on special order for 120 volt control; internal and transformer or external without transformer.
2. On dual voltage units; CFM, FPM, and RPM are shown at higher voltage.
3. On dual phase units, maximum amp draw is listed for respective voltage.
4. 25 thru 50 KW models have two speed motors and dual CFM ratings.

5A. Standard.

5B. Optional - made to order - amp load unbalanced on 3 Phase.

5C. Optional - made to order - amp load balanced on 3 Phase.

ACCESSORIES

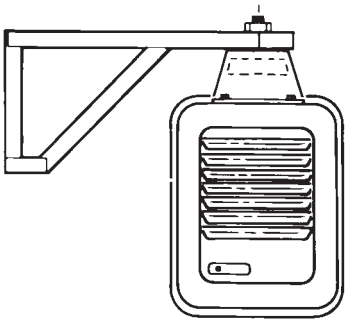
CATALOG #	DESCRIPTION	ELECTRICAL RATING	USE WITH HEATER NO.
MT-1	Single Pole Internal Thermostat Temp. Range: 40°F - 85°F	25A; 120, 240V. A.C. Res. 22A; 277V.A.C. Res.	All MUH Series Heaters (except MUH05-21 3Ø and mUH025-81 3Ø, which use MT-2).
MT-2	Two Stage Internal Thermostat Temp. Range: 40°F - 85°F	25A; 120, 240V. A.C. Res. 22A; 277V.A.C. Res. 125V.A; Pilot Duty	MUH05-21 3Ø, MUH05-81 3Ø, MUH-15-8, MUH-20-8, MUH-25-2, MUH-30-2, MUH-30-8, MUH-40-2, MUH-50-2, MUH-50-4, MUH-50-8
MCFS	Internal Summer Fan Switch	6A; 600V.A.C. Res. 2 HP; 250, 480, 600V.A.C. 1, 2, or 3Ø	All MUH Series Heaters
MRFS-1	Remote Summer Fan Switch (Line Voltage)	2 HP; 250-480V.A.C.	All MUH Series Heaters
NRFS-2	Remote Summer Fan Switch with Relay (24V Coil-Single Pole Normally Open)	6 AFL, 35 ALR, 250V.A.C. 60 Hz 3 AFL, 18 ALR, 480V.A.C. 60 Hz	All MUH Series Heaters (except MUH03-21, MUH03-71, MUH03-81, MUH05-21, MUH05-71, MUH05-81 Units, unless optional control transformer is supplied.
MHRT	Heater Recovery Thermostat with Relay (24V Coil-Single Pole Normally Open) Hi — 120°F; Low — 60°F	6 AFL, 35 ALR, 250V.A.C. 60 Hz 3 AFL, 18 ALR, 480V.A.C. 60 Hz	All MUH Series Heaters (except MUH03-21, MUH03-71, MUH03-81, MUH05-21, MUH05-71, MUH05-81 Units, unless optional control transformer is supplied.
MPDS-25	Power Disconnect Switch (3 Pole)	25A, 600V.A.C. Res.	MUH03-21, MUH03-41, MUH03-71, MUH03-81, MUH05-21, MUH05-41, MUH05-71, MUH05-81, MUH-07-4, MUH-10-4, MUH-15-4, MUH-20-4
MPDS-60	Power Disconnect Switch (3 Pole)	63A, 600V.A.C. Res.	MUH-07-02, MUH-07-7, MUH-07-8, MUH-10-2 ,MUH-10-7, MUH-10-8, MUH-15-2 MUH-15-8 3Ø only, MUH-20-2, MUH-20-8, MUH-25-2, MUH-25-4, MUH-30-4 MUH-40-4, MUH-50-4

UNIVERSAL WALL & CEILING BRACKET

CATALOG NO.	USED ON
MMB-10	MUH-03, 05, 07 & 10
MMB-20	MUH-15 & 20
MMB-30	MUH-25 & 30
MMB-50	MUH-40 & 50

CEILING BRACKET

CATALOG NO.	USED ON
MCMB-10	MUH-03, 05, 07 & 10
MCMB-20	MUH-15 & 20
MCMB-30	MUH-25 & 30
MCMB-50	MUH-40 & 50



BRACKET SIZE

DIMENSION	3 - 20Kw	25 - 50Kw
A	$7^{1}/_{4}$"	$9^{7}/_{16}$"
B	$9^{1}/_{2}$"	$14^{3}/_{8}$"
C	$7^{1}/_{4}$"	$12^{1}/_{8}$"
D	$1^{15}/_{16}$"	$2^{1}/_{16}$"
E	$2^{1}/_{4}$"	3"
L	$20^{1}/_{2}$"	$28^{15}/_{16}$"
M	$9^{15}/_{16}$"	$14^{15}/_{16}$"
N	$3^{1}/_{4}$"	$4^{1}/_{2}$"

OPTIONAL VERTICAL CEILING MOUNTING BRACKET

CATALOG NUMBER	USED ON	STANDARD CARTON QTY.	WT. LBS.
MVDMB5	MUH03-05	1	5
MVDMB20	MUH07-20	1	7
MVDMB50	MUH25-50	1	9

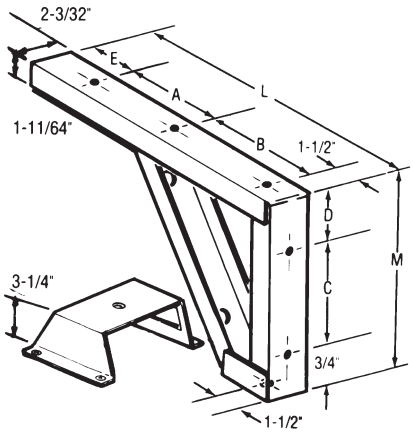
OPTIONAL BUILT-IN CONTROLS AND ACCESSORIES ON MUH HEATERS

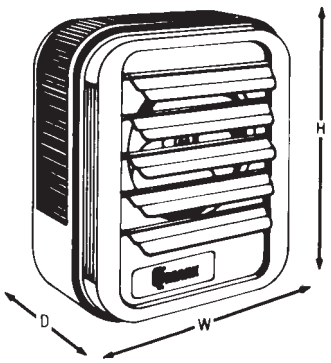
FACTORY INSTALLED ONLY††
DESCRIPTION
MUH-03 & 05 (208, 208/240, 277V Supply) 24 or 120V Control Transformer and Power Contactor 24 or 120V H.C. Power Contactor
MUH-03 & 05 (480V Supply) & MUH-07 thru MUH-50, Optional 120V Control
2-Stage Control of Elements (See Note 5)
Manual Reset.
Outlet Mesh (Bird Screen) For all MUH Heaters

††Optional built-in controls and accessories factory installed only - Not to be field installed

DIMENSIONS

CAT. NO.	HEIGHT	WIDTH	DEPTH
MUH-03 & 05	16"	14"	$7^{1}/_{2}$"
MUH-07 & 10	$21^{3}/_{4}$"	19"	$7^{1}/_{2}$"
MUH-15 & 20	$21^{3}/_{4}$"	19"	$12^{3}/_{4}$"
MUH-25 & 30	30"	$26^{5}/_{8}$"	$11^{3}/_{4}$"
MUH-40 & 50	30"	$26^{5}/_{8}$"	$17^{1}/_{8}$"

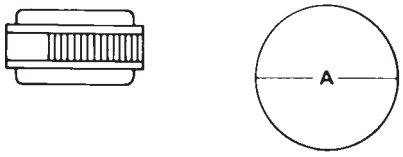
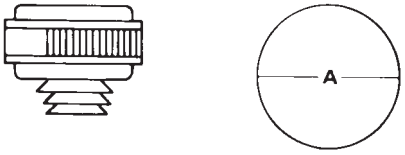
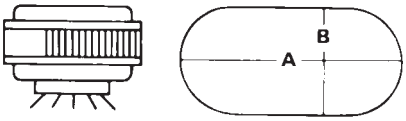
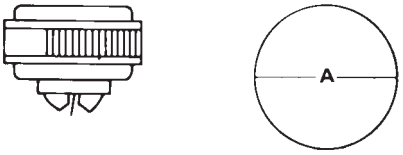




MOUNTING LIMITATIONS

Unit heaters should not be used in potentially explosive atmospheres. The finish is not intended for direct salt spray exposure in marine applications or the highly corrosive atmospheres of swimming pools, chemical storage bins, etc. Do not install unit heaters above recommended maximum mounting height. Obstructions must not block unit heater air inlet or discharge. Heaters must be mounted at least 7' above the floor to prevent accidental contact with the heating element or fan blade which could cause injury.

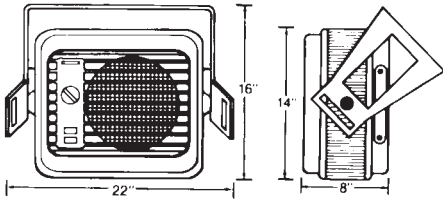
DIFFUSER SELECTOR TABLES FOR VERTICAL MOUNTING

CATALOG NO.	DESCRIPTION	CATALOG NO.	MAX. MNT. HT.	A DIMENSION	DIFFUSER PATTERN AND AREA
NONE	WITHOUT DIFFUSER No diffuser needed where a straight downflow air pattern is required. For maximum air throw, remove louvers. Any of three diffusers can be added to basic heater.	MUH-03 &MUH-05	9	18	
NONE		MUH-07 & MUH-10	14	26	
NONE		MUH-15	20	35	
NONE		MUH-20	23	40	
NONE		MUH-25	23	63	
NONE		MUH-30	20	55	
NONE		MUH-40	28	70	
NONE		MUH-50	25	63	
MAD-S	ANEMOSTAT DIFFUSER The “comfort” diffuser. Produces draft-free air movement at low mounting heights. Floor coverage shown in table.	MUH-03 & MUH-05	8	18	
MAD-M		MUH-07 & MUH-10	12	28	
MAD-M		MUH-15	15	35	
MAD-M		MUH-20	17	40	
MAD-L		MUH-25	19	60	
MAD-L		MUH-30	17	55	
MAD-L		MUH-40	22	77	
MAD-L		MUH-50	20	70	
MLD-S	LOUVER DIFFUSER Permits directional (straight line) air flow as in air curtain application over doorways. Rectangular coverage, Louvers can be turned in either direction.	MUH-03 & MUH-05	9	25(A) 12(B)	
MLD-M		MUH-07 & MUH-10	14	39 (A) 19(B)	
MLD-M		MUH-15	18	50(A) 25(B)	
MLD-M		MUH-20	20	56(A) 28(B)	
MLD-L		MUH-25	23	72(A) 36(B)	
MLD-L		MUH-30	20		
MLD-L		MUH-40	24	88(A) 44(B)	
MLD-L		MUH-50	22	80(A) 40(B)	
MRD-S	RADIAL DIFFUSER Increases floor coverage. Adjustable fins, in vertical mode, direct downward in a tight pattern. Conversely, when fins are tilted to 45° angle, floor coverage is up to 25% greater at relatively low mounting heights.	MUH-03 & MUH-05	9	20	
MRD-M		MUH-07 & MUH-10	14	31	
MRD-M		MUH-15	18	40	
MRD-M		MUH-20	20	45	
MRD-L		MUH-25	23	69	
MRD-L		MUH-30	20	60	
MRD-L		MUH-40	24	75	
MRD-L		MUH-50	22	68	

TYPE MUH-35
UNIT HEATER

FILE #E21609

- Mounts either on the wall or from the ceiling can be used for primary or spot heating. For factories, garages, schools, etc.
- Airflow can be directed horizontally, vertically or any position between for precise control.
- Multiple wattage heat selector switch. Either 5KW or 3.3KW @ 240V (3.7KW or 2.5KW @ 208V) for just the right amount of heat.
- Fan only switch allows fan to cycle automatically with elements or run continuously for air movement when no heat is required.
- Built-in bi-metal thermostat. Range 40° to 90°F.
- Heater is shipped with ceiling/wall bracket.
- Heavy gauge die-formed steel housing.
- Advanced pull-through air flow design draws air across heating element for more even air distribution and cooler element operation.
- Specially designed venturi outlet to meet that added throw as required in vertical position.
- Completely enclosed fan motor.
- Aluminum-finned, copper clad steel sheath heating element has longer useful life, because of cooler sheath temperature and faster heat dissipation.
- Automatic reset linear thermal cut-out capillary type, provides protection over entire length of element area.
- Ruggedly built, yet lighter weight for easier installation. No piping flues, valves, or traps.
- Meets all UL, NEC, and OSHA requirements.



SELECTION CHART

CATALOG NUMBER	ELECTRICAL DATA						2 STAGE ELEMENT CONTROL	AIR DELIVERY DATA			FAN MOTOR DATA			MAXIMUM EFFECTIVE MOUNTING HEIGHT		HORIZ. AIR THROW	WIRE SIZE	INSTALLED WEIGHT (lbs) W/ BRACKET
	VOLTS	PHASE	KW	BTU/HR (000)	AMPS	CONTROL VOLTAGE		CFM	FPM	ΔT(°F)	VOLTS	RPM	HP	HORIZ.	VERT.			
MUH-35	240/208	1	5.0/3.7	17.0/12.6	21.0/18.0	17.0/12.6	MUH-35	210	550	71°	240/208	1600	1/100	8	51	24	AWG 10	22

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS*

- Unit mounts either horizontally or vertically. Totally versatile. For factories, warehouses, garages, stores, shipping rooms, power stations, aircraft hangers. Can be used for primary, supplementary, spot, or dual-system heating.
- Wide range of optional control kits are field installable, increasing the MUH adaptability to the specification market.
- Forced air unit heater with 10 power ratings; from 3KW to 50 KW heating output; 208, 240, 277 and 480V, 10,230 to 170,500 BTU/hr.
- 32 compatible models (no need to try to assemble a heating system from 70 or 80 models!)
- Heavy gauge die-formed steel housing. Two-toned, smartly styled.
- Advanced pull-through air flow design draws air across heating element for more even air distribution and cooler element operation.
- Specially designed venturi outlet to meet that added throw as required in vertical position.
- Branch circuit fusing (when required).
- Completely enclosed fan motor.
- 1- or 3-phase wiring on 5 through 10 KW 208/240V and 15 KW 208V units (field interchangeable).
- Aluminum-finned, copper clad steel sheath heating element has longer useful life, because of cooler sheath temperature and faster heat dissipation.
- 24V control transformer standard on most models, providing a safer and more accurate means of temperature control. 3KW and 5KW, 208-277V, have line voltage controls as standard (24V control available on made-to-order basis).
- Automatic reset linear thermal cut-out, capillary type, provides protection over entire length of element areas (Manual reset protection available on made-to-order basis).
- 2-speed fan selector switch (25 to 50 KW models).
- Fan delay feature eliminates cold drafts. Element heats up before fan cuts in, then fan continues to distribute heat after element shuts off.
- Ruggedly built, yet lighter weight for easier installation. No piping flues, valves, or traps.
- Individually adjustable discharge louvers to control air flow.
- Choice of optional diffusers for variety of air patterns, maximizing heat concentration and coverage in the vertical position.
- Meets all UL, NEC, and OSHA requirements.

*QMark reserves the right to make changes without prior notice.

QMARK®
A Marley Engineered Products Brand
470 Beauty Spot Road East
Bennettsville, SC 29512

360°

How can we improve our **Product Images**?

Compare

Line Volt Mechanical Tstat, 120 to 277VAC

DAYTON

Submittal#8.4.16

Price
$50.76 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

+Add to list

Availability for Qty 1 Go

Shipping | Pick Up

Expected to arrive **Fri. Mar 13**

Ship to: **11710** (Change)

Add **Repair & Replacement Coverage** for **$12.95 each.**

Be the first to write a review | **Ask & Answer**

Item # **2E816** Mfr. Model # **2E816** NSN # **5930-01-381-7792**

UNSPSC # **41112209** Catalog Page # **4220** Shipping Weight **1.05 lbs.**

Country of Origin **China** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Line Volt Mechanical Tstat**
Switch Type	**SPDT**
Switch Action	**Open/Close on Rise**
Number of Switches	**1**
Control Range	**-10 Degrees to 100 Degrees F**
Differential	**6 to 8 Degrees F**
Height	**5-1/2"**
Width	**2"**
Depth	**2"**
Sensor Type	**Bi-Metal**
Features	**Ventilation Control**

Back to Top

For Use With	**Agricultural, Commercial and Industrial Applications**
Color	**Gray**
Application	**Heating and Cooling**
Voltage Range	**120 to 277VAC**
Inductive Amps @ 120V	**13.8A**
Inductive Amps @ 240V	**10A**
Full Load Amps @ 120V	**15A**
Full Load Amps @ 240VAC	**10A**
Contact Rating Resistive @ 120V	**22A**
Contact Rating Resistive @ 240V	**22A**
Standards	**UL**

How can we improve our **Product Images**?

Compare

Line Volt Mechanical Tstat, 120 to 277VAC

DAYTON

Submittal#8.4.17

Price
$47.48 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

+Add to list

Availability for Qty 1 Go

Shipping Pick Up

Expected to arrive **Mon. Mar 16**

Ship to: **11710** (Change)

Add **Repair & Replacement Coverage** for $12.95 each.

Be the first to write a review | Ask & Answer

Item # **2E815** Mfr. Model # **2E815** NSN # **5930-01-378-1780**

UNSPSC # **41112209** Catalog Page # **4220** Shipping Weight **0.9 lbs.**

Country of Origin **China** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Line Volt Mechanical Tstat**
Switch Type	**SPST**
Switch Action	**Open on Rise**
Number of Switches	**1**
Control Range	**-10 Degrees to 100 Degrees F**
Differential	**6 to 8 Degrees F**
Height	**5-1/2"**
Width	**2-13/100"**
Depth	**2-63/100"**
Sensor Type	**Bi-Metal**
Features	**Commercial**
For Use With	**Agricultural, Commercial and Industrial Applications**

Color	**Gray**
Application	**Heating Only**
Voltage Range	**120 to 277VAC**
Inductive Amps @ 120V	**13.8A**
Inductive Amps @ 240V	**10A**
Full Load Amps @ 120V	**15A**
Full Load Amps @ 240VAC	**10A**
Contact Rating Resistive @ 120V	**22A**
Contact Rating Resistive @ 240V	**22A**
Includes	**Contacts that Open on Temperature Rise for Heating Applications**
Standards	**CSA**

Back to Top

SEA BOX®

Double Doors Both Ends Standard
20’ x 8’ 6” Dry Freight ISO Cargo Container

Submittal#8.4.18

SB862.6
Double Doors Both Ends Standard
20’ x 8’ 6” Dry Freight ISO Cargo Container

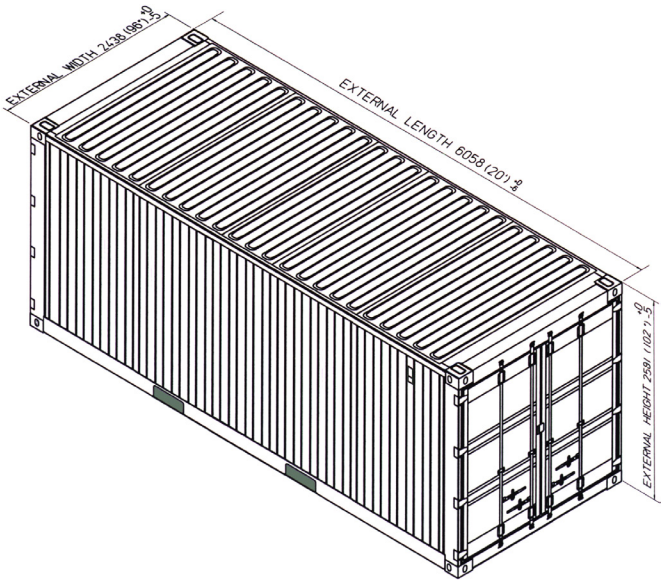
PRODUCT FEATURES

STANDARD FEATURES

- Corrugated steel sides, roof + swing doors on both ends
- (2) way laden forklift pockets
- 1 1/8” thick marine plywood floors, forklift tested to 16,000 lbs per 44 square inches
- Wall tie down steel lashing rings, 6,000 lbs. cap. each (24 total)
- Door corner post tie downs, (20) total = restraint system, shoring slot will support 2” x 6” lumber
- Vents, (2) each

OPTIONAL FEATURES

- Manifest box (2) each
- 2nd set unladen forklift pockets
- 383 Green exterior CARC paint



112811-R00

ALL NEW CONTAINERS ARE MANUFACTURED TO THE LATEST ISO STANDARD

	LENGTH		HEIGHT		WIDTH		DOOR OPENING	
	Exterior	Interior	Exterior	Interior	Exterior	Interior	Height	Width
Ft in	19’ 10 1/2”	19’ 2 1/16”	8’ 6”	7’ 10 1/4”	8’ 0”	7’ 8 1/2”	7’ 5 5/8”	7’ 8 1/8”
Metric	6,058	5,844	2,591	2,394	2,438	2,350	2,276	2,340

	TARE WEIGHT	PAYLOAD	GROSS WEIGHT	CUBIC CAPACITY
Lbs	5,450	47,460	52,910	1,161 Cu.Ft.
Kgs	2,472	21,528	24,000	32.8 Cu.M.

ISO 9001:2008

CERTIFIED QUALITY MANAGEMENT SYSTEM

GSA Advantage!™ CONTRACT # GS-02F-0024P

ALL DIMENSIONS AND WEIGHTS ARE NOMINAL AND SUBJECT TO MINOR VARIATIONS THAT MAY OCCUR DURING THE MANUFACTURING PROCESS

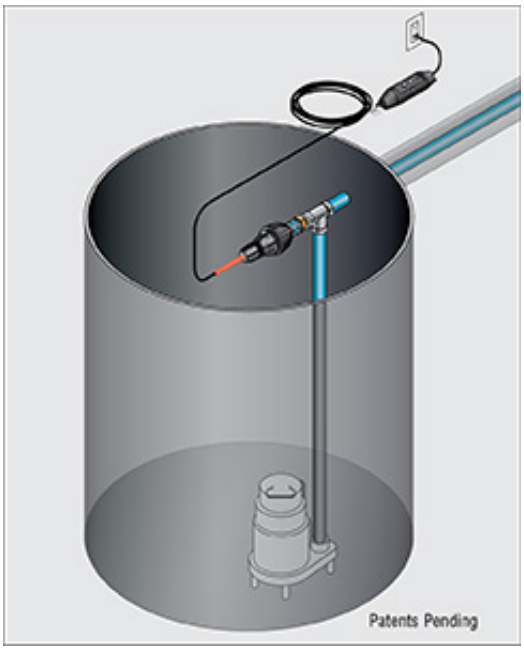
1 Sea Box Drive, East Riverton, NJ 08077-2004 | Phone: 856 . 303 . 1101 | Fax: 856 . 303 . 1501 | Email: sales@seabox.com
www.seabox.com

Retro-FM

Submittal#9.3

Below are several downloadable documents about Heat-Line:

Product Information



Retro-FM is a tubular self-regulating heating system designed for freeze protection for pressurized sewage and grey water force mains and large diameter pressurized pipes. Retro-FM is easily installed in existing problematic pipes without the need to excavate. Insulation and thermostatic controls can be added to optimize energy efficiency as required.

The Retro-FM is constructed with Heat-Line certified, self-regulating heating cable system installed inside ½" HDPE tube with factory applied fusion end-seal. The system is manufactured to a predetermined length and supplied complete with necessary plumbing components.

Product Application

Retro-FM is supplied job-ready with a 1 inch Brass MIP staged fitting to quickly interface into force main T fittings.

Retro-FM is custom manufactured to specified lengths and comes with a 20 foot SJEOOW hard usage power supply lead, with (GFC) or without (CS) integral ground fault circuit protection.

Retro-FM is designed to freeze protect many large diameter pressurized pipe systems which contain fluids that are compatible to be in contact with polyethylene. Retro-FM employs Heat-Line self-regulating heating cable factory installed inside HDPE tube and fusion end sealed. The purpose of the HDPE tube is to provide a barrier from fluids while providing extremely efficient freeze protection. The system will push inside most pipes. For long distances Retro-FM can be drawn in with a fish tape or rope.

The self-regulating heating cable technology renders the system safe to use with all metal and non-metal pipes. Even if the pipe is dry, the self-regulating heating cable presents no danger of over-heating, making it suitable for pipes that drain back or are periodically dry.

Retro-FM is the only heating cable system designed to internally protect pressurized waste pipes. These applications include but are not limited to rural and municipal sewage force mains.

Retro-FM can be used as a system to prevent freezing or as a precautionary system to use only if a freeze up occurs. The Retro-FM is also a fully serviceable product. If a blockage occurs, the entire system can be removed and re-installed.

For non-pressurized pipe systems, please see RETRO-DWS.
For new or exposed pipe systems also see EXT5R systems.

When ordering Retro-FM you will need to know the diameter of the pipe and length of heating cable that is required.

Important Considerations

Retro-FM defends against many various and difficult freezing processes and conditions. The use of this product and its compatibility with a particular application is at the complete discretion of the user. The possibility exists that this product may cause an obstruction, especially where foreign objects or solids may flow in direct contact with it. The product is designed to be serviceable and if this is a concern we would recommend a service schedule.

Specifications

- cCSAus approved heating cable (Canada and USA)
- 120 Volt systems - 5watt /ft. at 50°F, maximum length 220 ft
- 240 Volt systems - 5watt /ft. at 50°F, maximum length 300'
- 27 milliamp ground fault circuit interrupter plug-in device (with GFC model only)
- Minimum pipe size required is 2" ID.

Benefits of Heat-Line

- cCSAus approved heating cable (Canada and USA)
- 5 year limited warranty
- Most reliable and energy efficient system on the market
- Can be fully insulated to increase energy efficiency
- Easily and quickly installed inside most existing pipes without their removal
- Can be installed inside metallic and non-metallic pipes
- Provides reliable freeze protection of many pipe diameters
- Will never melt or burnout the pipe, even if the pipe is dry
- Long length systems available
- Can be used with various control devices including timers and thermostats
- Ground fault protection is integral to the system
- Simply plugs into a 120V or 240V receptacle (GFC model only). No extra electrical work is required
- No other product combines these features or offers the reliability and flexibility

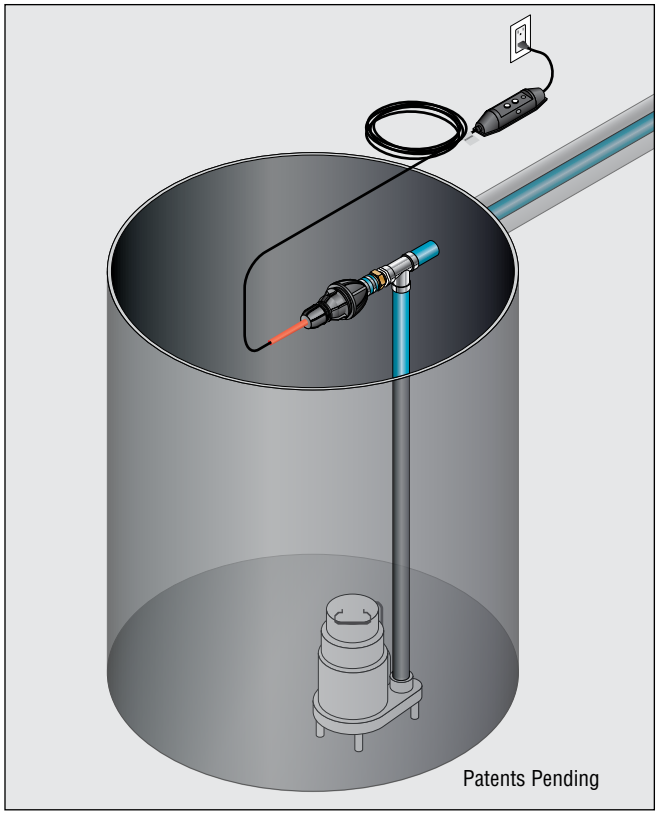
Included in a Retro-DWS

- Factory finished, self-regulating heating cable tube set
- 27 milliamp GFCI (ground fault circuit interrupter) electrical plug in device (GFC model only)

Retro-FM™

Force Main and Large Diameter Pipe Freeze Protection

Installation Instructions



Kit Description

Retro-FM is a tubular self-regulating heating system designed for use in pressurized sewage and grey water force mains, as well as other large diameter pipe systems. The entry fitting is pressure rated and CSA certified for this use. The tubular core is constructed of HDPE (high density polyethylene) and will push inside most pipes for long distances. They can also be drawn in with a fish tape.

Retro-FM utilizes a conductive polymer tubular heater technology which provides a barrier from the fluids while providing extremely efficient freeze protection. Retro-FM can be used as a system to prevent freezing or as a precautionary system. If the system freezes, Retro-FM can be energized to begin the thawing process.

Retro-FM is supplied job ready with a 1 inch brass MIP staged fitting and a 1 inch FIP x 2 inch MIP PVC reducing bushing to quickly interface into force main Tee fittings. Supplied with a 20 foot electrical cold lead. Available with Ground-Fault Protection (GFCI) or Cord-Set (CS) both in 120 volt and 240 volt.

Tools Required

- Adjustable wrench
- Pump pliers

Additional Materials Required

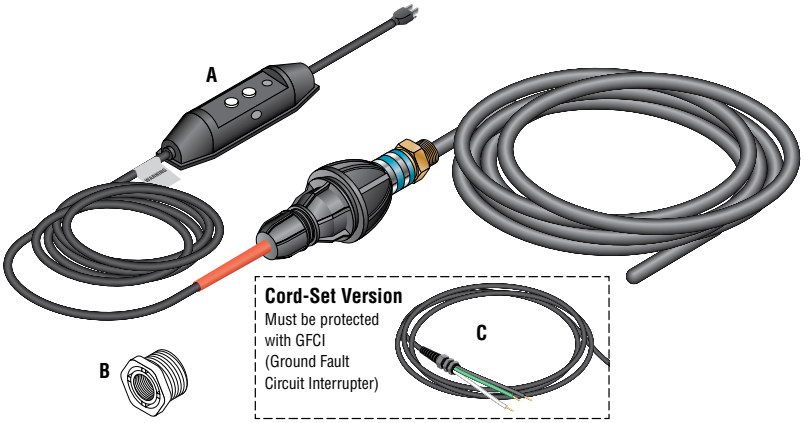
- Teflon tape or thread sealant
- Reduction bushings and fitting components as required

Approvals

Heating Cable	C US	LR85446 CSA 2E, 3A, 3B, 3C, 3D TYPE A (USA)
Pipe		NSF PE 4710 ASTM 2737

Kit Contents

Item	Qty	Description
A	1	Retro-FM –Predetermined length (GFC shown)
B	1	1" FIP x 2" MIP PVC reducing bushing
C	1	Optional Cord-Set (CS) power connection



Optional Accessories

- MilliAmp MA-10 electrical equipment protection device (GFCI/ELCI)
- HLJ-Stat 120V thermostat device
- GF-Stat 120V/240V thermostat device
- Closed cell pipe foam insulation for various pipe sizes

⚠ WARNING:

Important Safety Instructions and Rules for safe Installation and Operation

FIRE AND SHOCK HAZARD. This component is an electrical device which must be installed properly. Read and follow these rules and instructions carefully. Failure to follow them could result in serious bodily injury and/or property damage.

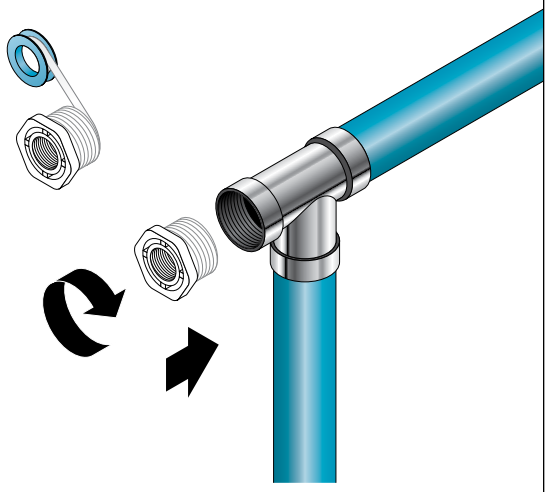
WHEN PERFORMING WORK OR REPAIRS ON YOUR WATER SYSTEM BE SURE TO UNPLUG YOUR HEAT-LINE SYSTEM FROM THE POWER SUPPLY.

- Check your local building, plumbing and electrical codes before installing. You must comply with their rules. Retro-FM meets cCSAus codes for use in Canada and the United States.
- Before installing this product have the electrical outlet checked by an electrician to make sure it is properly installed and grounded in accordance with your local Electrical Code.
- Before installing or servicing your Retro-FM **BE CERTAIN** that the power source is disconnected.
- Do not use extension cords.
- This product is designed to keep drains from freezing in serious climate conditions. The Retro-FM tube may obstruct certain materials, especially solids in the drains so a service schedule for proper maintenance is recommended. **The use of this product is at the sole discretion of the user. Heat-Line will not be liable for obstructions or blockages that may occur in some situations.**
- Never tamper with or alter the electrical apparatus associated with your Heat-Line system.

Retro-FM Installation Instructions

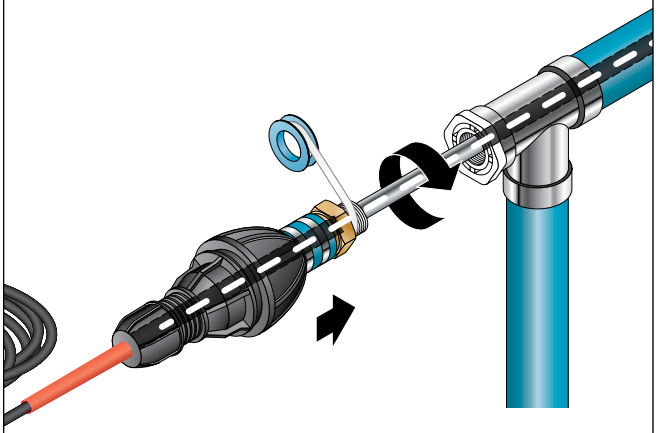
1

- Using the provided PVC reducing bushing, install into threaded Tee to accept 1-inch MIP Retro-FM fitting. If the provided PVC reducing bushing is not suitable determine and install required bushing.
- Use appropriate Teflon tape or thread sealants.



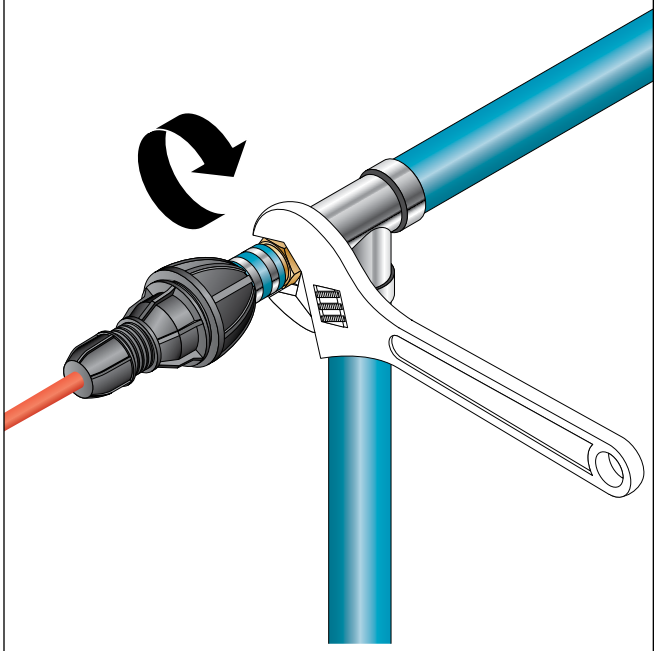
2

- Push or draw in Retro-FM tubular heater.
- Use appropriate Teflon tape or thread sealants and apply directly to 1 inch Brass MIP staged fitting.



3

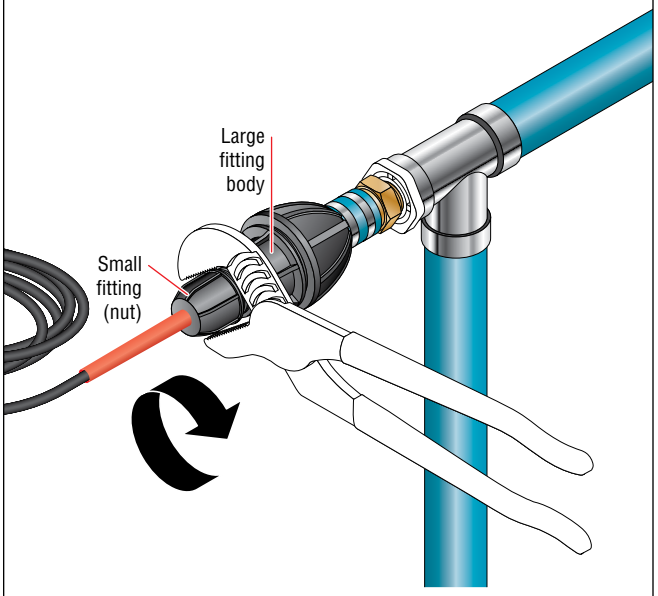
- Tighten 1 inch brass MIP staged fitting with a wrench.
- Large fitting body should rotate around tubular heater as the brass MIP fitting tightens.



4

- Engage small fitting (nut) to large fitting body and tighten with a pump plier.

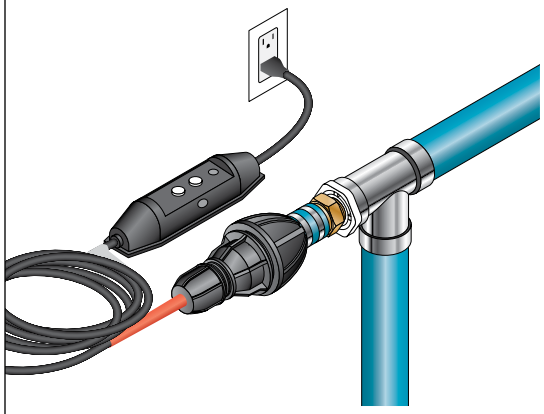
CAUTION: It is an O-ring seal, **DO NOT** over-tighten.



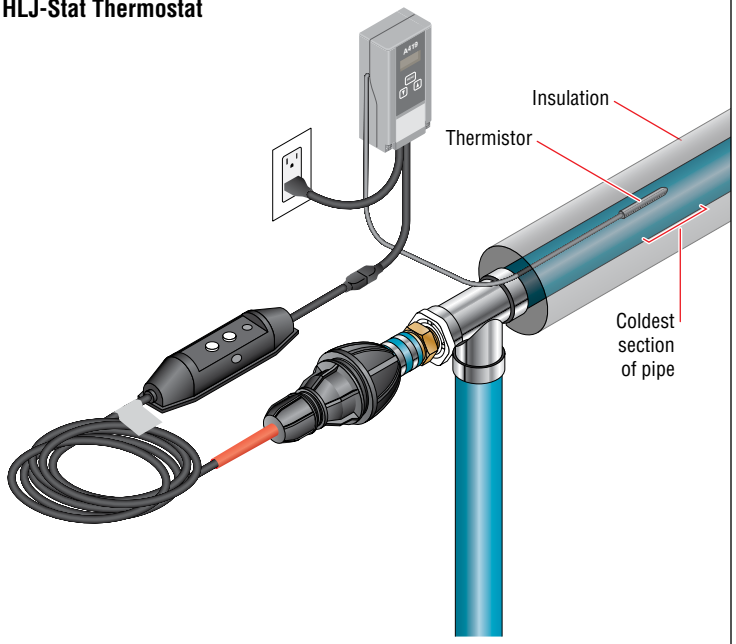
5

- In accordance with standard industry practices test the integrity of the seal.
- Plug in heater and Test/Reset GFCI located in cord set and or GFCI located in Heat-Line accessory.

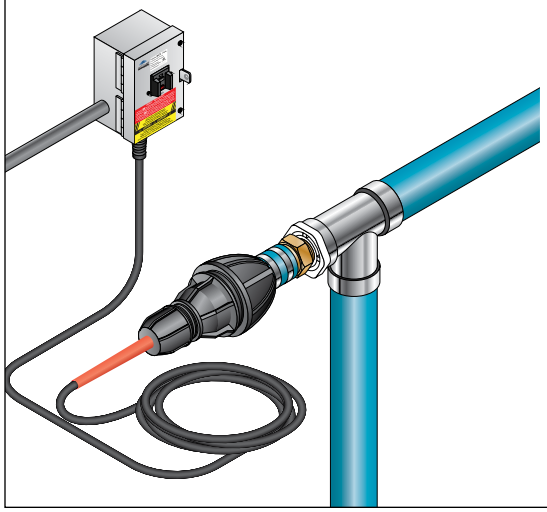
Typical Retro-FM-GFC Model Installation



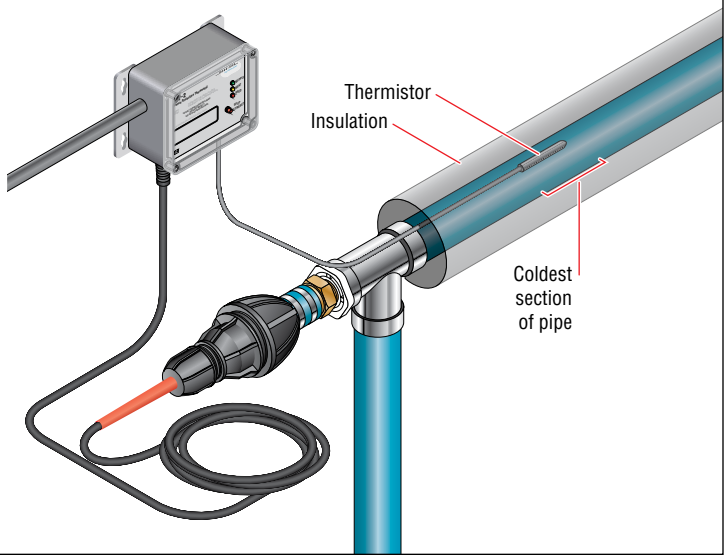
Retro-FM-GFC Installation with Heat-Line HLJ-Stat Thermostat



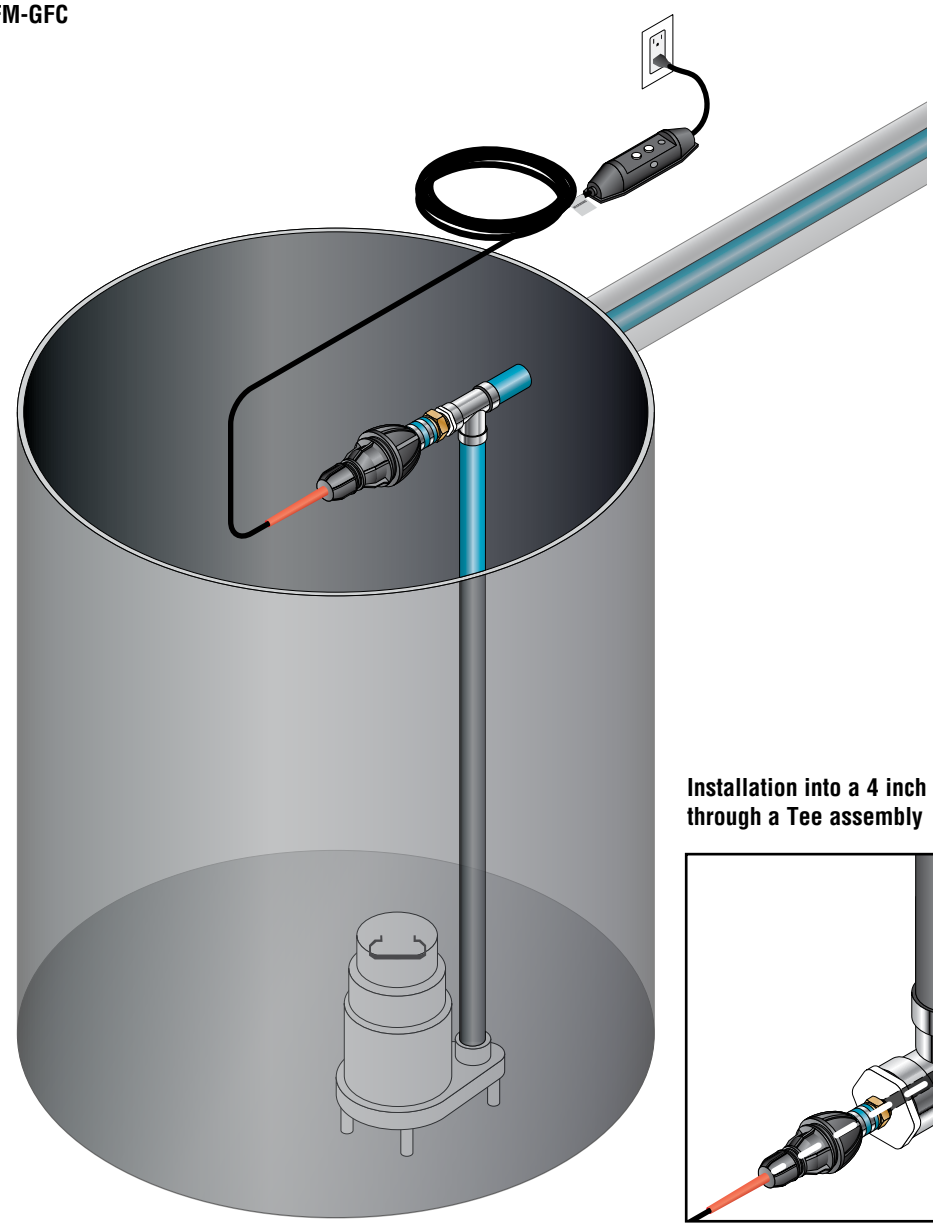
Retro-FM-CS Installation with Heat-Line MilliAmp GFCI/ELCI



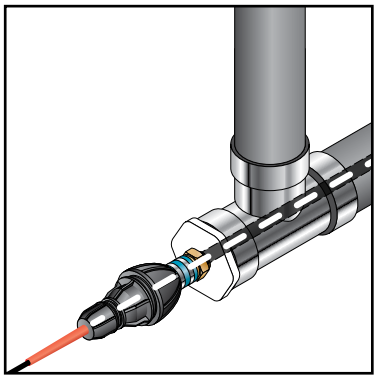
Retro-FM-CS Installation with Heat-Line GF-Stat Thermostat with Built in GFCI/ELCI



Typical Sewage Basin Installation with Retro-FM-GFC



Installation into a 4 inch pipe through a Tee assembly



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info@heatline.com
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Submittal#10.1

CHARLOTTE PIPE AND FOUNDRY COMPANY®

SUBMITTAL FOR CHARLOTTE PIPE® PVC SCHEDULE 80 PRESSURE PIPE AND FITTING SYSTEM

Date: _____

Job Name: _____ Location: _____

Engineer: _____ Contractor: _____

Scope:
This specification covers PVC Schedule 80 pipe and fittings for pressure applications. This system is intended for pressure applications where the operating temperature will not exceed 140° F.

Specification:
Pipe and fittings shall be manufactured from virgin rigid PVC (polyvinyl chloride) vinyl compounds with a cell class of 12454 as identified in ASTM D 1784.

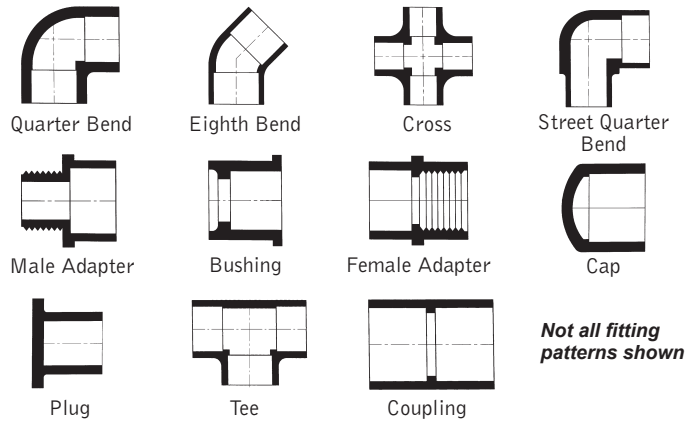
PVC Schedule 80 pipe shall be Iron Pipe Size (IPS) conforming to ASTM D 1785. Injection molded PVC Schedule 80 fittings shall conform to ASTM D 2467. PVC Schedule 80 threaded fittings shall conform to ASTM D 2464. Pipe and fittings shall be manufactured as a system and be the product of one manufacturer. All pipe and fittings shall be manufactured in the United States. Pipe and fittings shall conform to NSF International Standard 61 or the health effects portion of NSF Standard 14.

Installation:
Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all applicable plumbing, fire, and building code requirements. Buried pipe shall be installed in accordance with ASTM F 1668 and ASTM D 2774. Solvent cement joints shall be made in a two-step process with primer manufactured for thermoplastic piping systems and solvent cement conforming to ASTM D 2564. The system shall be protected from chemical agents, fire-stopping materials, thread sealant, plasticized-vinyl products or other aggressive chemical agents not compatible with PVC compounds. The system shall be hydrostatically tested after installation. **WARNING!** Never test with or transport/store compressed air or gas in PVC pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

Referenced Standards:

ASTM D 1784: Rigid Vinyl Compounds
ASTM D 1785: PVC Plastic Pipe, Schedule 80
ASTM D 2464 or D 2467: PVC Threaded Fittings, Schedule 80
ASTM D 2467: PVC Socket Fittings, Schedule 80
ASTM D 2564: Solvent Cements for PVC Pipe and Fittings
ASTM D 2774: Underground Installation of Thermoplastic Pressure Piping
ASTM F 1668: Procedures for Buried Plastic Pipe
NSF Standard 14: Plastic Piping Components & Related Materials
NSF Standard 61: Drinking Water System Components–Health Effects

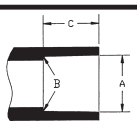
MADE IN U.S.A.



Not all fitting patterns shown

Van Stone Flange

Schedule 80 Tapered Socket Dimensions



PVC SCHEDULE 80 - ASTM D 2467

Nominal Size	Schedule 80 and Schedule 40 Socket Diameter Entrance A	Bottom B	Tolerance	Schedule 80 Socket Length C (Minimum)	Schedule 40 Socket Length C (Minimum)
1/2	0.848	0.836	±0.004	0.875	0.688
3/4	1.058	1.046	±0.004	1.000	0.719
1	1.325	1.310	±0.005	1.125	0.875
1 1/4	1.670	1.655	±0.005	1.250	0.938
1 1/2	1.912	1.894	±0.006	1.375	1.094
2	2.387	2.369	±0.006	1.500	1.156
2 1/2	2.889	2.868	±0.007	1.750	1.750
3	3.516	3.492	±0.008	1.875	1.875
4	4.518	4.491	±0.009	2.250	2.000
6	6.647	6.614	±0.011	3.000	3.000
8	8.655	8.610	±0.015	4.000	4.000
10	10.780	10.735	±0.015	5.000	5.000
12	12.780	12.735	±0.015	6.000	6.000

PIPE REFERENCE GUIDE

Product	Sizes Available																
	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16
PVC Schedule 80	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

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PVC Schedule 80 Pipe

>> PVC Schedule 80 Pipe, Type 1, Grade 1 - Plain End

ASTM D 1784 & ASTM D 1785

PVC SCHEDULE 80 (GRAY)			PLAIN END			PVC 1120
PART NO.	NOM. SIZE	UPC # 611942-	AVG. OD (IN.)	MIN. WALL (IN.)	MAX WORK PRESSURE AT 23° C OR 73° F	WT. PER 100 FT. (LBS.)
PVC 10002	¼″ x 20′	04920	0.540	.119	1130 PSI	10.0
PVC 10003	⅜″ x 20′	04917	0.675	.126	920 PSI	13.8
PVC 10005	½″ x 20′	03968	0.840	.147	850 PSI	20.3
PVC 10007	¾″ x 20′	03969	1.050	.154	690 PSI	27.5
PVC 10010	1″ x 20′	03970	1.315	.179	630 PSI	40.5
PVC 10012	1¼″ x 20′	03973	1.660	.191	520 PSI	55.9
PVC 10015	1½″ x 20′	03976	1.900	.200	470 PSI	67.7
PVC 10020	2″ x 20′	03977	2.375	.218	400 PSI	93.6
PVC 10025	2½″ x 20′	03978	2.875	.276	420 PSI	142.8
PVC 10030	3″ x 20′	03979	3.500	.300	370 PSI	191.1
PVC 10040	4″ x 20′	03980	4.500	.337	320 PSI	279.3
PVC 10060	6″ x 20′	03981	6.625	.432	280 PSI	532.7
PVC 10080	8″ x 20′	04175	8.625	.500	250 PSI	808.9
PVC 10100	10″ x 20′	04768	10.750	.593	230 PSI	1199.3
PVC 10120	12″ x 20′	04770	12.750	.687	230 PSI	1650.1
PVC 10140	14″ x 20′	04816	14.000	.750	220 PSI	1930.0
PVC 10160	16″ x 20′	04919	16.000	.843	220 PSI	2544.1

NSF Listed. Meets All Requirements of ASTM D 1784 and ASTM D 1785.

⚠ WARNING

Testing with or use of compressed air or gas in PVC / ABS / CPVC pipe or fittings can result in explosive failures and cause severe injury or death.

- NEVER test with or transport/store compressed air or gas in PVC / ABS / CPVC pipe or fittings.
- NEVER test PVC / ABS / CPVC pipe or fittings with compressed air or gas, or air over water boosters.
- ONLY use PVC / ABS / CPVC pipe or fittings for water or approved chemicals.
- Refer to warnings in PPFA User Bulletin 4-80 and ASTM D 1785.

Submittal#10.2

PE 4710 (PE3408) Energy - DriscoPlex® 6400 Series PE4710 IPS Pipe Data

Pipe weights are calculated in accordance with PPI TR-7. Average inside diameter calculated using nominal OD and minimum wall plus 6% for use in estimating fluid flows. Actual ID will vary. When designing components to fit the pipe ID, refer to pipe dimensions and tolerances in applicable pipe specifications. Pressure Ratings are for water at 73.4° F. For other fluid and service temperature, ratings may differ. Refer to Engineering Manual for Chemical and Environmental Considerations.

Pressure		400 psi			317 psi			250 psi			200 psi			160 psi			125 psi			
Rating		DR 6.0			DR 7.0			DR 9.0			DR 11.0			DR 13.5			DR 17			
IPS Pipe Size	Nom OD (in)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	Min Wall (in)	Avg ID (in)	Wgt (lbs/ft)	IPS Pipe Size
1"	1.315	0.219	0.851	0.33	0.188	0.916	0.29													
1 1/4"	1.660	0.277	1.073	0.52	0.237	1.158	0.46	0.184	1.270	0.37	0.151	1.340	0.31	0.123	1.399	0.26				1 1/4"
1 1/2"	1.900	0.317	1.228	0.69	0.271	1.325	0.61	0.211	1.453	0.49	0.173	1.533	0.41	0.141	1.601	0.34				1 1/2"
2"	2.375	0.396	1.535	1.07	0.339	1.656	0.95	0.264	1.815	0.77	0.216	1.917	0.64	0.176	2.002	0.53	0.140	2.078	0.43	2"
3"	3.500	0.583	2.264	2.33	0.500	2.440	2.06	0.389	2.675	1.66	0.318	2.826	1.39	0.259	2.951	1.16	0.206	3.063	0.94	3"
4"	4.500	0.750	2.910	3.85	0.643	3.137	3.40	0.500	3.440	2.75	0.409	3.633	2.31	0.333	3.794	1.92	0.265	3.938	1.55	4"
6"	6.625	1.104	4.285	8.35	0.946	4.619	7.37	0.736	5.065	5.96	0.602	5.349	5.00	0.491	5.584	4.15	0.390	5.798	3.36	6"
8"	8.625	1.438	5.576	14.15	1.232	6.013	12.50	0.958	6.594	10.11	0.784	6.963	8.47	0.639	7.270	7.04	0.507	7.550	5.69	8"
10"	10.750	1.792	6.951	21.98	1.536	7.494	19.42	1.194	8.219	15.70	0.977	8.679	13.16	0.796	9.062	10.93	0.632	9.410	8.83	10"
12"	12.750	2.125	8.245	30.92	1.821	8.889	27.31	1.417	9.746	22.08	1.159	10.293	18.51	0.944	10.749	15.38	0.750	11.160	12.43	12"
14"	14.000				2.000	9.760	32.93	1.556	10.701	26.63	1.273	11.301	22.32	1.037	11.802	18.54	0.824	12.253	14.98	14"
16"	16.000				2.286	11.154	43.01	1.778	12.231	34.78	1.455	12.915	29.15	1.185	13.488	24.22	0.941	14.005	19.57	16"
18"	18.000				2.571	12.549	54.43	2.000	13.760	44.02	1.636	14.532	36.89	1.333	15.174	30.65	1.059	15.755	24.77	18"
20"	20.000				2.857	13.943	67.20	2.222	15.289	54.34	1.818	16.146	45.54	1.481	16.860	37.84	1.176	17.507	30.58	20"
22"	22.000				3.143	15.337	81.32	2.444	16.819	65.75	2.000	17.760	55.10	1.630	18.544	45.79	1.294	19.257	37.00	22"
24"	24.000				3.429	16.731	96.77	2.667	18.346	78.25	2.182	19.374	65.58	1.778	20.231	54.49	1.412	21.007	44.03	24"
26"	26.000							2.889	19.875	91.84	2.364	20.988	76.96	1.926	21.917	63.95	1.529	22.759	51.67	26"
28"	28.000							3.111	21.405	106.51	2.545	22.605	89.26	2.074	23.603	74.17	1.647	24.508	59.93	28"
30"	30.000							3.333	22.934	122.27	2.727	24.219	102.47	2.222	25.289	85.14	1.765	26.258	68.80	30"
32"	32.000										2.909	25.833	116.58	2.370	26.976	96.87	1.882	28.010	78.28	32"
34"	34.000										3.091	27.447	131.61	2.519	28.660	109.36	2.000	29.760	88.37	34"
36"	36.000										3.273	29.061	147.55	2.667	30.346	122.60	2.118	31.510	99.07	36"

Pressure ratings are calculated using 0.63 design factor for HDS at 73°F as listed in PPI TR-4 for PE4710 materials. Temperature, chemical and environmental use considerations may require use of additional design factors.

Other Sizes and Dimensions Available

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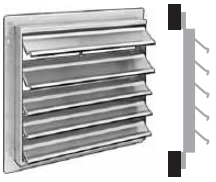
Movable-Blade Wall Louvers

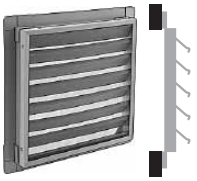


Surface Mount

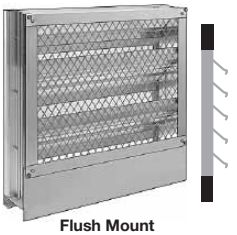
These gravity-operated louvers remain open only when air flows, preventing backdrafts. All have a flange with 1/4″ Ht. × 1/2″ Wd. slots (fasteners not included). Frame is 3″ deep and made of 0.037″ galvanized steel. Blades are 0.017″ thick aluminum. Louvers that fit 36 1/2″ and smaller openings are single panel; louvers that fit 42 1/2″ and larger openings are double panel. Maximum air velocity is 2,500 fpm. Temperature range is –40° to 180° F.

Fits Opening Wd.	Fits Opening Ht.	Overall Wd.	Overall Ht.		
Surface Mount					
10 1/2″	10 1/2″	13″	13″	20015K61	$37.11
12 1/2″	12 1/2″	15″	15″	20015K62	41.09
16 1/2″	16 1/2″	19″	19″	20015K63	46.50
18 1/2″	18 1/2″	21″	21″	20015K64	54.82
20 1/2″	20 1/2″	23″	23″	20015K65	63.46
24 1/2″	24 1/2″	27″	27″	20015K66	75.69
30 1/2″	30 1/2″	33″	33″	20015K67	90.29
36 1/2″	36 1/2″	39″	39″	20015K68	101.93
42 1/2″	42 1/2″	45″	45″	20015K72	129.88
48 1/2″	48 1/2″	51″	51″	20015K73	144.60
54 1/2″	54 1/2″	57″	57″	20015K74	220.26

Heavy Duty Fixed-Blade Wall Louvers



Surface Mount



Flush Mount

Constructed with a thick frame and blades, these louvers have a long service life.

Surface-mount louvers have a 1 1/2″ wide flange for mounting outside your wall. They're 1 3/4″ deep and have a 1/8″ thick frame. Blades are 1/16″ thick. They include a plastic insect screen.

Flush-mount louvers mount inside your wall. They're 4″ deep and include a bird screen. Blades are designed to direct water away from the louvers. *Extruded aluminum louvers* are 0.081″ thick. *Galvanized steel louvers* are 0.064″ thick.

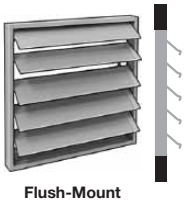
Surface Mount

Fits Opening Wd.	Fits Opening Ht.	Overall Wd.	Overall Ht.	PVC	
12″	12″	13 3/4″	13 3/4″	20405K11	$95.00
12″	18″	13 3/4″	19 3/4″	20405K12	107.25
12″	24″	13 3/4″	25 3/4″	20405K13	143.75
14″	24″	15 3/4″	25 3/4″	20405K14	150.38

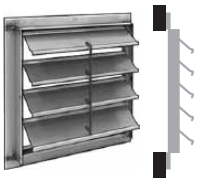
Flush Mount

Fits Opening Wd.	Fits Opening Ht.	Overall Wd.	Overall Ht.	Extruded Aluminum		Galvanized Steel	
18″	18″	17 1/2″	17 1/2″	2100K251	$169.29	2100K151	$194.17
24″	24″	23 1/2″	23 1/2″	2100K252	247.02	2100K152	228.57
24″	36″	23 1/2″	35 1/2″	2100K254	299.40	2100K154	296.43
36″	24″	35 1/2″	23 1/2″	2100K253	307.50	2100K153	295.24
36″	36″	35 1/2″	35 1/2″	2100K255	386.67	2100K155	377.98
36″	48″	35 1/2″	47 1/2″	2100K258	397.90	2100K158	383.20
48″	36″	47 1/2″	35 1/2″	2100K256	387.70	2100K156	383.80
48″	48″	47 1/2″	47 1/2″	2100K259	431.25	2100K159	416.79
60″	48″	59 1/2″	47 1/2″	—	—	2100K161	489.29
60″	60″	59 1/2″	59 1/2″	2100K264	591.47	2100K164	585.93

Corrosion-Resistant Movable-Blade Wall Louvers



Flush-Mount PVC



Surface-Mount Type 304 Stainless Steel

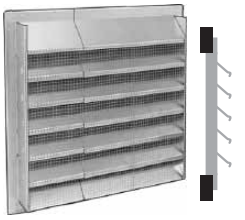
Able to withstand harsh environments, these louvers won't rust. They are gravity operated. The louvers remain open only when air flows, preventing backdrafts.

Flush-mount PVC louvers have a 1 3/4″ deep frame and 1/16″ thick blades. Louvers that fit 18″ and smaller openings are single panel; 24″ and higher are double panel. Max. air velocity is 1,200 fpm. Temperature range is 5° to 140° F.

Surface-mount Type 304 stainless steel louvers have a flange with 1/4″ dia. holes (fasteners not included). Frame is 2 3/8″ deep; blades are 0.019″ thick. They are single panel. Max. air velocity is 2,500 fpm. Temperature range is –20° to 200° F.

Fits Opening Wd.	Fits Opening Ht.	Overall Wd.	Overall Ht.		
Flush-Mount PVC					
12″	12″	11 7/8″	11 7/8″	19615K35	$80.62
16″	16″	15 7/8″	15 7/8″	19615K37	94.00
18″	18″	17 7/8″	17 7/8″	19615K39	96.75
24″	24″	23 7/8″	23 7/8″	19615K47	138.22
30″	30″	29 7/8″	29 7/8″	19615K53	166.11
36″	36″	35 7/8″	35 7/8″	19615K57	195.56
Surface-Mount Type 304 Stainless Steel					
12″	12″	15″	15″	6420T18	217.98
16″	16″	19″	19″	6420T22	263.96
18″	18″	21″	21″	6420T24	279.38
20″	20″	23″	23″	6420T26	321.77
24″	24″	27″	27″	6420T29	382.59
30″	30″	33″	33″	6420T33	428.00
36″	36″	39″	39″	6420T37	520.42

Adjustable-Width Fixed-Blade Wall Louvers

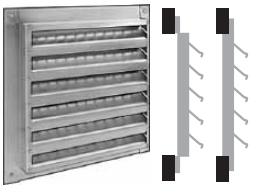


Recess Mount

Get an exact fit for your opening by sliding out the louver to the width you need. Made of corrosion-resistant aluminum, they have a 4″ deep frame (mounting fasteners included) and 0.04″ thick blades. Louvers include a galvanized steel bird screen.

Fits Opening Wd.	Fits Opening Ht.		
Recess Mount			
12″ to 18″	14″	1152T52	$99.02
18″ to 24″	18″	1152T54	136.02
21″ to 36″	30″	1152T58	242.02
24″ to 36″	36″	1152T63	295.00
36″ to 48″	48″	1152T61	379.27

Fixed-Blade Wall Louvers



Surface/Recess Mount

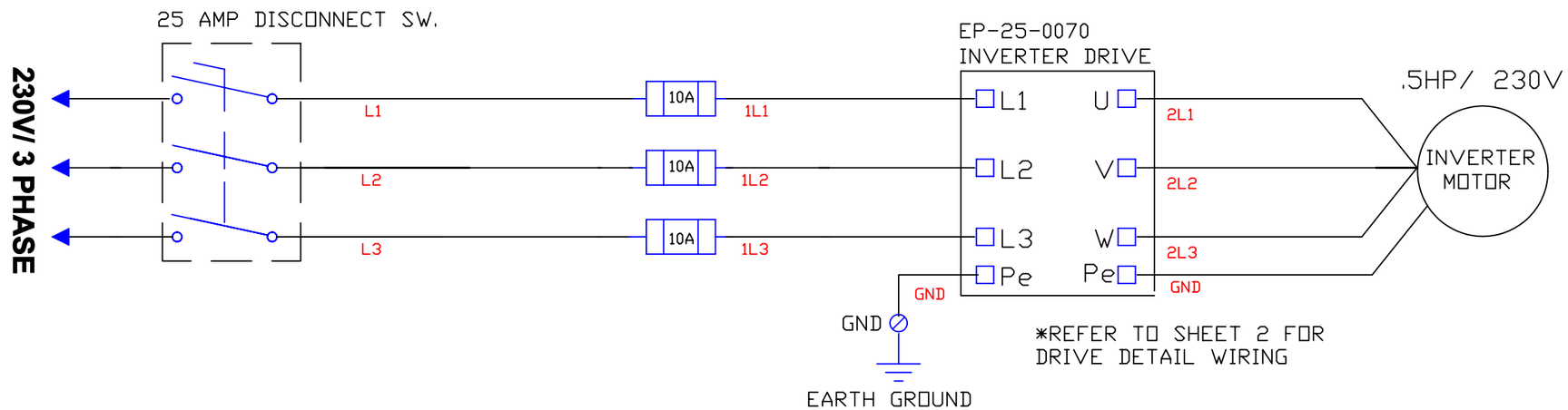
Always open, these are our most basic wall louvers. They surface or recess mount. All have a 1 1/4″ wide flange.

White plastic louvers have 1/16″ thick blades. Frame is 0.06″ thick and 1 3/8″ deep.

Aluminum louvers have 0.015″ thick blades. Frame is 0.04″ thick and 1 1/2″ deep.

SUBMITTAL #8.4.19

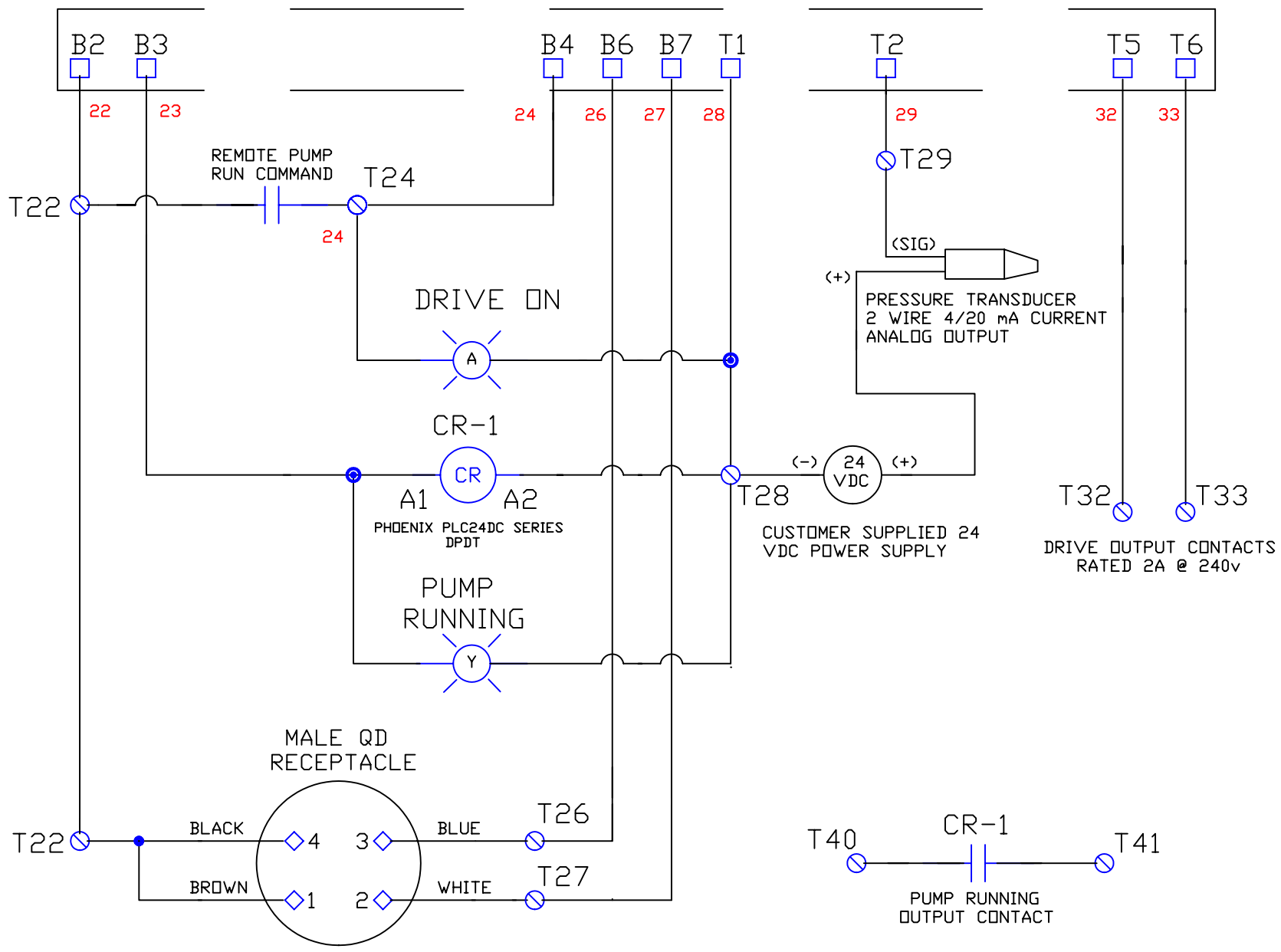
Fits Opening Wd.	Fits Opening Ht.	White Plastic Overall Wd.	White Plastic Overall Ht.			Aluminum Overall Wd.	Aluminum Overall Ht.	Aluminum Plain		Aluminum White Painted	
8″	8″	10 1/2″	10 1/2″	2038K1	$9.69	—	—	—	—	—	—
12″	12″	14 1/2″	14 1/2″	2038K2	11.40	14 1/2″	14 5/8″	2038K14	$19.00	2038K61	$22.11
12″	18″	14 1/2″	20 1/2″	2038K3	15.54	14 1/2″	20 1/2″	2038K16	23.46	2038K62	26.60
14″	24″	16 3/4″	26 3/4″	2038K6	19.12	16 1/2″	26 3/8″	2038K59	31.66	2038K63	36.60
18″	24″	20 3/4″	26 3/4″	2038K7	28.60	20 1/2″	26 3/8″	2038K21	41.37	2038K64	44.77
24″	30″	—	—	—	—	26 1/2″	32 1/4″	2038K23	59.94	2038K65	69.11



CONTINUE TO SHEET 2

DATE: 5/4/15	BY: SA	DRAWING NO: 300-CP324K SHEET 1 OF 2	CUSTOMER: AEC/NATIONAL GRID	BLACKHAWK ENVIRONMENTAL COMPANY
REVISION:	APPROVED:			21W 211 Hill Ave. Glen Ellyn, IL. 60137 Ph.630/469-4916 Fx.630/469-4896

EP-25-0070 INVERTER DRIVE WIRING DETAIL

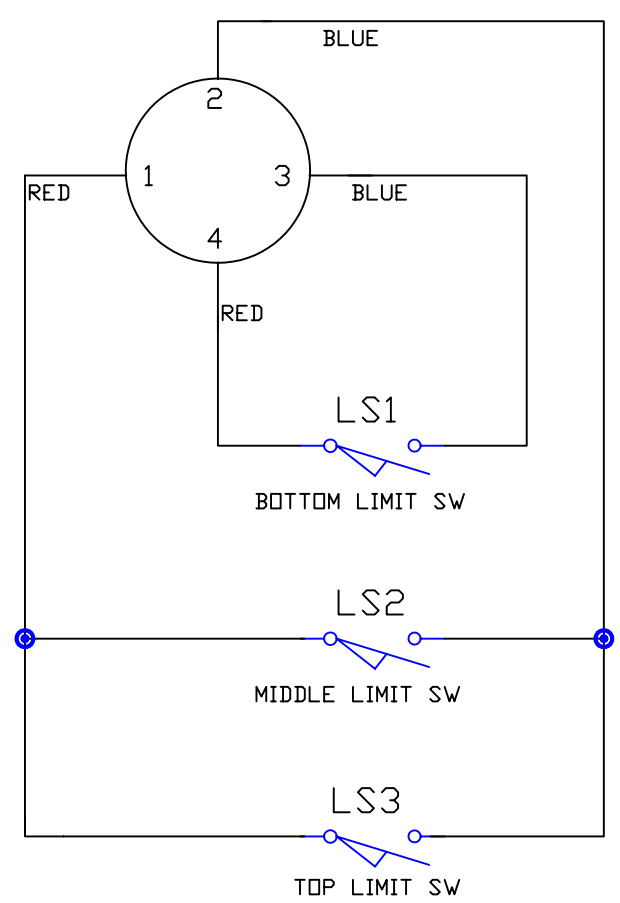


FIELD TERMINAL STRIP CONNECTION SUMMARY

GND	EARTH GROUND
T22	BROWN & BLACK MALE QD RECEPT/ REMOTE PUMP RUN CONTACT
T24	REMOTE PUMP RUN COMMAND CONTACT
T26	BLUE MALE QD RECEPTACLE
T27	WHITE MALE QD RECEPTACLE
T28	0v COMMON (SPEED REFERENCE)
T29	4-20mA ANALOG SPEED REFERENCE
T32	"DRIVE FAULT" OUTPUT CONTACT
T33	CONTACT RATED 2A @ 240v
T40	LOCAL PUMP RUN OUTPUT CONTACT
T41	CONTACT RATED 2A @ 240v

*ALL LIMIT SWITH WIRING MUST BE ISOLATED FROM ALL CONTROL & POWER WIRING . A SEPERATE CONDUIT IS REQUIRED

BLACKHAWK 15' LIMIT SWITCH WIRING HARNESS/ FEMALE DISCONNECT PLUG

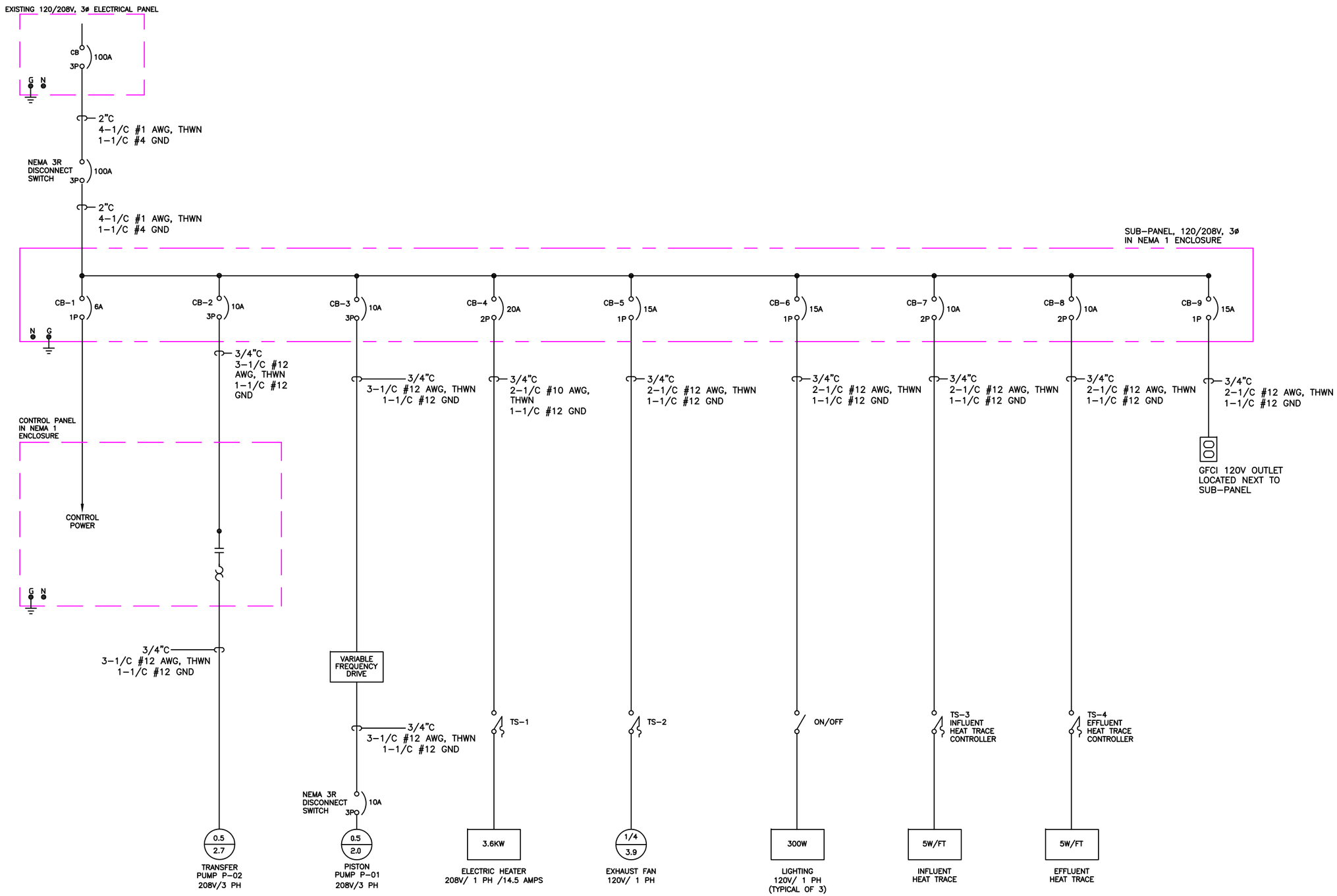


*ALL LIMIT SWITH WIRING MUST BE ISOLATED FROM ALL CONTROL & POWER WIRING . A SEPERATE CONDUIT IS REQUIRED

DATE: 5/4/15
REVISION:
BY: SA
APPROVED:
DRAWING NO: 300-CP324K
SHEET 2 OF 2
CUSTOMER: AECOM/NATIONAL GRID

BLACKHAWK ENVIRONMENTAL COMPANY
21W 211 Hill Ave. Glen Ellyn, IL. 60137
Ph.630/469-4916 Fx.630/469-4896

SUBMITTAL #8.8



LEGEND:

CB-X 1P 20A	CIRCUIT BREAKER OR DISCONNECT SWITCH (RATINGS AS SHOWN)
	FULL VOLTAGE NON-REVERSING MOTOR STARTER
	OVERLOAD RELAY
HP / FLA	MOTOR LOAD
	SINGLE POLE SWITCH
	THERMOSTAT

DRAWN/REVISED BY: JW
REVISION DATE: MARCH 24, 2015

FIGURE: 3

DRAWING TITLE

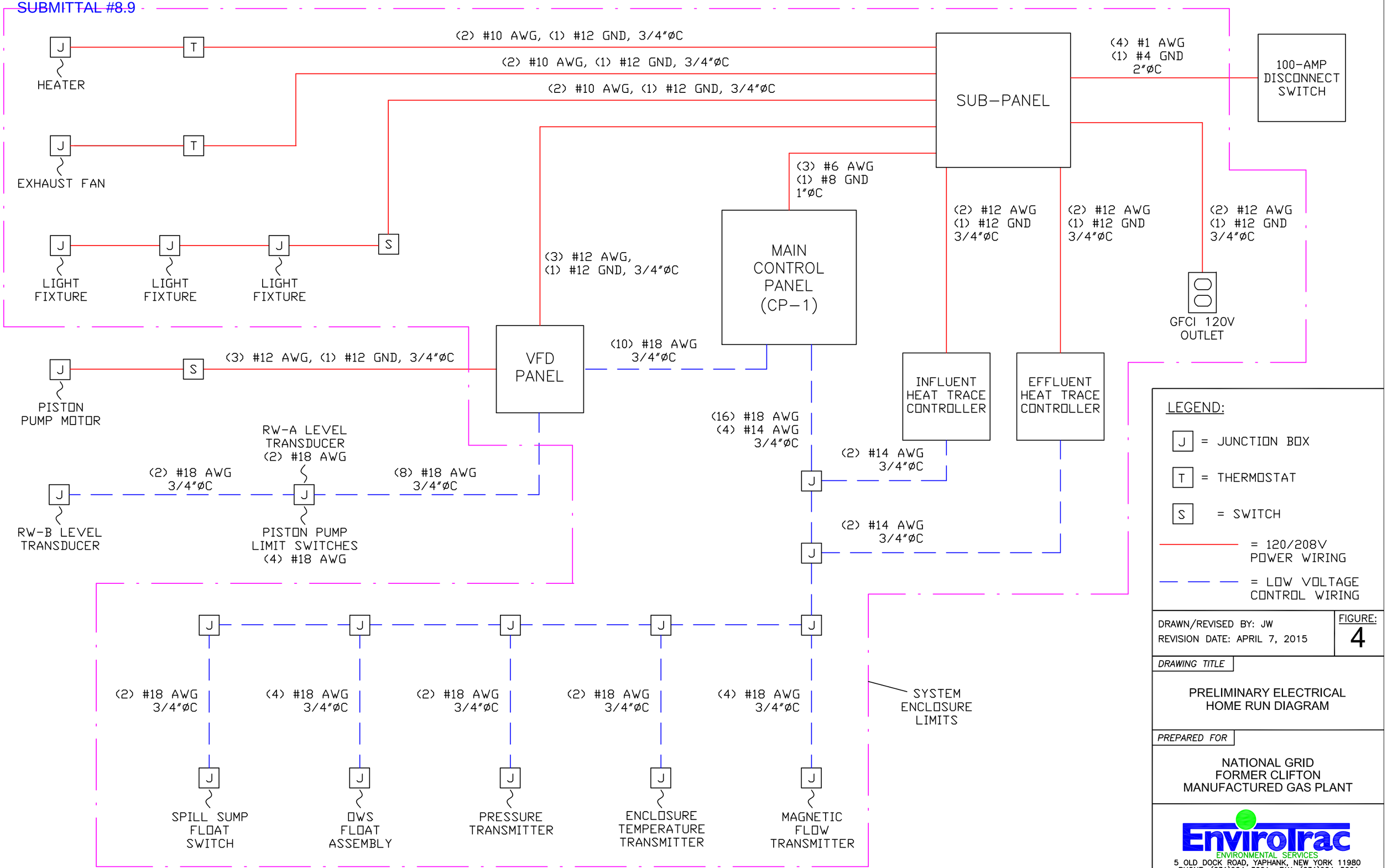
PRELIMINARY ELECTRICAL SINGLE LINE DIAGRAM

PREPARED FOR

NATIONAL GRID
FORMER CLIFTON
MANUFACTURED GAS PLANT

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

SUBMITTAL #8.9



DRAWN/REVISED BY: JW
REVISION DATE: APRIL 7, 2015

FIGURE: 4

DRAWING TITLE

PRELIMINARY ELECTRICAL HOME RUN DIAGRAM

PREPARED FOR

NATIONAL GRID
FORMER CLIFTON
MANUFACTURED GAS PLANT

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

Project: National Grid - Clifton Former MGP Site
Submittal #8.12 P&T System Cause and Effect Spreadsheet

Tag No.	Description	Event	Set Point	Effect	Displays/Alarms		
					Local/Field	HMI Treatment Bldg.	Data Log
Level Instrumentation in wells COU1-RWA and COU1-RWB - Option 1							
LT-100A	Level transducer in well COU1-RWA for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWA	≥ Field selectable water level	Energize Piston Pump P-01		D	X
			< Field selectable water level	De-energize Piston Pump P-01			
LT-100B	Level transducer in well COU1-RWB for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWB				D	X
Level Instrumentation in wells COU1-RWA and COU1-RWB - Option 2							
LT-100A	Level transducer in well COU1-RWA for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWA				D	X
LT-100B	Level transducer in well COU1-RWB for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWB	≥ Field selectable water level	Energize Piston Pump P-01		D	X
			< Field selectable water level	De-energize Piston Pump P-01			
Level Instrumentation in wells COU1-RWA and COU1-RWB - Option 3							
LT-100A	Level transducer in well COU1-RWA for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWB minus Level in well COU1-RWA	≥ Field selectable water level	Energize Piston Pump P-01		D	X
			< Field selectable water level	De-energize Piston Pump P-01			
LT-100B	Level transducer in well COU1-RWB for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWB				D	X
Level Instrumentation in Oil/Water Separator (OW-01)							
LSHH-102	High High Level switch in OW-01	High-High level in OW-01	≥ 28"	De-energize P-01, De-energize P-02, Energize OW-01 High-High Level Alarm until level recedes to low level.		A	X
LSH-103	High Level switch in OW-01	High level in OW-01	≥ 24"	Energize P-02.			X
LSL-104	Low Level switch in OW-01	Low level in OW-01	< 6"	De-energize P-02.			X
Level Instrumentation in Spill Containment Sump (S-01)							
LSHH-121	High High Level switch in S-01	High-High level in OW-01	≥ 2"	De-energize P-01, De-energize P-02, Energize S-01 High-High Level Alarm		A	X
Pressure Instrumentation on Discharge Pump (P-02)							
PT-107	Pressure transmitter in P-02 discharge pipeline for continuous measurement of pressure	Pressure in pipeline before bag filters.	≥ Field selectable pressure levels PSH & PSHH	PSH - Energize High Pressure Alarm		D,A	X
				PSHH - De-energize P-01, De-energize P-02, Energize High High Pressure Alarm		D,A	X
Flow Instrumentation on Discharge Pump (P-02)							
FIT-119	Indicating Flow meter/transmitter in P-02 discharge pipeline for continuous measurement of flow total and flowrate.	Flow and total in discharge pipeline after cartridge filters.				D	X
Temperature Instrumentation in System Enclosure							
TT-120	Temperature transmitter for continuous measurement of system enclosure interior temperature.	System enclosure internal temperature.	< Field selectable temperature set point	De-energize P-01, Energize Low Temperature Alarm		D,A	X
Heat Trace Monitors							
HTM-122	Heat trace thermostat with alarm output for influent piping heat trace	Influent Heat Trace Failure	Heat Trace Controller Alarm	De-energize P-01, Energize Low Temperature Alarm		A	X
HTM-123	Heat trace thermostat with alarm output for effluent piping heat trace	Effluent Heat Trace Failure	Heat Trace Controller Alarm	De-energize P-01, De-energize P-02, Energize Heat Trace Alarm		A	X
Piston Pump P-01							
HS P-01	Local disconnect Switch for P-01 Motor	Hand Switch in On/Off position	On/Off	Energize/ De-energize Power to P-01	X		X
HOA P-01	Hand-Off-Auto Switch for P-01	Off Position		De-energize Pump P-01 (Bypass PLC output)		D	X
		Hand Position		Send enable command to VFD. No permissive/ interlocks associated with pump running		D	X
		Auto position		Control by PLC based on level in extraction well(s)		D	X
VFD P-01	Variable Frequency drive for control of P-01	Frequency control to control motor run direction and speed based on P-01 integral limit switches which monitor the position of the piston pump drive rod.	Bottom, Middle, and Top Limit Switches	Control of motor run direction and speed based on limit switches. VFD to output to PLC run indication and alarm indication.		D,A	X
Transfer Pump P-02							
HOA P-01	Hand-Off-Auto Switch for P-01	Off Position		De-energize Pump P-02 (Bypass PLC output)		D	X
		Hand Position		Energize Pump P-02. No PLC control and No permissive/ interlocks associated with pump running		D	X
		Auto position		Control by PLC based on level in extraction well(s)		D	X

Project: National Grid - Clifton Former MGP Site
Submittal #8.13 P&T System Instrumenattion Wiring Schedule

Tag No.	Description	Make	Model	# of Wires	Wire Size	Shielded/Non-shielded
Level Instrumentation in wells COU1-RWA and COU1-RWB						
LT-100A	Level transducer in well COU1-RWA for continuous measurement of water level in well (Level measured from bottom) 4-20mA Output	Winters	LM6W40	2	18 AWG	Shielded
LT-100B	Level transducer in well COU1-RWB for continuous measurement of water level in well (Level measured from bottom) 4-20mA Output	Winters	LM6W40	2	18 AWG	Shielded
Level Instrumentation in Oil/Water Separator (OW-01)						
LSHH-102	High High Level switch in OW-01					
LSH-103	High Level switch in OW-01					
LSL-104	Low Level switch in OW-01	ESD/W2W	Stem float assembly with three float switches	4	18 AWG	Non-shielded
Level Instrumentation in Spill Containment Sump (S-01)						
LSHH-121	High High Level switch in S-01	Dwyer	F6-SS	2	18 AWG	Non-shielded
Pressure Instrumentation on Discharge Pump (P-02)						
PT-107	Pressure transmitter in P-02 discharge pipeline for continuous measurement of pressure 4-20mA Output	Dwyer	626-10-GH-P1-E1-S1	2	18 AWG	Shielded
Flow Instrumentation on Discharge Pump (P-02)						
FIT-119	Indicating Flow meter/transmitter transmitter in P-02 discharge pipeline for continuous measurement of flow total and flowrate. 4-20mA Output	Signet	3-2551-P0-41	3	18 AWG	Shielded
Temperature Instrumentation in System Enclosure						
TT-120	Temperature transmitter for continuous measurement of system enclosure interior temperature. 4-20mA Output	Dwyer	TTW	2	18 AWG	Shielded
Heat Trace Monitors						
HTM-122	Heat trace thermostat with alarm output for influent piping heat trace	Chromalox	DTS	3 for208V power wiring	12 AWG	Non-shielded
				2 for alarm output	14 AWG	Non-shielded
HTM-123	Heat trace thermostat with alarm output for effluent piping heat trace	Chromalox	DTS	3 for208V power wiring	12 AWG	Non-shielded
				2 for alarm output	14 AWG	Non-shielded
Variable Frequency Drive				**Wiring to PLC**		
VFD P-01	Variable frequency drive for controlling speed and direction of piston pump motor.	Emerson		2 for run output	18 AWG	Non-shielded
				2 for alarm output	18 AWG	Non-shielded
				2 for enable input	18 AWG	Non-shielded
				Wiring to Limit Switches		
				4	18 AWG	Shielded

SUBMITTAL #9.4

Johns Manville

Micro-Lok® *HP*

High-Performance Fiber Glass Pipe Insulation

DESCRIPTION

Micro-Lok *HP* Fiber Glass Pipe Insulation is a high-performance insulation made from rotary glass fibers bonded with a thermosetting resin and produced in 36" (0.92 m) lengths. Micro-Lok *HP* insulation is used to insulate standard iron pipe and copper tubing. The 3' (0.92 m) sections are available plain or with a factory-applied vapor-barrier jacket. The all-service (ASJ) vapor-retarder jacket includes a longitudinal, self-sealing closure lap. The jacket system is adhered to each fiber glass section using a specially formulated adhesive to ensure jacket securement. Latex paint may be applied to the Micro-Lok *HP* jacket after installation.

The factory-installed tape system permits installation at ambient temperatures down to 20°F (-7°C) and will not soften or separate when exposed to high ambient temperatures and humidity.

USES

Micro-Lok *HP* fiber glass pipe insulation is suitable for installation over hot, cold, concealed and exposed piping systems with operating temperatures up to 850°F (454°C). Weather-protective jacketing is required for outdoor applications. Pipes operating below ambient temperatures require all joints to be sealed with the factory-applied, self-seal lap and butt strips.

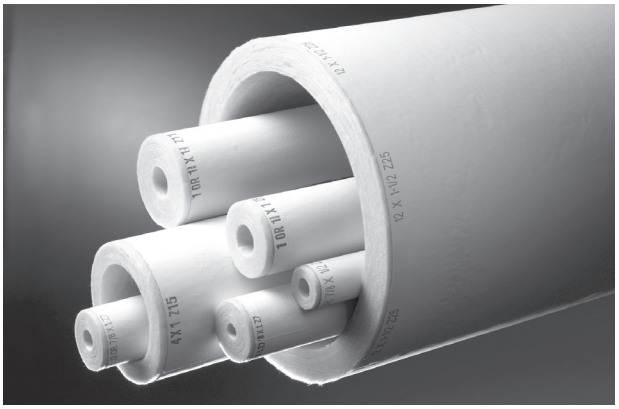
PHYSICAL PROPERTIES

Service Temp. Range (ASTM C411)	0°F to 850°F (-18°C to 454°C)
Moisture Sorption	<5% by weight
Alkalinity	<0.6% expressed as Na_2O
Corrosivity (ASTM C665)	Does not accelerate
Capillarity	Negligible (after 24 hours)
Shrinkage (ASTM C356)	None
Microbial Growth (ASTM C1338)	Does not promote microbial growth
Surface Burning Characteristics	Composite FHC 25/50 per ASTM E84, NFPA 255, CAN/ULC S102.2
Limited Combustibility	NFPA 90A and 90B
Jacketing	ASTM C1136 (Type I)
Water Vapor Permeance (ASTM E96 – Procedure A)	0.02 perms max.
Burst Strength (ASTM D774)	50 Beach Units (1.5 Joules min.)
Tensile Strength (ASTM D828)	45 lbs./in. (7.9N/mm) width min. (MD) 30 lbs./in. (5.23N/mm) width min. (CD)

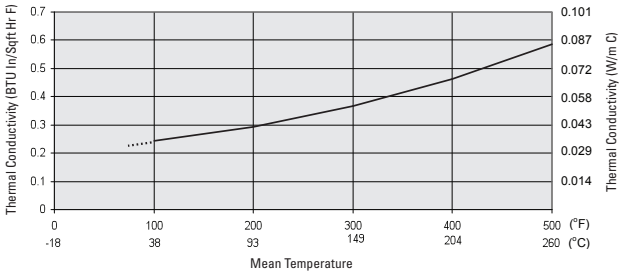
Operating Temperature Limits: 0°F to 850°F (-18°C to 454°C)

SPECIFICATION COMPLIANCE

- ASTM C547 Type I (Replaces HH-I-558B, Form D, Type III, Class 12, Class 13 up to 850°F [454°C])
- ASTM C585 – Dimension Standard
- ASTM C1136 (Jacketing) (Replaces HH-B-100B, Type I & II)
- MIL-I-22344D
- NRC 1.36, ASTM C795, MIL-I-24244C
- Coast Guard/IMO Approved 164.109/56/0 (plain, unjacketed only – excluding ⅞ x ½ [22 mm x 13 mm], ½ x ½ [13 mm x 13 mm])
- MEA compliant
- California Bureau of Home Furnishings and Thermal Insulation – Registry Number CA-T040 (CO)
- Firestop Assemblies: Meets requirement for jacketed fiber glass pipe insulation product density at or above 3.5 pcf.
- ASTM E84, CAN ULC S102.2 – 25/50 listed and labeled Intertek testing laboratories



THERMAL CONDUCTIVITY ("K")



MEAN TEMPERATURE	K	K(SI)
75˚F (24˚C)	0.23	0.034
100˚F (38˚C)	0.24	0.035
200˚F (93˚C)	0.28	0.040
300˚F (149˚C)	0.34	0.049
400˚F (204˚C)	0.44	0.063
500˚F (260˚C)	0.55	0.079

GREEN BUILDING ATTRIBUTES

Manufacturing Location	Defiance, Ohio (43512)	
Recycled Content	36%	
Volatile Organic Compounds (ASTM D5116) (Analysis ASTM D6196 & ASTM D5197)	Total	0.15 g/l
Fiber Glass Pipe Insulation	Formaldehyde	0.009 ppm
	Aldehydes	0.009 ppm
Volatile Organic Compounds (Calculated)	Total	<49 g/l
Self-Sealing Lap & Butt Strips		

GREEN BUILDING CERTIFICATIONS

GREENGUARD®	
• Indoor Air Quality	Certified
• Children and Schools	Certified
LEED® Credits	
LEED-NC	See JM.com/buildgreen JM LEED Credit Guide (HIG-1231)

GREENGUARD® Certified products have been screened for more than 10,000 volatile organic compounds (VOCs) and meet stringent standards for low chemical emissions based on established criteria from key public health agencies.

GREENGUARD
PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS UL.COM/GG UL 2818
GOLD

Micro-Lok® *HP*

High-Performance Fiber Glass Pipe Insulation

SIZE AVAILABILITY

Insulation Thickness		Iron Pipe Size Range		Copper Tubing Size Range	
in.	mm	in.	mm	in.	mm
½	13	½–6	13–152	⅝–4⅛§	16–105
1	25	½–24	13–610	⅝–6⅛	16–156
1½	38	½–24	13–610	⅝–6⅛	16–156
2	51	½–24	13–610	1⅛–6⅛	29–156
2½	64	1–24	25–610	1⅜–6⅛	35–156
3	76	1–24	25–610	1⅜–6⅛	35–156
3½	89	1½–24*	38–610	–	–
4	102	3–24**	76–610	–	–
4½	114	3–24†	76–610	–	–
5	127	3–20††	76–508	–	–

Notes:

**2½" and 23" IPS not available in this insulation thickness.*

***22" and 23" IPS not available in this insulation thickness.*

†21", 22" and 23" IPS not available in this insulation thickness.

††19" IPS not available in this insulation thickness.

§3⅝" CTS not available in this insulation thickness.

QUALIFICATIONS FOR USE

A sufficient thickness of insulation must be used to keep the maximum surface temperature of Micro-Lok *HP* insulation below 150°F (66°C). In addition, at operating temperatures above 500°F (260°C), Micro-Lok *HP* pipe insulation must be applied in a thickness ranging from 2" (51 mm) minimum to 6" (152 mm) maximum.

During initial heat-up to operating temperatures above 350°F (177°C), an acrid odor and some smoke may be given off as the organic binders used in the fiber glass pipe insulation begin to decompose. When this occurs, caution should be exercised to ventilate the area well. This loss of binder does not directly affect the thermal performance of the pipe insulation, but the compressive strength and resiliency of the product are reduced. For applications with excessive physical abuse or vibration at high temperatures, consult your local Insulation Systems Market Development Manager for alternate material recommendations.

CHILLED WATER SYSTEMS

For chilled water systems, see Chilled Water InsulSpec™ – 3-Part Specification, MECH-239.

APPLICATION RECOMMENDATIONS*
MICRO-LOK *HP* PIPE INSULATION AND BUTT STRIPS

1. Do not apply Micro-Lok *HP* insulation if air temperature is below 20°F (-7°C) or above 130°F (54°C) due to the effect of temperature on tape performance. We recommend stapling when application falls outside this temperature range.

When stapling, we recommend mastic be applied over staples to prevent moisture penetration.

2. If stored below 20°F (-7°C) or above 130°F (54°C), insulation cartons should stand within the recommended temperature range for 24 hours prior to application.

3. Once release paper is removed, both adhesive and lap must be kept free of dirt and water, and the lap sealed immediately.

4. When adhered, the lap and butt strips must be pressurized by rubbing firmly with a plastic squeegee or the back of a knife blade to ensure positive closure.

**For complete application recommendations and installation instructions, see MECH-238 and MECH-239 InsulSpec Specifications.*

Johns Manville

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Denver, CO 80202
1-800-654-3103
JM.com

North American Sales Offices, Insulation Systems

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(800) 334-2399
Fax: (419) 784-7866

Western Region & Canada
P.O. Box 5108
Denver, CO 80217
(800) 368-4431
Fax: (303) 978-4661

The physical and chemical properties of Micro-Lok® *HP* High-Performance Fiber Glass Pipe Insulation listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Numerical flame spread and smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the Regional Sales Office nearest you to ensure current information. **All Johns Manville products are sold subject to Johns Manville's standard Terms and Conditions including Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville standard Terms and Conditions, Limited Warranty and Limitation of Remedy, and information on other Johns Manville thermal insulations and systems, call (800) 654-3103.**

MECH-228 1/14 (Replaces 10/13)

JMCOM1400070

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Johns Manville

Micro-Lok® *HP*

High Performance Fiber Glass Pipe Insulation
Dimensional Data

Iron Pipe Sizes

		Wall Thickness and O.D. of Insulation (in.)									
		Nominal ½" Wall		Nominal 1" Wall		Nominal 1½" Wall		Nominal 2" Wall		Nominal 2½" Wall	
Nominal Pipe Size (in.)	Pipe O.D. (in.)	Actual Wall Thickness (in.)	Insulation O.D. (in.)	Actual Wall Thickness (in.)	Insulation O.D. (in.)	Actual Wall Thickness (in.)	Insulation O.D. (in.)	Actual Wall Thickness (in.)	Insulation O.D. (in.)	Actual Wall Thickness (in.)	Insulation O.D. (in.)
½	0.90	0.52	1.93	0.97	2.83	1.53	3.95	2.03	4.95	2.30	5.50
¾	1.15	0.51	2.17	0.84	2.83	1.40	3.95	1.90	4.95	2.71	6.57
1	1.40	0.51	2.41	1.03	3.45	1.53	4.45	2.05	5.50	2.59	6.57
1¼	1.70	0.52	2.73	0.88	3.45	1.63	4.95	1.90	5.50	2.44	6.57
1½	1.97	0.52	3.00	0.99	3.95	1.49	4.95	2.30	6.57	2.80	7.57
2	2.40	0.53	3.45	1.03	4.45	1.55	5.50	2.09	6.57	2.59	7.57
2½	2.91	0.52	3.95	1.02	4.95	1.83	6.57	2.33	7.57	2.83	8.57
3	3.54	0.52	4.57	0.98	5.50	1.52	6.57	2.02	7.57	2.52	8.57
3½	4.15	0.46	5.07	1.21	6.57	1.71	7.57	2.21	8.57	2.71	9.57
4	4.55	0.51	5.57	1.01	6.57	1.51	7.57	2.01	8.57	2.51	9.57
4½	5.15	0.47	6.09	1.21	7.57	1.71	8.57	2.21	9.57	2.78	10.70
5	5.62	0.52	6.65	0.98	7.57	1.48	8.57	1.98	9.57	2.54	10.70
6	6.69	0.51	7.71	0.94	8.57	1.44	9.57	2.01	10.70	2.51	11.70
7	7.70	0.52	8.73	0.94	9.57	1.50	10.70	2.00	11.70	2.50	12.70
8	8.72	0.51	9.74	0.99	10.70	1.49	11.70	1.99	12.70	2.62	13.95
9	9.72	0.51	10.74	0.99	11.70	1.49	12.70	2.12	13.95	2.62	14.95
10	10.85	0.52	11.89	0.93	12.70	1.55	13.95	2.05	14.95	2.55	15.95
11	11.86	0.52	12.89	1.05	13.95	1.55	14.95	2.05	15.95	2.55	16.95
12	12.86	0.52	13.89	1.05	14.95	1.55	15.95	2.05	16.95	2.55	17.95
14	14.13	0.50	15.13	0.91	15.95	1.41	16.95	1.91	17.95	2.41	18.95
15	15.13	0.50	16.13	0.91	16.95	1.41	17.95	1.91	18.95	2.41	19.95
16	16.13	0.50	17.13	0.91	17.95	1.41	18.95	1.91	19.95	2.41	20.95
17	17.15	0.50	18.15	0.90	18.95	1.40	19.95	1.90	20.95	2.40	21.95
18	18.16	0.50	19.16	0.90	19.95	1.40	20.95	1.90	21.95	2.40	22.95
19	19.16	0.50	20.16	0.90	20.95	1.40	21.95	1.90	22.95	2.40	23.95
20	20.17	0.50	21.17	0.89	21.95	1.39	22.95	1.89	23.95	2.39	24.95
21	21.17	0.50	22.17	0.89	22.95	1.39	23.95	1.89	24.95	2.39	25.95
22	22.17	0.50	23.17	0.89	23.95	1.39	24.95	1.89	25.95	2.39	26.95
23	23.17	0.50	24.17	0.89	24.95	1.39	25.95	1.89	26.95	2.39	27.95
24	24.19	0.50	25.19	0.88	25.95	1.38	26.95	1.88	27.95	2.38	28.95

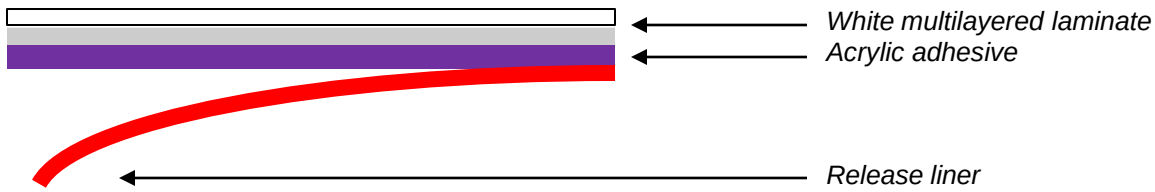
VentureClad® 1577CW-WM

SUBMITTAL #9.5

JACKETING SYSTEM - WHITE

Venture Tape® VentureClad 1577CW-WM is a white zero permeability vapor barrier for insulation cladding and jacketing applications. A multilayered, self adhesive material installs quickly and easily with no special tools required, resulting in significant time, labor, and cost savings. VentureClad 1577CW-WM exceeds most building code requirements and can be used for new construction as well as repair on existing structures.

Product Construction



Features & Benefits

- *ASTM E84 (25/45 Flame/Smoke Rating)*
- *BS476 parts 6 & 7 class 'O'*
- *High performance jacketing product performs well over a wide temperature range*
- *Puncture and tear resistant*
- *Self adhesive material installs easily with no off-site fabrication required*
- *Meets FDA compositional requirements for indirect food contact (21 CFR 175.105 and 21 CFR 175.125; FDA: Indirect Food Additives: Adhesives and Components of Coatings)*
- *IMO Resolution A653(16)*
- *IMO Resolution MSC 61(67) Annex 1 Part 5 and Annex 2 IMO Resolution MSC 61(67) Annex 1 Part 2 and Annex 2*
- *Coast Guard 164.112/1121/WCL MED0290TE*
- *ULC S102 Classification (25/25 Flame/Smoke Rating)*
  ULC file # R10984

Test	Typical Value	Typical Value (Metric)	Test Method
Product Thickness Ω	8.0 mils	0.20 mm	PSTC-133
Peel Adhesion Δ	65 oz/in	18.0 N/25 mm	PSTC-101
Shear Adhesion	>24 hrs @ 2.2 psi	>24 hrs @ 15.2 kPa	PSTC-107
Tensile Strength	69 lb/in	312 N/25 mm	PSTC-131
Elongation	80 %	80 %	PSTC-131
Puncture	35 lbs	155 N	ASTM D1000
Emittance	0.80		ASTM C1371
WVTR	0.00 perm		ASTM E96
Service Temperature	-94 to 248 °F	-70 to 120 °C	

Ω - excluding liner

Δ - 20 minute dwell

Typical values are not intended to be used for specification development. Technical data is believed to be true and accurate; Venture Tape recommends that the purchaser test for fitness of use in all applications.

Product Configurations

- *Standard widths: 23" and 35½" and standard length: 50 yards*
- *Custom widths and lengths available, contact Venture Tape for specifications and requirements*

Contact Venture Tape today for a complete list of products or a free sample

Toll Free North America 800-343-1076
From United Kingdom 0-800-962-957
From Australia 1-800-122-797
www.venturetape.com

VentureTape®

GTA - NHT, Inc.
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Toll Free Fax 877-264-5490
www.venturetape.com

GTA TAPES & ADHESIVES a 3M Company

VentureClad® 1577CW-WM

CHEMICAL RESISTANCE

Acids	Acetic acid (all concentrations) 50% formic acid 10% hydrochloric acid 30% hydrochloric acid 10% and 35% hydrofluoric acid 10% nitric acid 65% and 100% nitric acid 30% and 85% phosphoric acid 20% sulphuric acid Sulphur dioxide gas, dry >80% sulphuric acid	resistant resistant resistant partially resistant resistant resistant not resistant resistant partially resistant resistant not resistant
Aldehydes	Acetaldehyde Formaldehyde	resistant resistant
Alcohols	Benzyl alcohol Cyclohexanol Ethyl alcohol Glycerine Glycol Isopropyl alcohol Methyl alcohol	partially resistant resistant resistant resistant resistant resistant resistant
Aqueous alkaline solutions	Ammonium hydroxide Calcium hydroxide Sodium hydroxide	not resistant partially resistant not resistant
Chlorinated hydrocarbons	Carbon tetrachloride Chlorinated biphenyls Chloroform Trichloroethylene	partially resistant partially resistant resistant resistant
Esters	Ethyl acetate	resistant
Hydrocarbons	Aliphatic hydrocarbons Benzene Gasoline (petrol) Mineral oils Toluene Xylene	resistant resistant resistant resistant resistant resistant
Miscellaneous substances	Chlorine Hydrogen peroxide Oxygen Water	resistant resistant resistant resistant
Other organic solutions	Acetone Diethylether Nitrobenzene Phenol	resistant resistant not resistant not resistant
Salt solutions	Alkaline carbonates Bichromates Cyanides Fluorides	resistant resistant resistant resistant

Chemical resistance info based in part on vendor or independent test data.

Contact Venture Tape today for a complete list of products or a free sample

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VentureTape®

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Tel 781-331-5900; Fax 781-871-0065
800-343-1076 (U.S.A.), 800-544-1024 (Canada)
Toll Free Fax 877-264-5490
www.venturetape.com

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ESD Waste2Water, Inc.

Submittal Data

Control Panel & Components

ESD Project # 13653

EnviroTrac LTD
National Grid
Clifton Former MGP Site

495 Oak Road
Ocala, FL 34472
1-800-277-3279
www.waste2water.com

Project: National Grid - Clifton Former MGP Site
Submittal #8.12 P&T System Cause and Effect Spreadsheet

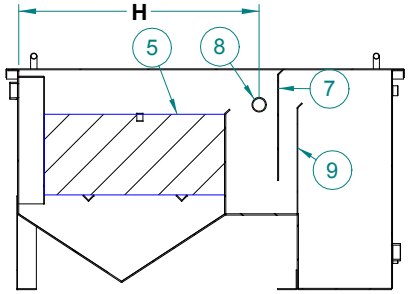
Tag No.	Description	Event	Set Point	Effect	Displays/Alarms		
					Local/Field	HMI Treatment Bldg.	Data Log
Level Instrumentation in wells COU1-RWA and COU1-RWB - Option 1							
LT-100A	Level transducer in well COU1-RWA for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWA	≥ Field selectable water level	Energize Piston Pump P-01		D	X
			In-between High and Low Setpoints	4-20mA speed reference signal from PLC to VFD: PLC shall use the level inputs and use a Proportional Integral Derivative (PID) control algorithm to send out the speed reference analog output.			
			< Field selectable water level	De-energize Piston Pump P-01			
LT-100B	Level transducer in well COU1-RWB for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWB				D	X
Level Instrumentation in wells COU1-RWA and COU1-RWB - Option 2							
LT-100A	Level transducer in well COU1-RWA for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWA				D	X
LT-100B	Level transducer in well COU1-RWB for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWB	≥ Field selectable water level	Energize Piston Pump P-01		D	X
			In-between High and Low Setpoints	4-20mA speed reference signal from PLC to VFD: PLC shall use the level inputs and use a Proportional Integral Derivative (PID) control algorithm to send out the speed reference analog output.			
			< Field selectable water level	De-energize Piston Pump P-01			
Level Instrumentation in wells COU1-RWA and COU1-RWB - Option 3							
LT-100A	Level transducer in well COU1-RWA for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWB minus Level in well COU1-RWA	≥ Field selectable water level	Energize Piston Pump P-01		D	X
			In-between High and Low Setpoints	4-20mA speed reference signal from PLC to VFD: PLC shall use the level inputs and use a Proportional Integral Derivative (PID) control algorithm to send out the speed reference analog output.			
			< Field selectable water level	De-energize Piston Pump P-01			
LT-100B	Level transducer in well COU1-RWB for continuous measurement of water level in well (Level measured from bottom)	Level in well COU1-RWB				D	X
Level Instrumentation in Oil/Water Separator (OW-01)							
LSHH-102	High High Level switch in OW-01	High-High level in OW-01	≥ 28"	De-energize P-01, De-energize P-02, Energize OW-01 High-High Level Alarm until level recedes to low level.		A	X
LSH-103	High Level switch in OW-01	High level in OW-01	≥ 24"	Energize P-02.			X
LSL-104	Low Level switch in OW-01	Low level in OW-01	< 6"	De-energize P-02.			X
Level Instrumentation in Spill Containment Sump (S-01)							
LSHH-121	High High Level switch in S-01	High-High level in OW-01	≥ 2"	De-energize P-01, De-energize P-02, Energize S-01 High-High Level		A	X
Pressure Instrumentation on Discharge Pump (P-02)							
PT-107	Pressure transmitter in P-02 discharge pipeline for continuous measurement of pressure	Pressure in pipeline before bag filters.	≥ Field selectable pressure levels PSH & PSHH	PSH - Energize High Pressure Alarm		D,A	X
				PSHH - De-energize P-01, De-energize P-02, Energize High High Pressure Alarm		D,A	X
Flow Instrumentation on Discharge Pump (P-02)							
FIT-119	Indicating Flow meter/transmitter in P-02 discharge pipeline for continuous measurement of flow total and flowrate.	Flow and total in discharge pipeline after cartridge filters.				D	X
Temperature Instrumentation in System Enclosure							
TT-120	Temperature transmitter for continuous measurement of system enclosure interior temperature.	System enclosure internal temperature.	< Field selectable temperature set point	De-energize P-01, Energize Low Temperature Alarm		D,A	X
Heat Trace Monitors							
HTM-122	Heat trace thermostat with alarm output for influent piping heat trace	Influent Heat Trace Failure	Heat Trace Controller Alarm	De-energize P-01, Energize Low Temperature Alarm		A	X
HTM-123	Heat trace thermostat with alarm output for effluent piping heat trace	Effluent Heat Trace Failure	Heat Trace Controller Alarm	De-energize P-01, De-energize P-02, Energize Heat Trace Alarm		A	X
Piston Pump P-01							
HS P-01	Local disconnect Switch for P-01 Motor	Hand Switch in On/Off position	On/Off	Energize/ De-energize Power to P-01	X		X
HOA P-01	Hand-Off-Auto Switch for P-01	Off Position		De-energize Pump P-01 (Bypass PLC output)		D	X
		Hand Position		Send enable command to VFD. No permissive/ interlocks associated with pump running		D	X
		Auto position		Control by PLC based on level in extraction well(s)		D	X
VFD P-01	Variable Frequency drive for control of P-01	Frequency control to control motor run direction based on P-01 integral limit switches which monitor the position of the piston pump drive rod.	Bottom, Middle, and Top Limit Switches	Control of motor run direction based on limit switches. VFD to output to PLC run indication, running frequency which is controlled by PLC input described above, and alarm indication.		D,A	X
Transfer Pump P-02							
HOA P-01	Hand-Off-Auto Switch for P-01	Off Position		De-energize Pump P-02 (Bypass PLC output)		D	X
		Hand Position		Energize Pump P-02. No PLC control and No permissive/ interlocks associated with pump running		D	X
		Auto position		Control by PLC based on level in extraction well(s)		D	X

Section 1

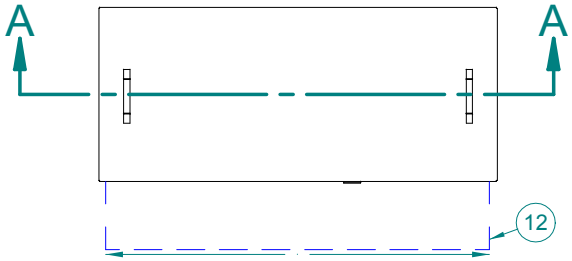
Oil Water Separator

OWS-501 OWS10

OWS		
ITM	DESCRIPTION	QTY
1	2" FNPT , INLET	1
2	2" FNPT , OUTLET	1
3	OIL OUTLET	1
4	1" FNPT VENT	1
5	COALESCING MEDIA	1
6	ACCESS LID	1
7	OIL STOP WEIR	1
8	PVC OIL SKIMMER	1
9	OVERFLOW BAFFLE	1
10	1" FNPT SIGHT GLASS PORT	2
11	OPT. SIGHT GLASS w/ MULTI LEVEL PROBE	1
12	OPT. PRODUCT TANK	1
13	1 1/2" FNPT SLUDGE DRAIN	1
14	1" FNPT DRAIN	3



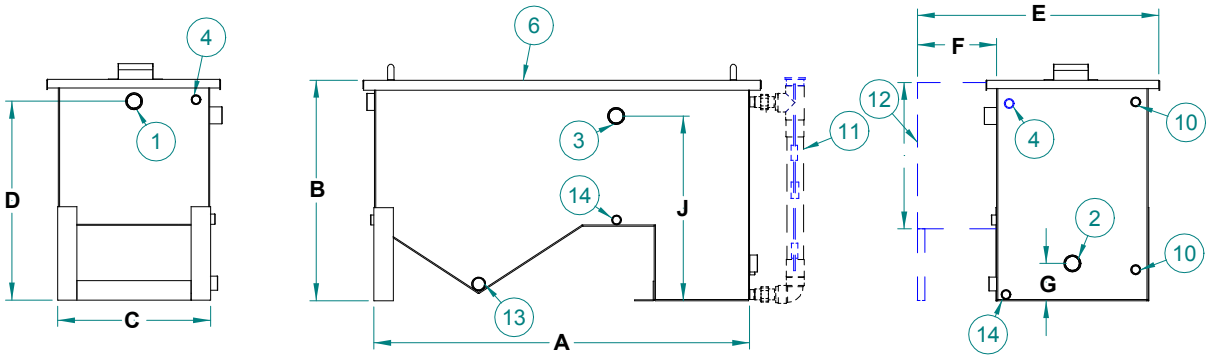
SECTION A-A

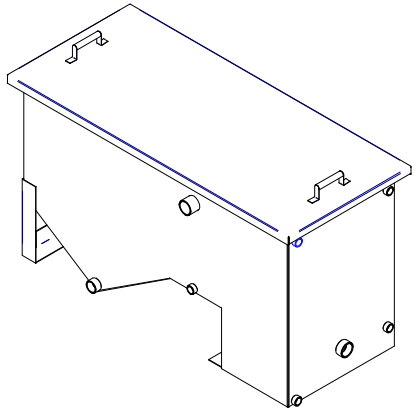


OWS

		OWS-10	OWS-25	OWS-50	OWS-80
A	LENGTH	60 1/2"	60 1/2"	83"	83"
B	HEIGHT	35 1/2"	35 1/2"	60"	60"
C	WIDTH	12"	24 1/2"	36"	48"
D	INLET HEIGHT	32"	32"	56"	56"
E	WIDTH (INCLUDING OPT PRODUCT TANK)	21 1/2"	38"	56"	66"
F	WIDTH OF PRODUCT TANK	12"	12"	18	18"
G	OUTLET HEIGHT	12"	12"	12"	12"
H	PRODUCT OUTLET	39"	39"	54"	54"
J	PRODUCT OUTLET HEIGHT	29 3/4"	29 3/4"	53 1/2"	53 1/2"
	SHIPPING WEIGHT (LBS)	115	175	450	-
	OPERATING WEIGHT (LBS)	650	1300	4500	-
	SEPARATOR VOLUME (GALLONS)	40	80	280	305
	EFFLUENT VOLUME (GALLONS)	19	38	135	220
	SLUDGE VOLUME (GALLONS)	9	18	76	101
	COALESING AREA (CUBIC FEET)	2.5	5	16	24
	OPT PRODUCT TANK VOLUME (GALLONS)	35	55	160	220

NOTES:
1. MATERIAL : 3/16" ALUMINUM SHT 5052
2. GASKET : NEOPRENE
3. INTERNAL PIPE : SCH 80 PVC





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495 Oak Road
Ocala, FL 34472
Phone (800) 277-3279
Fax (352) 680-0059

SCALE VERIFCATION
THIS BAR REPRESENTS ONE INCH ON ORIGNAL DRAWING
1"
USE TO VERIFY DRAWING

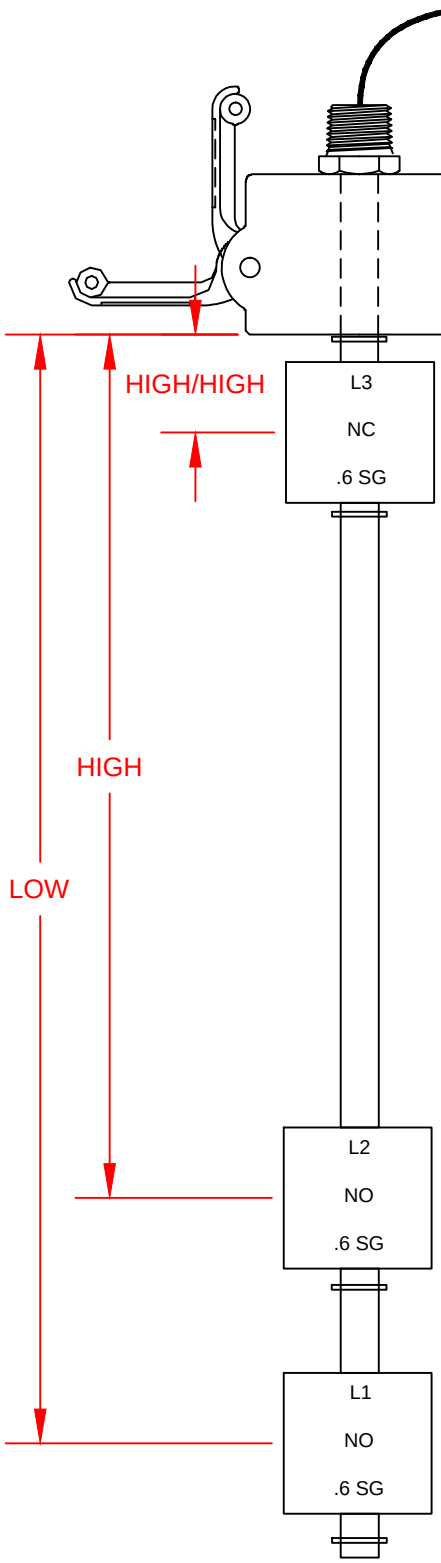
SIZE: B
SHEET #: 1 OF 1
SCALE: NTS
UPDATED BY: J. Andrews

DRAWN BY: J. Andrews
APPROVED BY:
COMPLETED: 6/5/10
UPDATED:

OIL WATER SEPARATOR
GENERAL LAYOUT
SPEC

JOB NUMBER:
PRODUCT NUMBER: OWS
FILE NAME: "OWS ALL MODELS SPEC.dft"

LSL, LSH, LSHH-501 Oil Water Separator Multi Level Probe



FITTING: 2" DUST CAP, POLYPROPYLENE

CONDUIT CONNECTION: 1/2" MNPT, STAINLESS STEEL

STEM: 5/16" DIA., 316 STAINLESS STEEL

FLOAT: 1" X 1" POLYPROPYLENE

FLOAT STOPS: STAINLESS STEEL RETAINING RINGS

SWITCH: 50 WATTS (MAXIMUM), SPST
(265 VOLTS AND 1 AMP MAXIMUM VALUES)

WIRING: 30 FT. PVC CABLE, 4 CONDUCTOR, 22 GA. STRANDED

COMMON: GREEN

L3 WIRE COLOR: RED

L2 WIRE COLOR: WHITE

L1 WIRE COLOR: BLACK

MAXIMUM PRESSURE: 50 PSI

OPERATING TEMPERATURE: -20F° TO 180F°

LEVEL DIMENSIONS BELOW REFERENCE THE LEVEL SWITCH POINT

MULTI LEVEL PROBE	OAL	HIGH/HIGH L3	HIGH L2	LOW L1
MLP FOR OWS-10	32"	18"	17"	4"
MLP FOR OWS-25	32"	18"	17"	4"
MLP FOR OWS-50	50"	36"	35"	4"
MLP FOR OWS-100				
MLP FOR CUSTOM APPLICATION				

OWS MULTILEVEL PROBE

DWG NO: OWS MLP

DATE: 12/09/13

495 Oak Road
Ocala, FL 34470
PHONE: (800) 277-3279
FAX: (352) 680-9278

ESD Waste2Water,Inc.

OIL WATER SEPARATOR
3 FLOAT MULTI-LEVEL PROBE

Section 2

Instrumentation

LT-100A,B Submersible Level Transmitter Model LM6W40

Description & Features:

- Designed for continuous level measurement in water or other liquids with low viscosity
- 316L SS probe with stainless steel sensor for ease of cleaning
- Available ranges from H_2O up to 300 psi
- ±0.1% and ±0.35% accuracy ratings
- NEMA 6P / IP68. Approved for outdoor use. Explosion proof option available
- Customizable
- 1 year warranty

Applications:

- Typical installations include ground or tank level monitoring of water and sewage treatment measurement

Specifications	
Output Signal	Standard 2-wire: 4-20 mA / Vs = 12-36 Vdc Optional 3-wire: 0-20 mA / Vs = 14-36 Vdc 0-10 V / Vs = 14-36 Vdc
Accuracy	±0.35% FSO BFSL Optional nominal pressure > 5 psi: <±0.25% FSO BFSL > 2 psi: <±0.1% FSO BFSL
Permissible Load	Current 2-wire: Rmax = [(Vs - Vs min) / 0.02] Ohm Current 3-wire: Rmax = 500 Ohm Voltage 3-wire: Rmin = 10 kOhm
Influence Effects	Supply: 0.05% FSO / 10 V Load: 0.05% FSO / kOhm
Long-term Stability	<±0.1% FSO/yr
Response Time	<10 ms*
Permissible Temperatures	Medium: 14°F to 158°F (-10°C to 70°C) Storage: -13°F to 158°F (-25°C to 70°C)
Reverse Polarity Protection	No damage. No function.
Electromagnetic Compatibility	Emission and immunity according to EN 61326
Electrical Connection	Cable with sheath material[2]: PVC grey, PUR black, FEP black, others available
Pollution Degree	4, electrical equipment for outdoor use
Housing	316Ti SS
Seals	FKM, others available
Diaphragm	316L SS
Weight	200 g (without cable)
Current Consumption	Current: 25 mA max Voltage: 7 mA max
Connecting Cables	Cable capacitance: Signal line/shield and signal line/signal line: 160 pF/m Cable inductance: Signal line/shield and signal line/signal line: 1 µH/m
Enclosure Rating	NEMA 6P / IP68

* With optional accuracy 0.1% FSO the response time is 200 msec

1 Approved for atmospheric pressure from 12 to 16 psi
2 Cable with integrated air tube for atmospheric pressure reference

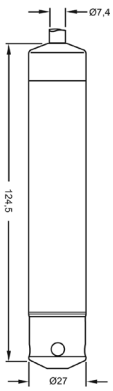
Note: Measurements are in mm. Total length of devices with accuracy 0.1% FSO IEC 60770 increases by 35mm

Order Codes

Range	Over-pressure	Burst Pressure	Code
0/50" water	15 psi	22 psi	LM6W05
0/100" water	15 psi	22 psi	LM6W10
0/150" water	15 psi	22 psi	LM6W15
0/200" water	15 psi	22 psi	LM6W20
0/300" water	15 psi	22 psi	LM6W30
0/400" water	15 psi	22 psi	LM6W40
0/5 psi	15 psi	22 psi	LM6005
0/10 psi	44 psi	109 psi	LM6010
0/15 psi	44 psi	109 psi	LM6015
0/25 psi	87 psi	218 psi	LM6025
0/50 psi	290 psi	218 psi	LM6050
0/100 psi	290 psi	725 psi	LM6100
0/200 psi	870 psi	1,740 psi	LM6200
0/300 psi	1,450 psi	1,740 psi	LM6300

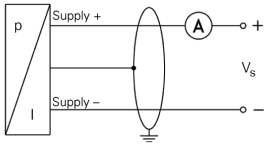
Thermal Errors (Offset and Span)					
Nominal Pressure (psi)	<1	<4	<6	<15	>15
Tolerance Band (% FSO)	<±2	<±1.5	<±1	<±1	<±0.75
TC, Average (% FSO/10K)	±0.3	±0.2	±0.14	±0.1	±0.07
Compensated Range	32°F to 122°F 0°C to 50°C			32°F to 158°F 0°C to 70°C	

Pin Configuration		
Electrical Connection		Cable Colours (DIN 47100)
2-wire system	Supply + Supply -	White Brown
	Ground	Yellow/green (shield)
3-wire system	Supply + Supply - Signal +	White Brown Green
	Ground	Yellow/green (shield)

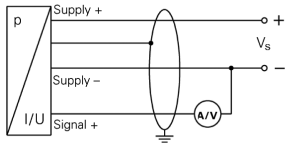


Wiring Diagram

2-wire-system (current)



3-wire-system (current / voltage)



Transmitters

Section 3

Carbon

T-801, 802, 803 Carbon LLPS-250

Liquid Low Pressure Steel Filters

LLPS 250-10,000 lb. Vessels

The **LLPS** series Liquid Phase Carbon filters are designed for water treatment applications. With a wide range of sizes, the LHPS series can fulfill a wide range of applications. These treatment filters hold 250-10,000 pounds of activated carbons or any variety of media with flow rates of up to 400 GPM.

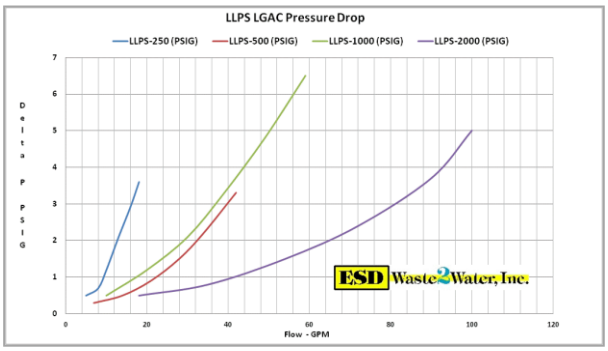
APPLICATIONS:

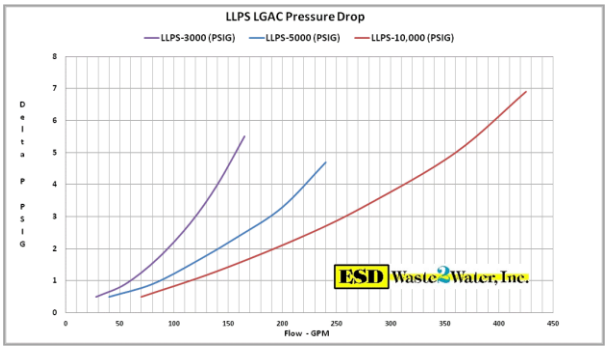
- Wastewater filtration
- Groundwater Remediation
- Underground Storage Tank Cleanup
- Dissolved Organic Removal
- Product Purification
- Tank Cleaning
- Pilot Testing
- Emergency Spill Treatment

FEATURES:

- Simple Installation and Operation
- Flexibility to be used in series of parallel operation
- Can be supplied with various medias
- Modular design for easy and rapid deployment and installation

PRESSURE DROP VS FLOW RATE





Specifications

Liquid Low Pressure Steel Filters	250	500	1000	2000	3000	5000	10,000
Dimensions: diameter x overall height	24" x 48"	30" x 72"	36" x 84"	50" x 101"	60" x 108"	72" x 120"	96" x 130"
Vessel Construction	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel
Inlet/Outlet Connection	2 " FNPT/2"MNPT	2 " FNPT	2 " FNPT	3 " FNPT	3 " FNPT	3 " FNPT	6 " Flange
Pounds of Carbon	250	500	1000	2000	3000	5000	10,000
Internal Piping	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC	Sch 40 PVC
Interior Coating	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy
Exterior Coating	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic	Epoxy Mastic
Carbon Bed Volume (cu.ft.)	8.6	16.5	33	68.5	107	170	350
Cross Section (sq.ft.)	3.1	4.9	7	12.6	19.3	28	50
Vessel Weight (lbs) Shipping Operational	 452 850	 870 1765	 1475 3100	 2985 6400	 4400 9875	 7325 16,550	 13,225 29,050
Flow, GPM (max.)	20	40	60	100	150	200	400
Pressure, PSIG (max.)	40	40	40	40	40	40	40
Temperature, °F (max)	140°	140°	140°	140°	140°	140°	140°

***The information provided in this literature contains merely general descriptions or characteristics of performance, which in actual case of use do not always apply as, described or which may change as a result of further product development. Specifications provided herein are subject to change without prior notice.*

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www.waste2water.com

Section 4

Control Panel

ESD Web2Water®

Control Platform

A Web Based, Wireless, Remote Monitoring, Telemetry & Control PLC Platform

The ESD "Web2Water®" (W2W) Control Platform is designed to both operate and control all types of Industrial process systems including wastewater treatment and soil and groundwater remediation systems.

W2W is designed to provide the most economical, stable and interactive remote monitoring, telemetry & system control platform available on the market today. ESD has configured the platform with the intent of providing the system operator the most user friendly and intuitive interface experience available, without sacrificing cost or uptime dependability.

W2W utilizes an Allen Bradley MicroLogix PLC, C-More color touch screen operator interface terminal (OIT) with built-in FTP server, e-mail client, and Web server, and a wireless 3G high speed modem supporting major carriers such as AT&T and Verizon Wireless at up to 7.2 Mbps. One simple compact economical platform provides local PLC control, remote control, remote alarming, automatic system status updates, remote interactive control (start / stop / modify) data-logging and trending, and can ship with all wireless communications fully established and operational prior to shipping.

Web2Water® Architecture

www.waste2water.com

Functional Features & Benefits:

Local PLC control – unlimited discrete and analog I/O capability / expansion

Real time local and remote display of any / all operational parameters

Local and remote alarm notification via e-mail or text

- Local PLC control – unlimited discrete and analog I/O capability / expansion
- Web based remote access via any browser – NO SOFTWARE to buy, install, or upgrades
- Full remote based interactive control – start / stop routines, set point adjustments, etc.
- Site video surveillance and security monitoring with local web cam, Pan, Zoom, Tilt (PZT) control
- Accessible from any device - laptop, desktop, iPad, iPhone, other PDA's and tablets
- No proprietary hardware or software – Allen Bradley PLC, C-More Operator Interface (OIT)
    - *Can be supported by an expansive worldwide network of Allen Bradley controls specialist*

- No remote or local software required - no up-front software purchases or legacy software update costs
- Requires no programming knowledge
- Integrated motor control, VFD's, circuit protection, etc.
- Graphics based local color touch screen operator interface terminal (OIT)
- Remote graphical interface is identical to the local interface
    - *Real time local and remote display of any / all operational parameters including process air and liquid flow rates and totals, pressure, vacuums, output status, VFD control, temperatures, timing programs and sequences*

- Data-logging and trending of all operational parameters, including local and remote data downloads to Excel or CSV file formats for data analysis or regulatory reporting
- Remote programming changes by ESD support team (no site visit required to change PLC code)
- Local and remote operator changes to set points such as alarm values, VFD speeds, timing programs without any programming knowledge
- Local and remote alarm notification via e-mail or text
- Can be installed on LAN or WAN for remote access as well as wireless
- Arrives with all wireless communications functional and tested – no need to contact wireless service providers
- Install on new or existing systems – simple retro fit capabilities
- Extremely robust and secure wireless platform – FCC and and CE approved
- Wireless Security – Ipsec VPN, GRE Tunnel, Friends List
- UL listed and Labeled – 508 and 698A for Industrial Controls Relating to a Hazardous Location

ESD Waste2Water, Inc.

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Toll Free (800) 277-3279 • (352) 680-0400
Fax (352) 680-9278

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LISTEN.
THINK.
SOLVE.®

PRODUCT PROFILE

MicroLogix™ 1400 / 1766

Small Programmable Logic Controller

Advantages

- Expand your application capabilities with up to 7 expansion I/O modules for a maximum of 144 discrete I/O
- Up to 6 embedded 100 kHz high-speed counters (on controllers with dc inputs)
- 2 Serial ports with DF1/ DH485/Modbus RTU/DNP3/ASCII protocol support
- Ethernet port provides you with peer-to-peer messaging, web server and email capabilities
- Built-in LCD with backlight allows you to view controller and I/O status, and provides a simple interface for messages, bit / integer monitoring and manipulation

Target Applications

- *General Industrial Machinery (Material Handling, Packaging, Assembly, etc.)*
- *HVAC/Building Automation*
- *SCADA (Oil & Gas, Water/Waste Water, and Electric Power)*
- *Food & Beverage*
- *Pharmaceutical*
- *Commercial Machinery (Vending, Industrial Washers & Dryers, etc.)*

Overview

The new Allen-Bradley® MicroLogix™ 1400 from Rockwell Automation complements the existing MicroLogix family of small programmable logic controllers. MicroLogix 1400 combines the features you demand from MicroLogix 1100, such as EtherNet/IP, online editing, and a built-in LCD, plus provides you with enhanced features, such as: higher I/O count, faster High Speed Counter/PTO and enhanced network capabilities

Take advantage of the built-in LCD with back lighting to set the Ethernet network configuration, display floating point values on a user configurable display, display OEM logos at startup and read or write any binary, integer and long file elements in the data table. Controllers without embedded analog come with 32 digital I/O count, while analog versions have 32 digital I/O and 6 analog I/O. All versions can be expanded using up to seven 1762 I/O modules - the same I/O modules that MicroLogix 1100 and 1200 utilize.

Three embedded communication ports provide you with superior communications capabilities. MicroLogix 1400 offers an isolated RS232C/RS485 combination port; a non-isolated RS232C port; and an RJ-45 port for 10/100 Mbps EtherNet/IP peer-to-peer messaging.

Similar to the rest of the MicroLogix family, MicroLogix 1400 is programmed with RSLogix 500 programming software (Version 8.1 and above) as well as new RSLogix Micro programming software.

SPECIFICATIONS

MicroLogix	1766-L32BWA	1766-L32AWA	1766-L32BXB	1766-L32BWAA	1766-L32AWAA	1766-L32BXBA
Input Power	120/240 VAC		24 VDC	120/240 VAC		24 VDC
Memory	non-volatile battery backed RAM					
User Program / User Data Space	10 K / 10K configurable					
Data Logging / Recipe Storage	128 K (without Recipe) / up to 64 K (after subtracting Data Logging)					
Battery Back-up	Yes					
Back-up Memory Module	Yes					
Digital Inputs	(12) Fast 24VDC (8) Normal 24VDC	(20) 120VAC	(12) Fast 24VDC (8) Normal 24VDC	(12) Fast 24VDC (8) Normal 24VDC	(20) 120VAC	(12) Fast 24VDC (8) Normal 24VDC
Digital Outputs	(12) Relay	(12) Relay	(6) Relay (3) Fast DC (3) Normal DC	(12) Relay	(12) Relay	(6) Relay (3) Fast DC (3) Normal DC
Analog Inputs / Outputs	None			(4) Voltage Inputs / (2) Voltage Outputs		
Serial Ports	(1)RS232C/RS485*, (1)RS232C**					
Serial Protocols	DF1 Full Duplex, DF1 Half Duplex Master/Slave, DF1 Radio Modem, DH-485, Modbus RTU Master/Slave, ASCII, DNP 3 Slave					
Ethernet Ports	(1) 10/100 EtherNet/IP port					
Ethernet Protocols	EtherNet/IP messaging only					
Trim Potentiometers	2 Digital					
High-Speed Inputs	Up to 6 channels @ 100 kHz	N/A	Up to 6 channels @ 100 kHz	Up to 6 channels @ 100 kHz	N/A	Up to 6 channels @ 100 kHz
Real Time Clock	Yes, embedded					
PID	Yes (limited by loop and stack memory)					
PWM /PTO	N/A		3 channel PTO (100kHz)\PWM (40kHz)	N/A		3 channel PTO (100kHz)\PWM (40kHz)
Dual Axis Servo control	N/A		Through embedded PTO	N/A		Through embedded PTO
Embedded LCD	Yes					
Floating Point Math	Yes					
Online Editing	Yes					
Operating Temperature	-20°C to +60°C					
Storage Temperature	-40°C (or -30°C) to +85°C					

* Isolated. RS232/RS485 combo port. Same as MicroLogix 1100 Comm 0

** Non-isolated RS232. standard D-sub connector.

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Publication 1766-PP001A-EN-P – July 2008

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C-more Operator Panels Overview

Touch Panel Part Number Key:

Screen Size:
6: 5.7”
8: 8.4”
10: 10.4”
12: 12.1”
15: 15.0”

Features:
blank: Full
R: Base

EA7-xxx-x

LCD Type:
S: STN
T: TFT

Color:
C: color
M: gray scale

Compatibility with our past!

All *C-more* panels have been designed to fit in the same dimensional cutout as a similar sized EZTouch panel*. In addition, *C-more* can convert and run existing EZTouch projects created with EZTouch Edit 3.1a sold by AutomationDirect. Just point, click and convert EZTouch projects to *C-more* and you are ready to go. All your hard work is transferred. To replace an EZTouch:

1) Remove it from its mounting cutout.
2) Click on your existing EZTouch project in the C-more browser. It will be converted to a C-more project, which can be downloaded into the new C-more panel.
3) Now mount the new C-more into the old cutout (using adapter plate where required) and reconnect your existing cables.

It’s that simple!

Getting started

Installing the software and configuring the *C-more* panel is simple. You will need the following to successfully connect and configure a project for the panel:

- ***C-more*** touch panel - 6”, 8”, 10”, 12” or 15” model
- ***C-more*** Programming Software, p/n EA-PGMSW
- ***C-more*** programming cable, USB or Ethernet
- 24 VDC switching power supply (min. 1.5A, switching) or the optional ***C-more*** AC Power Adapter
- Personal Computer - to run ***C-more*** programming software
- PLC communications cable (serial or Ethernet) to connect the ***C-more*** Touch Panel to your controller

* Replacement of an EZTouch wide bezel 6” model requires adapter EA-6-ADPTR.

Part Number	Description	Price
EA7-S6M-R	6-inch ***C-more*** grayscale STN touch panel (5.7 inch viewable screen), 15 shades of gray, 320 x 240 pixel QVGA screen resolution, 333 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), non-replaceable 50,000 hour half-life backlight. *Base Model: Built-in USB, no Ethernet or CompactFlash support.	<--->
EA7-S6C-R	6-inch ***C-more*** color STN touch panel (5.7 inch viewable screen), 256 colors, 320 x 240 pixel QVGA screen resolution, 333 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), non-replaceable 50,000 hour half-life backlight. *Base Model: Built-in USB, no Ethernet or CompactFlash support.	<--->
EA7-S6M	6-inch ***C-more*** grayscale STN touch panel (5.7 inch viewable screen), 15 shades of gray, 320 x 240 pixel QVGA screen resolution, 333 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), non-replaceable 50,000 hour half-life backlight. Built-in Ethernet and USB; supports CompactFlash.	<--->
EA7-S6C	6-inch ***C-more*** color STN touch panel (5.7 inch viewable screen), 256 colors, 320 x 240 pixel QVGA screen resolution, 333 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), non-replaceable 50,000 hour half-life backlight. Built-in Ethernet and USB; supports CompactFlash.	<--->
EA7-T6C	6-inch ***C-more*** color TFT touch panel (5.7 inch viewable screen), 65K colors, 320 x 240 pixel QVGA screen resolution, 333 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), non-replaceable 50,000 hour half-life backlight. Built-in Ethernet and USB; supports CompactFlash.	<--->
EA7-T8C	8-inch ***C-more*** color TFT touch panel (8.4 inch viewable screen), 65K colors, 640 x 480 pixel VGA screen resolution, 400 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), user replaceable 50,000 hour half-life backlight. Built-in Ethernet and USB; supports CompactFlash.	<--->
EA7-T10C	10-inch ***C-more*** color TFT touch panel (10.4 inch viewable screen), 65K colors, 640 x 480 pixel VGA screen resolution, 400 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), user replaceable 50,000 hour half-life backlight. Built-in Ethernet and USB; supports CompactFlash.	<--->
EA7-T12C	12-inch ***C-more*** color TFT touch panel (12.1 inch viewable screen), 65K colors, 800 x 600 pixel SVGA screen resolution, 400 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), user replaceable 50,000 hour half-life backlight. Built-in Ethernet and USB; supports CompactFlash.	<--->
EA7-T15C	15-inch ***C-more*** color TFT touch panel (15.0 inch viewable screen), 65K colors, 1024 x 768 XGA screen resolution, 400 MHz CPU, 24 VDC (20.4-28.8 VDC operating range), NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only), user replaceable 50,000 hour half-life backlight. Built-in Ethernet and USB; supports CompactFlash.	<--->
EA-PGMSW	***C-more*** touch panel Windows-based configuration software. Requires Windows® Vista, 2000 Service Pack 4 or XP Home or Professional Service Pack 2. Includes software installation guide and CD-ROM. Requires USB 1.1 or Ethernet connection to touch panel. Cables sold separately.	<--->
USB-CBL-AB3	Standard 3-ft. (0.9m) USB 2.0 cable, A-type connector to B-type connector, used to connect personal computer to any ***C-more*** touch panel for setup and programming. (Note: Touch panels require a 24 VDC power source for configuration and operation.)	<--->
USB-CBL-AB6	Standard 6-ft. (1.8m) USB 2.0 cable, A-type connector to B-type connector, used to connect personal computer to any ***C-more*** touch panel for setup and programming. (Note: Touch panels require a 24 VDC power source for configuration and operation.)	<--->
USB-CBL-AB10	Standard 10-ft (3 meter) USB 2.0 cable, A-type connector to B-type connector, used to connect personal computer to any ***C-more*** touch panel for setup and programming. (Note: Touch panels require a 24 VDC power source for configuration and operation.)	<--->
USB-CBL-AB15	Standard 15-ft. (4.6m) USB 2.0 cable, A-type connector to B-type connector, used to connect personal computer to any ***C-more*** touch panel for setup and programming. (Note: Touch panels require a 24 VDC power source for configuration and operation.)	<--->

C-more Part Number Cross Reference

EZTouch (as sold by AutomationDirect)			***C-more*** *
EZTouch 6", grayscale STN (0–45 °C)		*C-more 6" Adapter*	*C-more 6", grayscale STN (0–50 °C)*
EZ-S6M-R	*Requires:*	*EA-6-ADPTR*	*EA7-S6M-R* <--->
EZ-S6M-RS			
EZ-S6M-F	*Requires:*	*EA-6-ADPTR*	*EA7-S6M* <---> *(includes Ethernet)*
EZ-S6M-FS			
EZTouch 6", 128 Color STN (0–45 °C)		*C-more 6" Adapter*	*C-more 6", 256 Color STN or 65,536 Color TFT (0–50 °C)*
EZ-S6C-K	*Requires:*	*EA-6-ADPTR*	*EA7-S6C-R* <---> *(256 Color STN)*
EZ-S6C-KS			
EZ-S6C-F	*Requires:*	*EA-6-ADPTR*	*EA7-S6C* <---> *(256 Color STN; includes Ethernet)*
EZ-S6C-FS			*EA7-T6C* <---> *(65,536 Color TFT; includes Ethernet)*
EZ-S6C-FST			
EZTouch 8", 128 Color STN (0–40 °C)			*C-more 8", 65,536 Color TFT (0–50 °C)*
EZ-S8C-F			*EA7-T8C* <---> *(includes Ethernet)*
EZ-S8C-FS			
EZ-S8C-FST			
EZTouch 10", 128 Color TFT (0–50 °C)			*C-more 10", 65,536 Color TFT (0–50 °C)*
EZ-T10C-F			*EA7-T10C* <---> *(includes Ethernet)*
EZ-T10C-FS			
EZ-T10C-FST			
EZ-T10C-FSE			
No 12" EZTouch available			*C-more 12", 65,536 Color TFT (0–50 °C)*
			EA7-T12C <---> *(includes Ethernet)*
EZTouch 15", 128 Color TFT (0–45 °C)			*C-more 15", 65,536 Color TFT (0–50 °C)*
EZ-T15C-FS			*EA7-T15C* <---> *(includes Ethernet)*
EZ-T15C-FST			
EZ-T15C-FSE			

** Note: All C-more touch panels are NEMA 4/4X, IP-65 (when mounted correctly, for indoor use only), non-FDA.*

C-more Selection Guide & Specifications

Specification / Model	8" TFT color w/ full features	10" TFT color w/ full features	12" TFT color w/ full features	15" TFT color w/ full features
Part Number	***EA7-T8C***	***EA7-T10C***	***EA7-T12C***	***EA7-T15C***
Price	<--->	<--->	<--->	<--->
Display Actual Size and Type	8.4" TFT color	10.4" TFT color	12.1" TFT color	15.0" TFT color
Color Scale	65,536 colors			
Display Viewing Area	6.73" x 5.05" [170.9 mm x 128.2 mm]	8.31" x 6.24" [211.2 mm x 158.4 mm]	9.47" x 7.62" [240.6 mm x 184.5 mm]	11.97" x 8.98" [304.1 mm x 228.1 mm]
Screen Pixels	640 x 480 (VGA)		800 x 600 (SVGA)	1024 x 768 (XGA)
Display Brightness	300 cd/m² (NITS)	270 cd/m² (NITS)	260 cd/m² (NITS)	220 cd/m² (NITS)
LCD Panel Dot Pitch	0.267 mm x 0.267 mm	0.33 mm x 0.33 mm	0.267 mm x 0.267 mm	0.297 mm x 0.297 mm
Backlight Average Lifetime*	Approximately 50,000 hours			
Backlight User Replaceable	Yes - Part Number EA-xx-BULB, xx = panel size			
Touch Panel Type	Analog Resistive (10-bit resolution, 1024 x 1024 touch area)		Analog Resistive (12-bit resolution, 4096 x 4096 touch area)	
CPU Type	32-Bit RISC CPU (400 MHz)		32-Bit RISC CPU (400 MHz) Plus Graphic Accelerator Chip	
Battery	Replaceable battery – ADC Part # D2-BAT-1 (Manufacturer Part # CR2354)			
System Memory	SDRAM 32 MBytes		SDRAM 64 MBytes	
System Flash Memory	FLASH 32 MBytes		FLASH 64 MBytes	
Backup Memory (SRAM)	Control data backup memory (SRAM) 256 KBytes			
Logging Data Memory	CompactFlash Memory Card p/n EA-FLASH-128MB, industrial grade, high speed (Optional) or USB Pen Drive p/n SDCZ4-2048-A10 (Optional)			
Number of Screens	Up to 999 – limited by available project memory (10 MBytes)		Up to 999 – limited by available project memory (40 MBytes)	
Realtime Clock	Built into panel (PLC clock is still accessible if available)			
Calendar – Month/Day/Year	Yes - battery backup			
Screen Saver	Yes, backlight turns off after a 30–1500 minute adjustable time, or can be disabled			
Serial PLC Interface	Serial PLC Port: RS-232C/422/485 15-Pin D-sub (female)			
USB Port – Type B	Download/Program – USB Port – type B (ver. 1.2)			
USB Port – Type A	Port for USB device options – type A (ver. 1.2)			
Ethernet Port	Ethernet 10/100 Base-T			
Audio Line Out	Audio Line Out, 1 Volt rms, stereo – requires amplifier and speaker(s)			
CF Card – Slot #1	Optional: CompactFlash Memory Card p/n EA-FLASH-128MB, industrial grade, high speed, CF slot #1 located on top side of touch panel.			
Expansion Assembly (p/n EA-EXP-OPT)	Optional: Use the CF Card Interface Module p/n EA-CF-IF in the right slot of the Expansion Assembly for installing CF card - Slot #2. The left slot of the Expansion Assembly is for future options.			
Supply Power	24 VDC, -15%, +20% (20.4–28.8 VDC operating range) (Use an AC Power Adapter, p/n EA-AC, to power the touch panel from a 100-240 VAC, 50/60 Hz. power source.)			
Power Consumption	15 W @ 24 VDC	17 W @ 24 VDC	20 W @ 24 VDC	33 W @ 24 VDC
Recommended Input Fuse	3.0 A DC slow blow			
Operating Temperature	0 to 50°C (32 to 122°F)			
Storage Temperature	–20 to +60°C (–4 to +140°F)			
Humidity	10–85% RH, non-condensing			
Noise Immunity	Noise voltage: 1000 Vp-p, Pulse width: 1 µs, Rise time: 1 ns			
Withstand Voltage	1000 VDC for 1 minute, between DC power supply input terminal and safety ground			
Insulation Resistance	Over 20 MΩ between DC power supply input terminal and safety ground			
Vibration	IEC61131-2 compliant, 10–57 Hz: 0.075 mm amplitude, 57–150 Hz 1.0 G: 10 sweep cycles per axis on each of 3 mutually perpendicular axes			
Shock	15 G peak, 11 ms duration, 2 shocks per axis, on 3 mutually perpendicular axes			
Enclosure	NEMA 4/4X , IP-65 (When mounted correctly. For indoor use only.)			
Agency Approvals	UL, cUL, CE			
Dimensions	8.748" x 10.894" x 2.053" [222.2 mm x 276.7 mm x 52.1 mm]	10.669" x 13.661" x 2.079" [271.0 mm x 347.0 mm x 52.8 mm]	11.024" x 13.366" x 2.075" [280.0 mm x 339.5 mm x 52.7 mm]	13.000" x 16.748" x 2.048" [330.2 mm x 425.4 mm x 52.0 mm]
Weight	2.60 lb. [1,180 g]	3.55 lb. [1,610 g]	4.59 lb. [2,080 g]	7.01 lb. [3,180 g]

**** NOTE: The backlight average lifetime is defined as the average usage time it takes before the brightness becomes 50% of the initial brightness. The lifetime of the backlight depends on the ambient temperature. The lifetime will decrease under low or high temperature usage.***

C-more 8" TFT Color Touch Panel - Full Model

The *C-more* 8″ TFT color full featured touch panel uses a 8.4" diagonal analog (1024 X 1024) touch screen with a 640 x 480 (VGA) pixel resolution TFT LCD (liquid crystal display) with 65K colors. *C-more* 8″ touch panels can be directly mounted into any EZTouch 8″ touch panel cutouts.

Part No. EA7-T8C

<---->

Features

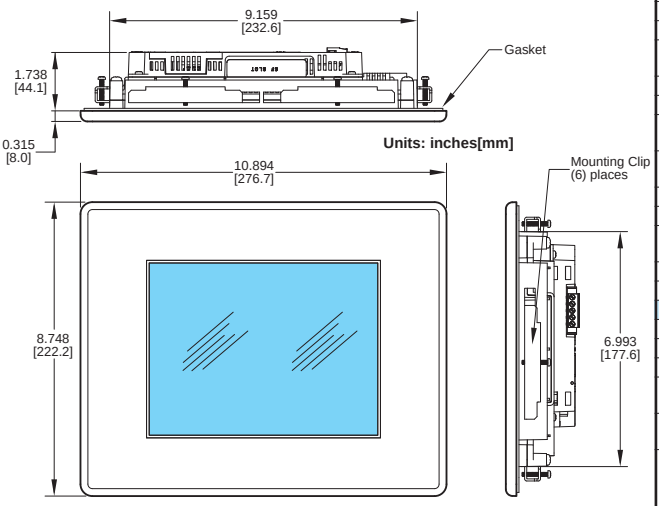
- 8.4" diagonal color TFT (Thin Film Transfer) LCD display with 65K colors
- 640 x 480 pixel resolution
- 300 NITS display brightness
- 50,000 hour average backlight lifetime, user replaceable
- Analog resistive (1024 X 1024) touch screen allowing unlimited touch areas
- USB port B (program/download) and USB port A (USB device options)
- Ethernet 10/100 Base-T port (program/download & PLC comm)
- Serial PLC interface (RS-232/422/485)
- 1 GByte CompactFlash card slot, built-in
- Expansion assembly (optional) for CompactFlash devices (use with optional CF Card Interface Module)
- 24 VDC powered, 110 VAC power adapter (optional)
- Audio Line Out, stereo - requires amplifier and speaker(s)
- 10 MByte project memory
- Data logging
- 0 to 50°C (32 to 122°F) operating temperature range
- NEMA 4/4X, IP-65 compliant when mounted correctly, indoor use only
- Slim design saves panel space
- UL, cUL & CE agency approvals
- 2-year warranty from date of purchase

Function	Available	Associated Features
Ethernet	Yes	FTP - Email - Web Server
USB	Yes	Data Logging
Compact Flash	Yes	Data Logging/Project
Expansion Assembly	Yes	CF Module & future modules
Audio Out	Yes	Speaker/Amplifier Connection

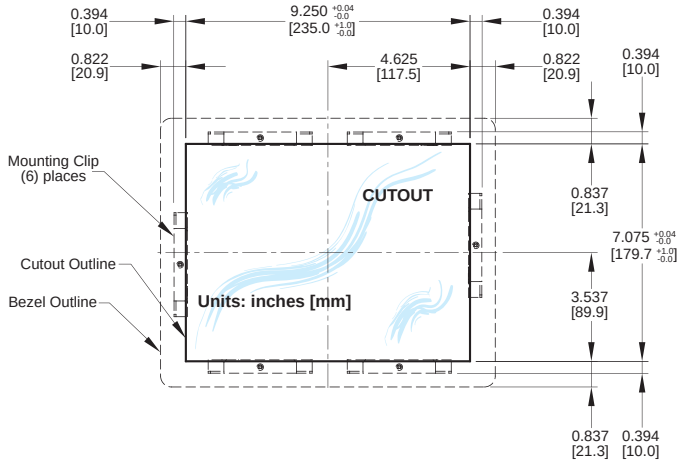
PLC Drivers	
Serial	**Avail.**
AutomationDirect CLICK	Yes
Direct LOGIC K-sequence	Yes
Direct NET	Yes
Modbus (Koyo Addressing)	Yes
Allen-Bradley DF1 Full & Half Duplex	Yes
Allen-Bradley PLC5 DF1	Yes
Allen-Bradley DH-485	Yes
Allen-Bradley DF1 Full & Half Duplex - Tag Based *	Yes
Modbus RTU	Yes
Entivity Modbus RTU	Yes
GE SNPX (90/30, 90/70), Micro 90, VersaMax Micro)	Yes
Omron Host Link C200 Adapter C500	Yes
Omron FINS (CJ1, CS1)	Yes
Mitsubishi FX	Yes
Mitsubishi Q02, Q02H, Q06H, Q12H, Q25H	Yes
Mitsubishi Q, QnA Serial	Yes
Siemens PPI (S7-200 CPU)	Yes
Ethernet	
Direct LOGIC Ethernet	Yes
Modbus TCP/IP	Yes
Entivity Modbus TCP/IP	Yes
Allen-Bradley EtherNet/IP™ Server - Generic I/O Messaging*	Yes
Allen-Bradley EtherNet/IP Client - Tag Based*	Yes
Allen-Bradley EtherNet/IP Client - MicroLogix 1100 & SLC 5/05 via native Ethernet port; MicroLogix 1000, 1100, 1200, 1500 & SLC 5-03, 04, 05 via AB ENI Adapter	Yes
Omron FINS	Yes
Mitsubishi Q, QnA Ethernet	Yes
Siemens (S7-300 CPU, S7-200)	Yes

* ControlLogix™ and CompactLogix™

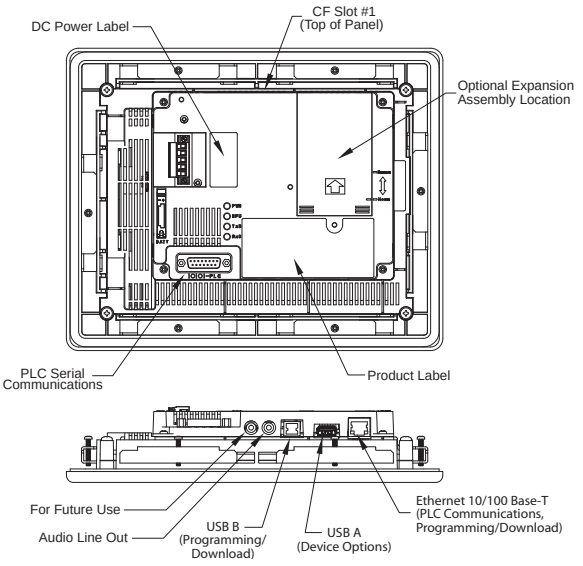
Dimensions



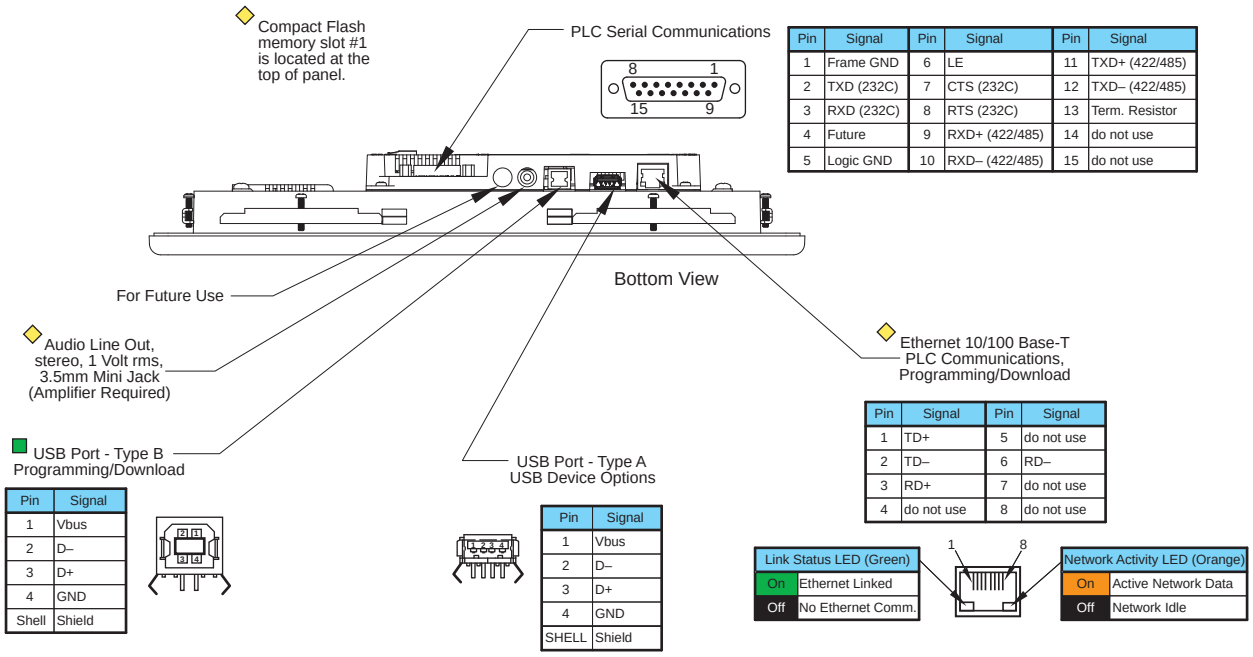
Mounting Cutout



Ports & Memory Expansion



C-more Communication Ports



Pin	Signal	Pin	Signal	Pin	Signal
1	Frame GND	6	LE	11	TXD+ (422/485)
2	TXD (232C)	7	CTS (232C)	12	TXD– (422/485)
3	RXD (232C)	8	RTS (232C)	13	Term. Resistor
4	Future	9	RXD+ (422/485)	14	do not use
5	Logic GND	10	RXD– (422/485)	15	do not use

Pin	Signal	Pin	Signal
1	TD+	5	do not use
2	TD–	6	RD–
3	RD+	7	do not use
4	do not use	8	do not use

Pin	Signal
1	Vbus
2	D–
3	D+
4	GND
Shell	Shield

Pin	Signal
1	Vbus
2	D–
3	D+
4	GND
SHELL	Shield

Note: Device is not available on Base Feature touch panels, part numbers EA7-S6M-R and EA7-S6C-R.

Note: Use USB Programming Cable, p/n USB-CBL-AB15.

Ethernet Port

The Ethernet port has several uses:

- Download program to panel
- Communicate to PLCs/PCs
- Send e-mail
- Access FTP server
- Act as a Web server

The Ethernet port has an RJ-45 8-wire modular connector with green and orange LEDs.

- The orange LED indicates the Ethernet communication status. It illuminates when there is data activity on the network.
- The green LED indicates link status and illuminates when a link is established.

Ethernet connections to PLCs/PCs:

- ***Direct***LOGIC Ethernet
- Modbus TCP/IP
- Allen-Bradley EtherNet/IP™ Server - Generic I/O Messaging (ControlLogix™, CompactLogix™, and FlexLogix™)
- Allen-Bradley EhterNet/IP Client - Tag Based (ControlLogix, CompactLogix, and FlexLogix™)
- Allen-Bradley EhterNet/IP Client - MicroLogix 1100 & SLC 5/05, both via native Ethernet port
- Allen-Bradley MicroLogix 1000, 1100, 1200, 1500, SLC 5-03/04/05, all via ENI Adapter
- Entivity Modbus TCP/IP
- Omron Ethernet FINS
- Siemens Ethernet ISO over TCP

Note: The base panels (-R part numbers) do not include an Ethernet port, and do not have these capabilities.

USB Port B

Program *C-more* via the USB programming port. It's fast and easy, with no baud rate settings, parity, or stop bits to worry about. We stock standard USB cables for your convenience. USB Port B can be used to upload or download projects to and from a PC.

USB Port A

The Universal Serial Bus (USB) Port A is a standard feature for all models and can be used to connect various USB HID (Human Input Device) devices to the panel, such as:

- USB pen drives, (SDCZ4-2048-A10)
- USB keyboards
- USB barcode scanners
- USB card scanners

C-more can log data to the USB pen drive as well as load projects to the panel from the pen drive. You can also back up project files and panel firmware.

Sound Interface (Audio Line Out)

When attached to an amplifier and speaker(s), *C-more* can play warning sounds or pre-recorded messages such as: "conveyor is jammed". *C-more* supports WAV type files. The output is stereo.

PLC Port

The PLC port is an RS-232, RS-422 or RS-485 female 15-pin D-sub connector. Use this port for serial connections to PLCs. The port supports the following PLC protocols:

All AutomationDirect.com PLCs:
- ***Direct***LOGIC K-sequence
- ***Direct***NET
- Modbus (Koyo Addressing)
- CLICK

Allen Bradley:
- DF1 Full & Half Duplex
- DF1 Full & Half Duplex - Tag Based
- PLC5 DF1
- DH485

Modbus RTU
Entivity Modbus RTU
GE SNPX (90/30, 90/70, Micro 90, VersaMax Micro)
Omron:
- Host Link (C200 Adapter, C500)
- FINS (CJ1, CS1)

Mitsubishi:
- Melsec FX
- Q/QnA

Siemens PPI (S7-200 CPU)

C-more PLC Comm Protocols & Cables

PLC Compatibility Table

PLC Family	Model		Protocols
Allen-Bradley	MicroLogix 1000/1100/1200/1500, SLC 5-/01/02/03, PLC5		DH485/AIC/AIC+
	MicroLogix 1000, 1100, 1200 and 1500		DF1 Half Duplex; DF1 Full Duplex
	SLC 5-/03/04/05		
	ControlLogix™, CompactLogix™, FlexLogix™		
	PLC-5		DF1 Full Duplex
	ControlLogix, CompactLogix, FlexLogix - Tag Based		DF1 Half Duplex; DF1 Full Duplex
	ControlLogix, CompactLogix, FlexLogix - Generic I/O Messaging		EtherNet/IP Server
	ControlLogix, CompactLogix, FlexLogix - Tag Based		EtherNet/IP Client
	MicroLogix 1100 & SLC 5/05, both via native Ethernet port		
	MicroLogix 1000, 1100, 1200, 1500 & SLC 5-03/04/05, all via ENI Adapter		
Modbus TCP/IP	Modbus TCP/IP devices		Modbus TCP/IP
GE	90/30, 90/70, Micro 90, VersaMax Micro		SNPX
Mitsubishi	FX Series		FX Direct
	Q02, Q02H, Q06H, Q12H, Q25H		Q CPU
	Q, QnA Serial		QnA Serial
	Q, Qna Ethernet		QnA Ethernet
Omron	C200 Adapter, C500		Host Link
	CJ1/CS1 Serial, CJ1/CS1 Ethernet		FINS
Modicon	984 CPU, Quantum 113 CPU, AEG Modicon Micro Series 110 CPU: 311-xx, 411-xx, 512-xx, 612-xx		Modbus RTU
Siemens	S7-200 CPU, RS-485 Serial		PPI
	S7-300 CPU, S7-200 Ethernet		Ethernet ISO over TCP
CLICK	all		AutomationDirect Modbus (CLICK)
*Direct*LOGIC	DL05/DL06	all	K-Sequence
			*Direct*NET
			Modbus (Koyo addressing)
		H0-ECOM/H0-ECOM100	*Direct*LOGIC Ethernet
	DL105	all	K-Sequence
	DL205	D2-230	K-Sequence
		D2-240	K-Sequence
			*Direct*NET
		D2-250/D2-250-1/D2-260	K-Sequence
			*Direct*NET
			Modbus (Koyo addressing)
		D2-240/D2-250-1/D2-260 Using DCM	*Direct*NET
			Modbus (Koyo addressing)
		H2-ECOM/H2-ECOM100	*Direct*LOGIC Ethernet
	DL305	D3-330/330P (Requires the use of a Data Communications Unit)	*Direct*NET
		D3-340	*Direct*NET
		D3-350	K-Sequence
			*Direct*NET
			Modbus (Koyo addressing)
		D3-350 DCM	*Direct*NET
			Modbus (Koyo addressing)
	DL405	D4-430	K-Sequence
			*Direct*NET
		D4-440	K-Sequence
			*Direct*NET
		D4-450	K-Sequence
			*Direct*NET
			Modbus (Koyo addressing)
		All with DCM	*Direct*NET
			Modbus (Koyo addressing)
		H4-ECOM/H4-ECOM100	*Direct*LOGIC Ethernet
	H2-WinPLC (Think & Do) Live V5.2 or later and Studio any version		Think & Do Modbus RTU (serial port)
	H2-WinPLC (Think & Do) Live V5.5.1 or later and Studio V7.2.1 or later		Think & Do Modbus TCP/IP (Ethernet port)

Cable Description	Cable Part Number	Price
AutomationDirect CLICK, *Direct*LOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C)	***EA-2CBL***	<---
*Direct*LOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C)	***EA-2CBL-1***	<---
*Direct*LOGIC PLC RJ-11 port, D3-340 (RS-232C)	***EA-3CBL***	<---
*Direct*LOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C)	***EA-4CBL-1***	<---
*Direct*LOGIC PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM's (RS-232C)	***EA-4CBL-2***	<---
Allen-Bradley MicroLogix 1000, 1100, 1200 & 1500 (RS-232C)	***EA-MLOGIX-CBL***	<---
Allen-Bradley SLC 5-03/04/05 ControlLogix, CompactLogix, FlexLogix, DF1 port (RS-232C)	***EA-SLC-232-CBL***	<---
Allen-Bradley PLC-5 DF1 port (RS-232C)	***EA-PLC5-232-CBL***	<---
Allen-Bradley SLC 500 DH485 port (RS-485A)	***EA-DH485-CBL***	<---
GE 90/30, 90/70, Micro 90, VersaMax Micro 15-pin D-sub port (RS-422A)	***EA-90-30-CBL***	<---
MITSUBISHI FX Series 25-pin port (RS-422A)	***EA-MITSU-CBL***	<---
MITSUBISHI FX Series 8-pin mini-DIN (RS-422A)	***EA-MITSU-CBL-1***	<---
OMRON Host Link C200 Adapter, C500 (RS-232C)	***EA-OMRON-CBL***	<---

NOTE: EZTouch serial PLC communication cables are compatible with C-more touch panels.

EA-2CBL

EA-2CBL-1

C-more Computer Programming Connections

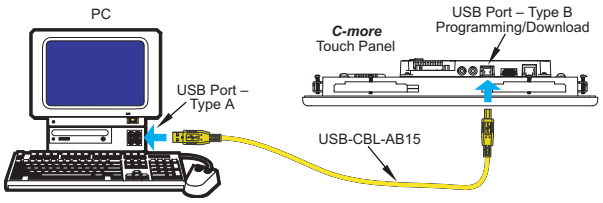
Using the *C-more* Programming Software for project development, the touch panel can be connected to a PC (personal computer) in one of several ways:

- Connect a USB Programming Cable (USB-CBL-AB15) from a USB port type A on the PC to the USB type B programming port on the C-more touch panel. The USB connection is for direct connection only and does not support USB hubs.
- Connect the ***C-more*** touch panel to a PC via an Ethernet hub or switch, and CAT5 Ethernet cables (full feature panels only). Multiple panels can be programmed in this configuration.
- Use an Ethernet crossover cable directly between the ***C-more*** touch panel's Ethernet port and the PC Ethernet port (full feature panels only).

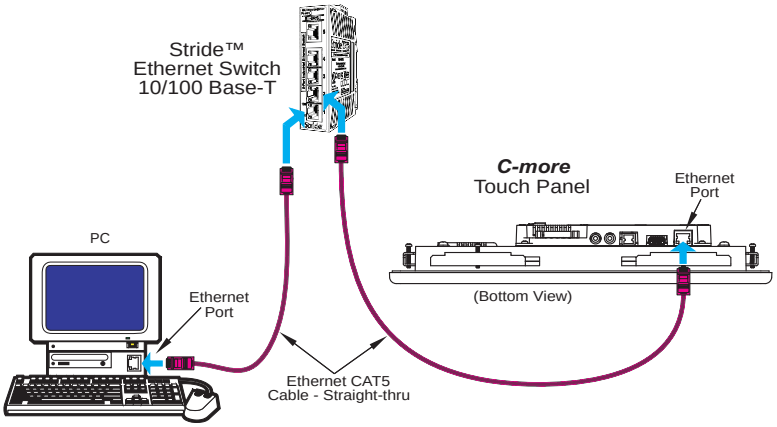
Following are the minimum system requirements for running *C-more* Programming Software, p/n EA-PGMSW, on a PC:

- Personal Computer with a 333 MHz or higher processor (CPU) clock speed recommended; (Windows® 2000 with Service Pack 4 or Windows® XP, 800 MHz or higher processor (CPU) clock speed recommended (Windows® Vista (32 bit)); Intel® Pentium/Celeron family, or AMD® K6/Athlon/Duron family, or compatible processor recommended
- Keyboard and Mouse or compatible pointing device
- Super VGA color video adapter and monitor with at least 800 x 600 pixels resolution (1024 x 768 pixels recommended) 64K color minimum
- 300 MB free hard-disk space
- 128 MB free RAM (512 MB recommended); 512 MB free RAM (1 GB recommended) for Vista
- CD-ROM or DVD drive for installing software from the CD
- USB port or Ethernet 10/100 Mbps port for project transfer from software to touch panel (Ethernet port not available on -R models)
- Operating System - Windows® Vista, Windows® XP Home / Professional Edition or Windows® 2000 with Service Pack 4.

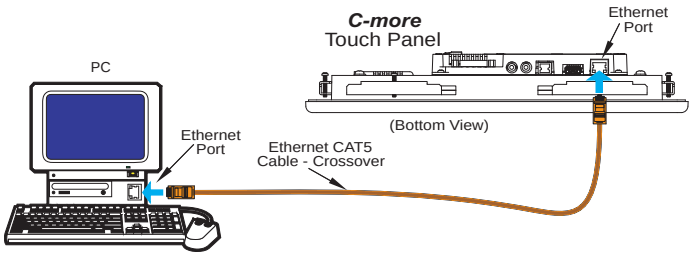
USB Connectivity



Ethernet Connectivity via a Hub or Switch



Ethernet Direct Connection



USB Programming Cable

Part No. USB-CBL-AB15

<---->

Other lengths available see USB-CBL-AB3, USB-CBL-AB6, USB-CBL-AB10 on page 9-27

Stride™ Ethernet Switch

Part No. SE-SW5U

<---->

Ethernet Configuration Kit

Part No. RT-CNFGKIT

<---->

The Ethernet Configuration Kit includes a five-port 10/100 Base-T Ethernet switch, four straight-through cables, and one crossover cable. (The cables are at least five feet in length.) The kit provides a great convenience for configuring systems, demonstration systems or basic control projects using Ethernet.

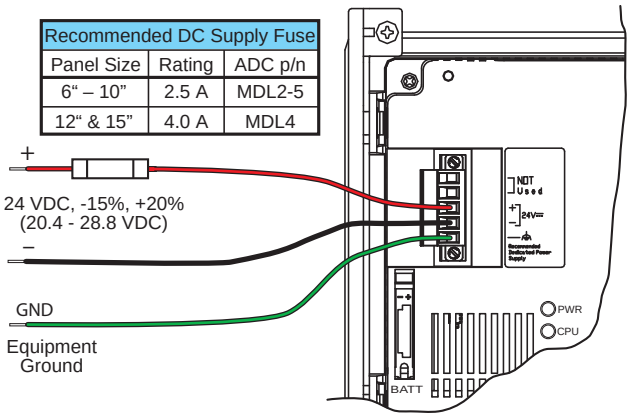
C-more Power Connection Wiring

Providing Power to the Touch Panel

- Connect a dedicated 24 VDC switching power supply rated for a minimum of 1.5 Amps to the DC connector on the rear of the ***C-more*** touch panel. Connect the ground terminal to a proper equipment ground.
- or, install a ***C-more*** AC Power Adapter (EA-AC) to the rear of the touch panel and connect an AC voltage source of 100-240 VAC, 50/60Hertz, to its AC connector.
- then, turn on the power source and check the LED status indicators on the rear of the ***C-more*** touch panel for proper operation.

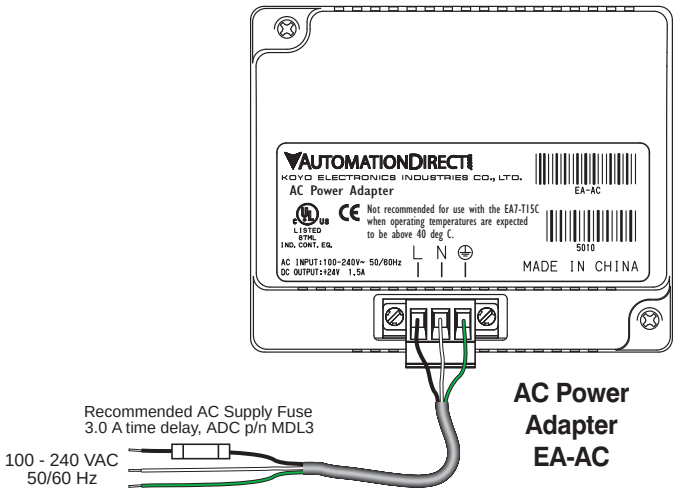
DC Wiring

Recommended DC Supply Fuse		
Panel Size	Rating	ADC p/n
6" – 10"	2.5 A	MDL2-5
12" & 15"	4.0 A	MDL4



Recommended Power Supply:
AutomationDirect Part No. PS24-050D

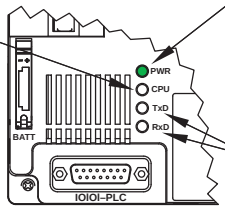
AC Wiring



AC Power Adapter EA-AC

C-more LED Status Indicators

CPU Status LED (Green, Orange & Red)	
Off	Power Off
Green	Normal – CPU Run State
Red	Memory Error
Blinking Red	Operating System not found
Blinking Orange	LCD Backlight Failure
Blinking Green	Power Loss Detection



Rear View

Power LED (Green)	
On	Power On
Off	Power Off

Serial TxD/RxD LED (Green)	
On	Comm. is active
Off	No communication

<u>WARNING:</u> To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

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The C-more Family

Features	Base Model	Full Featured Model
More durable		
- 50,000 hour bulb life	y	y
- Replaceable bulbs on 8", 10", 12", and 15" models	-	y
Better screens		
- Bright screens (NIT ratings)	y	y
- TFT with 65,536 colors available on all sizes	-	y
- 256 color STN screens on 6" models	y	y
More flexibility		
- Analog touch screen (no touch cell grid!)	y	y
- Overlapping objects	y	y
Better communications		
- USB Port-A	y	y
- USB Port-B	y	y
- Built-in Ethernet port	-	y
- Built-in serial communications	y	y
More capacity		
- Built-in 10Mbyte project memory	y	y
- CompactFlash card slot #1 (data logging)	-	y
- Supports USB memory devices (data logging)	y	y
- Symbol Factory™ library with 4,000 symbols.	y	y
More objects		
- Over 50 objects including 16 pen trends, switches, PID trend faceplate, PID bar graph faceplate	y	y
- Create custom objects and store in user library	y	y
- Improved multilanguage support for objects in German, French, Italian, Spanish, Chinese and Japanese characters	y	y
More high end features		
- Project simulator	y	y
- Bitmap animation	y	y
- E-mail messaging	-	y
- Built-in FTP server	-	y
- Pop-up window within a touch screen	y	y
- Data logging to USB/CompactFlash	USB only	y
- Historical alarms with time and date stamp along with alarm frequency reporting.	y	y
- Supports simultaneous communication to multiple brands of PLCs.	-	y
- Event Manager	y	y
- Audio line out	-	y
Improved ease of use		
- Improved multi-language support.	y	y
- Improved dialog boxes	y	y
- "Power User" property box	y	y
- More fonts and sizes	y	y
- Master background screens	y	y
- Improved recipes	y	y
Optional accessories		
- Optional "Screw on" 110VAC power supply	y	y
- Expansion unit for additional CompactFlash	-	y

Supported drivers

All AutomationDirect.com *Direct*LOGIC PLCs and PC-based control:

K-Sequence (DL05/06/105/205/350/405)

*Direct*NET (DL05/06/105/205/350/405)

*Direct*NET (DL330/340)

*Direct*LOGIC Modbus (DL05/06/205/350/405)

ECOM Ethernet (DL05/06/205/405) Ethernet

Entivity Modbus RTU (H2-WinPLC)

Entivity Modbus TCP/IP Ethernet (H2-WinPLC)

Modicon Modbus RTU

Modicon Modbus TCP/IP Ethernet

Allen-Bradley:

AB DF1 Full Duplex (SLC500)

AB DF1 Half Duplex (MicroLogix/SLC500)

AB DF1 Full Duplex (PLC5)

AB DH485 (MicroLogix/SLC500/AIC)

AB DF1 Full Duplex (MicroLogix)

AB DF1 Full Duplex Tag-Based (Control/CompactLogix /FlexLogix)

AB DF1 Half Duplex Tag-Based (Control/CompactLogix /FlexLogix)

AB EtherNet/IP Client (MicroLogix 1100)

AB EtherNet/IP Client (SLC5/05/ENI Adapter)

AB EtherNet/IP Client Tag-Based (Control/CompactLogix /FlexLogix)

AB EtherNet/IP Server:

(Generic IO Messaging) (Control/CompactLogix/FlexLogix)

GE 90/30 and 90/70 SNPX

Omron Host Link Adapter (C200/C500)

Omron FINS Serial (CS/CJ)

Mitsubishi Direct FX

Allen-Bradley Tag Import

Import tags directly from the RSLogix 5000 L5K file. *C-more* Software now supports direct insertion of ControlLogix, CompactLogix and FlexLogix tags from the PLC into *C-more* (no mapping or translations required).

Hardware User Manual

EA-USER-M

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Afin de réduire au minimum le risque d'éventuels problèmes de sécurité, vous devez respecter tous les codes locaux et nationaux applicables régissant l'installation et le fonctionnement de votre équipement. Ces codes diffèrent d'une région à l'autre et, habituellement, évoluent au fil du temps. Il vous incombe de déterminer les codes à respecter et de vous assurer que l'équipement, l'installation et le fonctionnement sont conformes aux exigences de la version la plus récente de ces codes.

Vous devez, à tout le moins, respecter toutes les sections applicables du Code national de prévention des incendies, du Code national de l'électricité et des codes de la National Electrical Manufacturer's Association (NEMA). Des organismes de réglementation ou des services gouvernementaux locaux peuvent également vous aider à déterminer les codes ainsi que les normes à respecter pour assurer une installation et un fonctionnement sûrs.

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AIRLINK™ RAVEN XE
INTELLIGENT 3G GATEWAY FOR EV-DO REV A NETWORKS

KEY FEATURES

Product and Benefits
- Persistent 3G Network Connectivity
- Low Power Consumption
- Compact Size for Easy Integration
- Rugged Aluminum Case
- Certified for Hazardous Environments
- Remote Management and Configuration

Highly Intelligent
- Security
  - IPsec VPN
  - GRE Tunneling
- Events Reporting Engine
- Embedded Protocols
- Highly Configurable

TECHNICAL SPECIFICATIONS

Technology
CDMA EV-DO Revision A
With Fallback to:
CDMA 1x
CDMA IS-95

Bands
800 Mhz Cellular
1900 Mhz PCS

Environmental
Operating Temperature:
-30° to 70° Celsius
Storage Temperature:
-40° to 85° Celsius

Dimensions
76 mm x 25 mm x 104 mm
3.0 in x 1.0 in x 4.1 in
185 grams
6.5 oz

Power Consumption (@12V DC)
Transmit (Typical/Max) 140.250 mA
Idle 35 mA
Input Current 30 mA to 300 mA
Input Voltage 9 - 28 V DC

Standards/Approvals
FCC
Industry Canada
Class I Div 2
RoHS
Carrier specific approvals

Host Interfaces
Ethernet: 10BaseT RJ-45
USB Type B5 Pin mini
Antenna Connection:
Cellular - 50 Ohm SMA
Receive Diversity - 50 Ohm SMA
I/O Ports: 2

Application Interfaces
TCP/IP, UDP/IP, DHCP, HTTP, SNMP, SMTP, SMS, MSCI, Modbus and more

LED Indicators
Network
Signal
Activity
Power

Reliability and Support
Since 1993, Sierra Wireless has been delivering high quality data products backed by a dedicated field and call center support team. The AirLink brand stands for reliable, intelligent data devices that enhance operations while reducing costs and increasing revenues.

SIERRA WIRELESS, CONNECTING PEOPLE AND SYSTEMS TO MOBILE BROADBAND NETWORKS AROUND THE WORLD

Sierra Wireless products connect people and machines to wireless networks around the world. We offer an advanced, comprehensive product line, addressing consumer, enterprise, original equipment manufacturer, and specialized vertical industry markets. Our solutions are used for mobile computing, transportation, industrial M2M (machine-to-machine), enterprise, residential and consumer communications applications. We also provide professional services to customers requiring expertise in wireless design, integration, and carrier certification.

For more information, please visit our website, www.sierrawireless.com.

SIERRA WIRELESS
HEART OF THE WIRELESS MACHINE®

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P/N RXECDMA 092809

SIERRA WIRELESS

AIRLINK™ RAVEN XE
(EV-DO REV A NETWORKS)

3G Rugged Ethernet Gateway

Powerful, intelligent connectivity

24/7 unmanned operation

Sleek, compact form factor

AIRLINK™ RAVEN XE
INTELLIGENT 3G GATEWAY FOR EV-DO REV A NETWORKS

Ethernet Gateway

The Raven XE provides 3G connectivity in a compact and sleek form factor ideal for enterprise customers requiring 24/7 unmanned operation of remote assets and high-speed broadband connectivity. The Raven XE is designed to handle rugged and robust commercial mobile and portable network connectivity applications.

The high-speed Ethernet interface and 3G optimized architecture make the Raven XE ideal for various commercial fixed or portable network connectivity applications.

Rugged Intelligence

Powered by ALEOS™ technology, the long-standing industry benchmark for reliable and feature-rich intelligence, the Raven XE provides the solution for enterprise customers requiring 24/7 unmanned operation of remote assets and high-speed broadband connectivity. Embedded machine protocols, ease of integration, and security protocols like IPSec VPN and GRE tunneling make the Raven XE the ideal solution for commercial and industrial applications requiring data security.

Ideal for Broadband Data Applications

The Raven XE is a versatile tool for a myriad of 3G data applications. Its small form factor enables integration into close quarters, such as ATMs, kiosks and media servers, while it's rugged design makes it an ideal option for surveillane and digital signage. Further, it's routing features, like NAT and Port Forwarding enabling the Raven XE to be connected to a switch for a routing solution.

Applications
• Surveillance/Streaming Video
• Retail/POS
• Vending/Kiosk
• Banking/ATM
• Digital Signage
• Remote Monitoring and Control
• Business Continuity
• Wireless Networking

- EASY INTEGRATION WITH CUSTOMER EQUIPMENT
- CONSISTENT USER EXPERIENCE ACROSS MULTIPLE WIRELESS NETWORK TECHNOLOGIES
- ETHERNET CONNECTIVITY FOR EASY SETUP
- REMOTE MANAGEMENT AND TROUBLESHOOTING
- IPSEC VPN TO PROTECT YOUR DATA FROM UNAUTHORIZED ACCESS

POWERED BY: ALEOS™

ALEOS™

ALEOS Intelligence

Embedded Technology from Sierra Wireless

KEY BENEFITS

- Simplifies Installation and maintenance
- Persistent network connectivity
- Real-Time Notification
- Over-The-Air (OTA) Upgrades
- Device Management & Control

ACEware™ AirLink Control Environment

ACEware™ Device Management

The Sierra Wireless suite of tools and utilities, leveraging the intelligence of ALEOS. ACEware simplifies deployment as well as remote monitoring, control and management of the entire wireless solution.

The ACEware suite of device management tools include:

ACEmanager	Remote device monitoring and configuration tool. Included with every AirLink device.
ACEnet	Enterprise-grade, hosted remote management application. Enables management of an entire fleet of AirLink gateways and routers.

* For more information on ALEOS and ACEware, please reference the ALEOS datasheet

Section 5

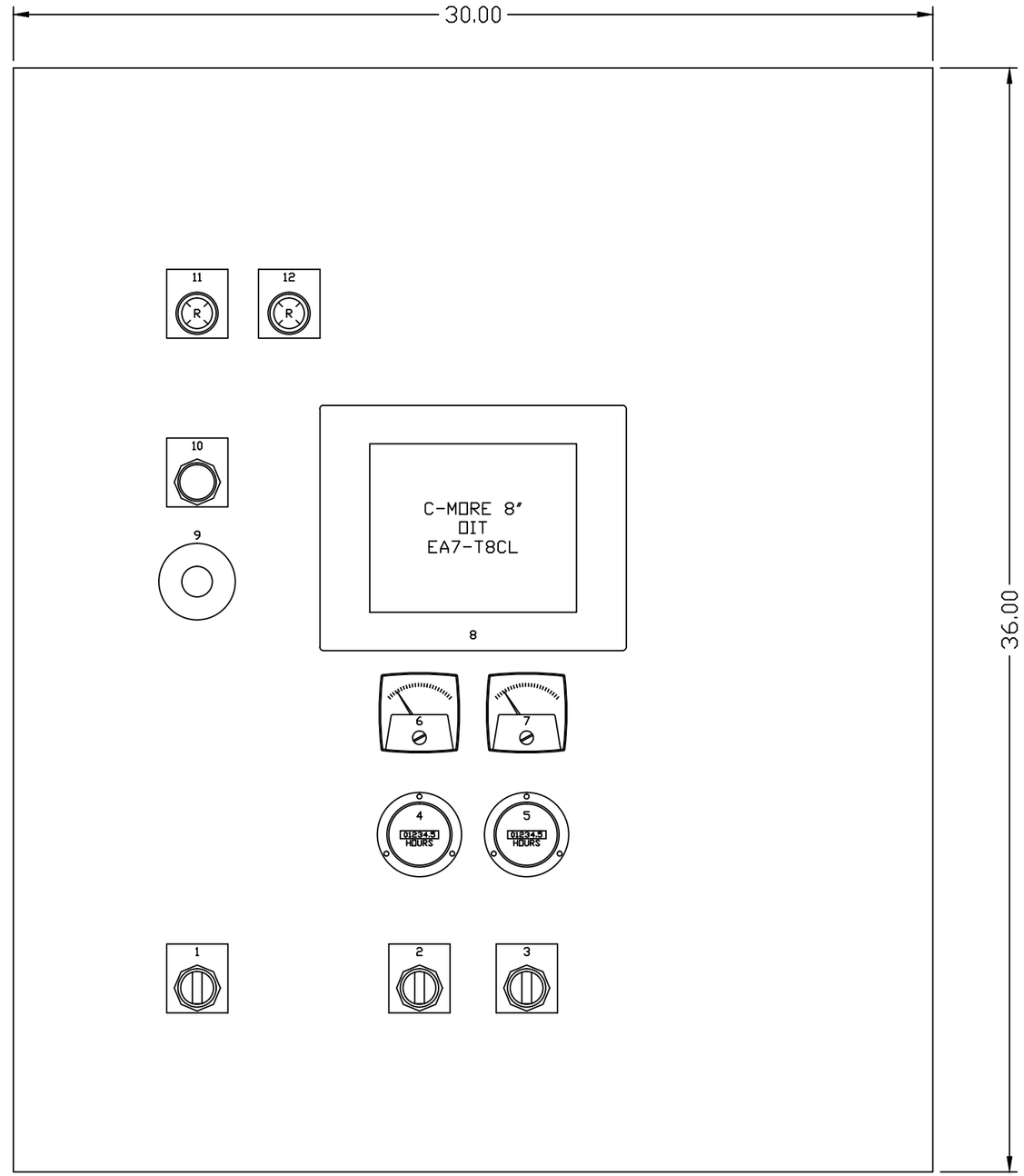
Electrical Engineer Drawings

DATE	BY	REVISION
05/14/15	CUST	REV-1

LEGEND PLATE TABLE

ITEM #	LINE 1	LINE 2	LINE 3
1	CONTROL POWER	OFF ON	
2	EXTRACTION WELL	PUMP P-01	HAND OFF AUTO
3	OWS TRANSFER	PUMP P-02	HAND OFF AUTO
4	HOURMETER	P-01	
5	HOURMETER	P-02	
6	AMMETER	P-01	
7	AMMETER	P-02	
8	OIT		
9	EMERGENCY	STOP	
10	RESET		
11	EMERGENCY	STOP	
12	TREATMENT	SYSTEM	ALARM
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

NOTE: SELECTOR SWITCHES ARE ILLUMINATED



ESD
Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
PANEL LAYOUT

DRAWN BY: PMG

ENGINEERING: DSH

MFG:

QC:

DATE: 04/21/15

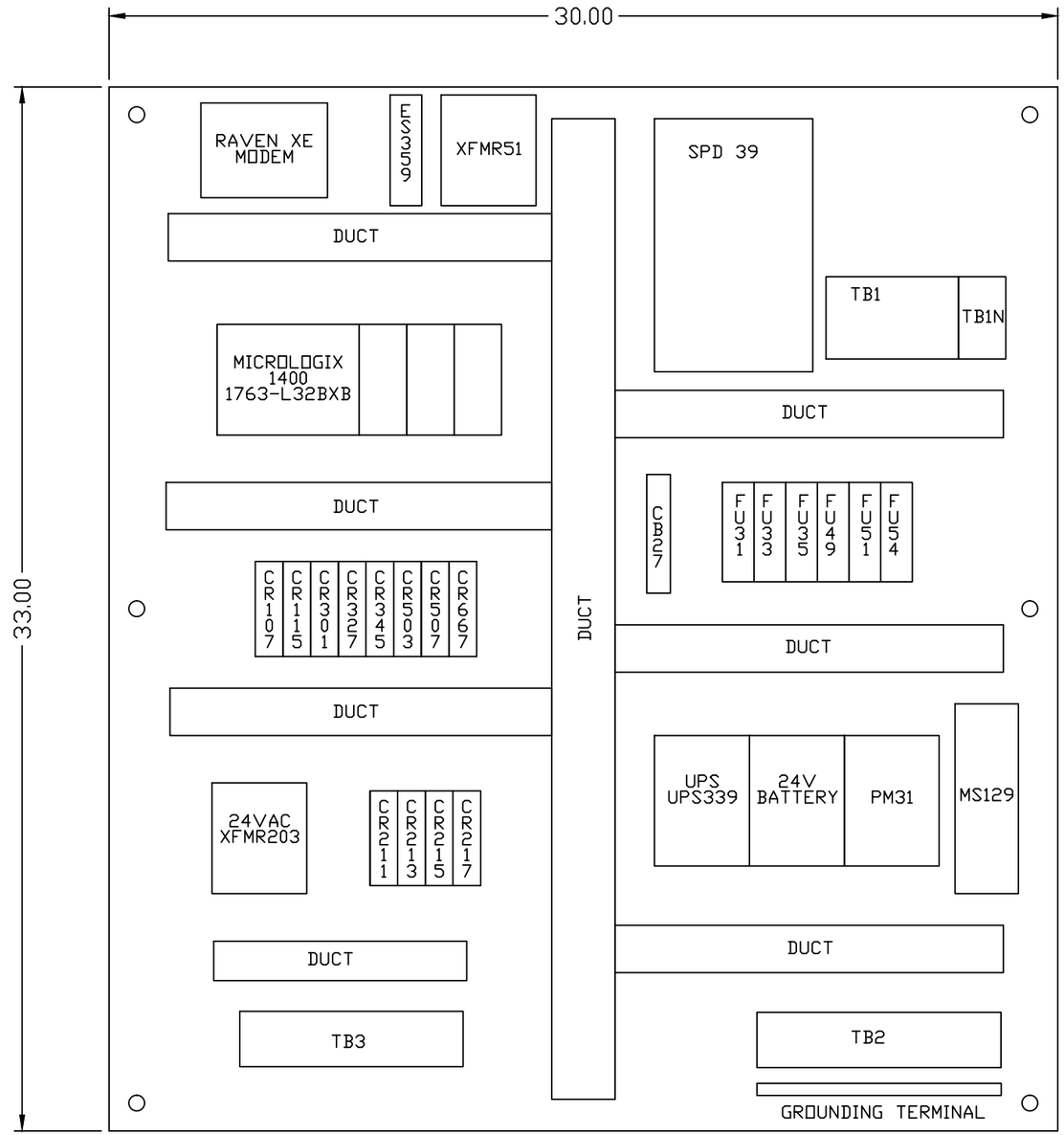
DWG NO: 13653-4-01

SCALE: NTS

SHEET: 01 OF 02

DATE	BY	REVISION
05/14/15	CUST	REV-1

NOTES:
1) 36" X 30" X 12" ENCLOSURE
2) SEGREGATE ALL ANALOG WIRING.



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YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
PANEL LAYOUT

DRAWN BY:	PMG
ENGINEERING:	DSH
MFG:	
QC:	
DATE:	04/21/15
DWG NO:	13653-4-02
SCALE:	NTS
SHEET:	02 OF 02

LEGEND:

- TERMINAL BLOCK (NUMBERED BY WIRE NUMBER)
- SCREW TERMINAL
- AMMETER
- AMMETER W/CT
- CIRCUIT BREAKER
- CONTACT N.O.
- CONTACT N.C.
- CONTACT TDCB
- CONTACT TDCM
- CONTACT INTERVAL
- CONTACT TDOB
- CONTACT TDOM
- COIL
- CYCLE COUNTER
- HOURMETER
- PUSHBUTTON
- SELECTOR SWITCH
- EMERGENCY STOP
- FLOW SWITCH
- TEMPERATURE SWITCH
- FUSE
- NOTE #
- GOTO LINE #
- GROUND
- SOLENOID VALVE
- DISCONNECT SWITCH
- MOTOR
- OVERLOAD
- LEVEL SWITCH (CONDUCTIVITY)
- LEVEL SWITCH
- PILOT LAMP
- PILOT LAMP (PUSH TO TEST)
- PRESSURE SWITCH
- MOTOR PROTECTOR (SHORT CIRCUIT & OVERLOAD PROTECTION)
- "ALL IN ONE" MOTOR STARTER (CONTACTOR,SHORT CIRCUIT & OVERLOAD PROTECTION)
- TRANSFORMER (240VAC H1 H3 H2 H4; 120VAC X1 X2)

ELECTRICAL COMPONENT ABBREVIATIONS:

AM	AMMETER
CB	CIRCUIT BREAKER
CR	CONTROL RELAY
FU	FUSE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HM	HOUR METER
HS	HAND/SELECTOR SWITCH
ISR	INTRINSICALLY SAFE RELAY
ISAR	INTRINSICALLY SAFE ANALOG REPEATER
MC	MOTOR CONTACTOR
MP	MOTOR PROTECTOR
MS	MOTOR STARTER
OL	OVERLOAD
PB	PUSHBUTTON
PL	PILOT LIGHT
PM	PHASE MONITOR
SP	SURGE PROTECTOR
SS	SOFT START
TB	TERMINAL BLOCK
TR	TIME DELAY RELAY
TMR	7 DAY TIMER
VFD	VARIABLE FREQUENCY DRIVE
XFMR	TRANSFORMER

PROCESS DEVICE ABBREVIATIONS:

LS-	LEVEL SWITCH
LT-	LEVEL TRANSMITTER
LSHH-	LEVEL SWITCH HIGH-HIGH
LSH-	LEVEL SWITCH HIGH
LSL-	LEVEL SWITCH LOW
LSLL-	LEVEL SWITCH LOW-LOW
PS-	PRESSURE SWITCH
PT-	PRESSURE TRANSMITTER
PSLL-	PRESSURE SWITCH LOW-LOW
PSHH-	PRESSURE SWITCH HIGH-HIGH
TS-	TEMPERATURE SWITCH
TT-	TEMPERATURE TRANSMITTER
TSHH-	TEMPERATURE SWITCH HIGH-HIGH
FS-	FLOW SWITCH
FT-	FLOW TRANSMITTER
FQ/FT-	FLOW TOTALIZER W/PULSE

NOTES:

1) LABEL: INSTALLER TO PROVIDE EQUIPMENT GROUNDING CONDUCTOR WHICH SHALL BE #10AWG.
2) ALL POWER WIRING SHALL BE #12AWG UNLESS OTHERWISE NOTED.
3) ALL 120VAC CONTROL WIRING SHALL BE #16AWG RED(LINE) OR WHITE(NEUTRAL) UNLESS OTHERWISE NOTED.
4) ALL 24VAC CONTROL WIRING SHALL BE #16AWG BLACK(LINE) OR GRAY(NEUTRAL) UNLESS OTHERWISE NOTED.
5) ALL DISCRETE DC CONTROL WIRING SHALL BE #16AWG YELLOW(+) OR YELLOW W/BLK STRIPE(-).
6) ALL ANALOG DC WIRING SHALL BE 300V #18AWG SHIELDED CABLE UNLESS OTHERWISE NOTED.
7) ALL INTRINSICALLY SAFE WIRING IN PANEL SHALL BE #22AWG BLUE.
8) INSTALL ALL INTRINSICALLY SAFE CABLE AND EQUIPMENT IN ACCORDANCE WITH ARTICLE 504 OF THE NATIONAL ELECTRICAL CODE.
9) MAXIMUM LENGTH OF ANY CABLE CONNECTED TO ANY I. S. BARRIER SHALL BE 10,000 FEET.
10) U.L. 508A AND 698A LISTED CONTROL PANEL.
11) LABEL: UPS VOLTAGE PRESENT WHEN POWER IS OFF.
12) LABEL: THIS CONTROL PANEL IS ENERGIZED BY MORE THAN ONE POWER SOURCE!
13) TERMINAL BLOCK TB3 IS FOR CONNECTION TO A CLASS 1 REMOTE CONTROL CIRCUIT.
14) REMOTE E-STOP BY OTHERS.

DATE	BY	REVISION
05/14/15	CUST	REV-1
06/09/15	DSH	REV-2

ESD
Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

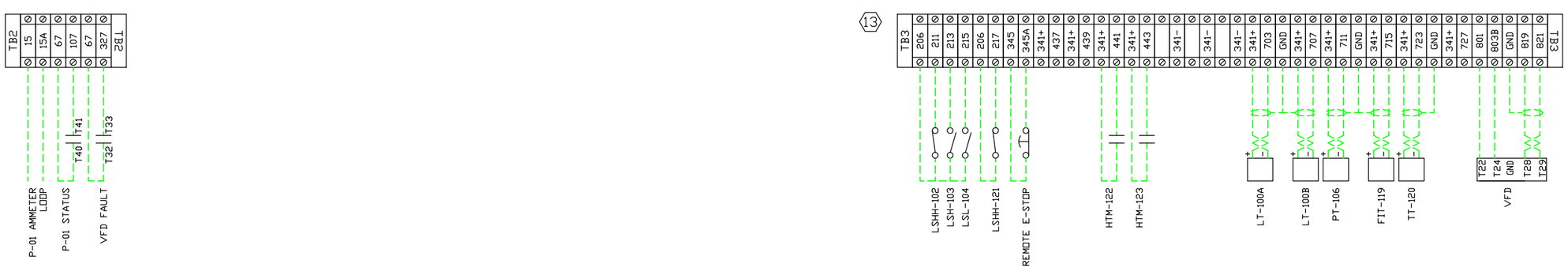
PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

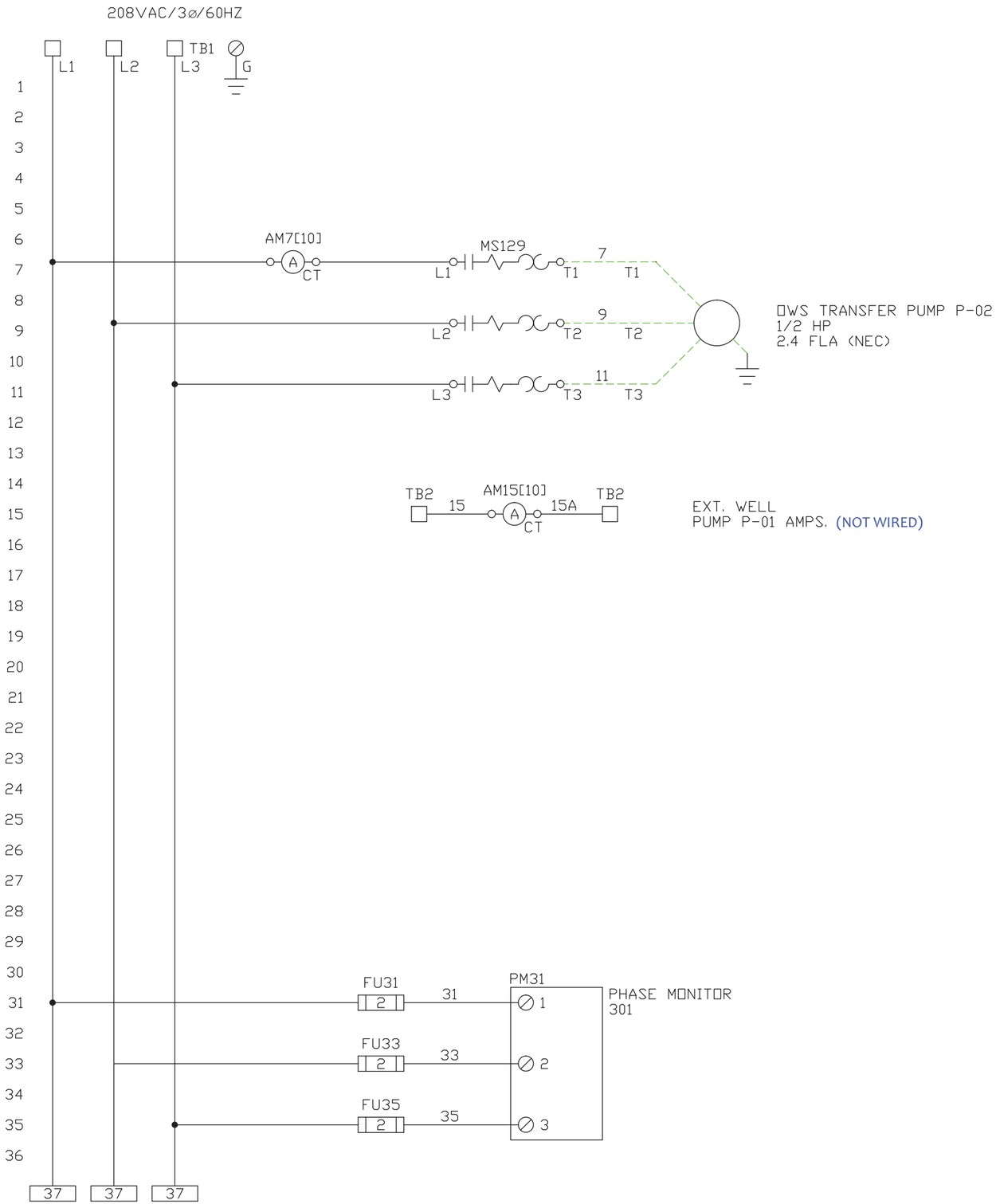
PROJECT NAME:
NATIONAL GRID CLIFTON FORMER MGP SITE

TITLE:
ELECTRICAL

DRAWN BY: PMG
ENGINEERING: DSH
MFG:
QC:
DATE: 04/21/15
DWG NO: 13653-5-00
SCALE: NTS
SHEET: 01 OF 10

TERMINAL CONNECTIONS:





DATE	BY	REVISION
05/14/15	CUST	REV-1

ESD
Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
ELECTRICAL

DRAWN BY: PMG

ENGINEERING: DSH

MFG:

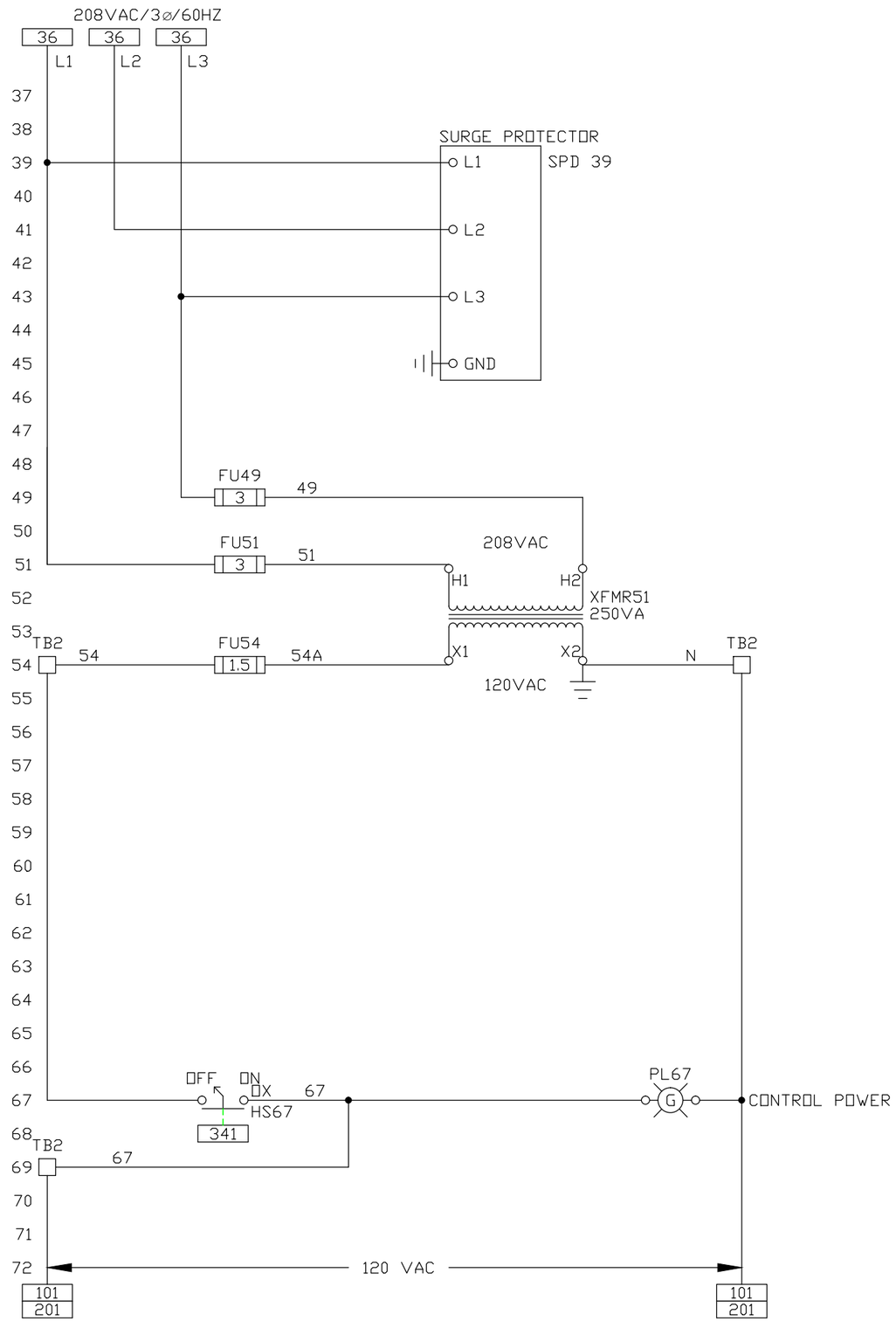
QC:

DATE: 04/21/15

DWG NO: 13653-5-01

SCALE: NTS

SHEET: 02 OF 10



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Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
ELECTRICAL

DRAWN BY: PMG

ENGINEERING: DSH

MFG:

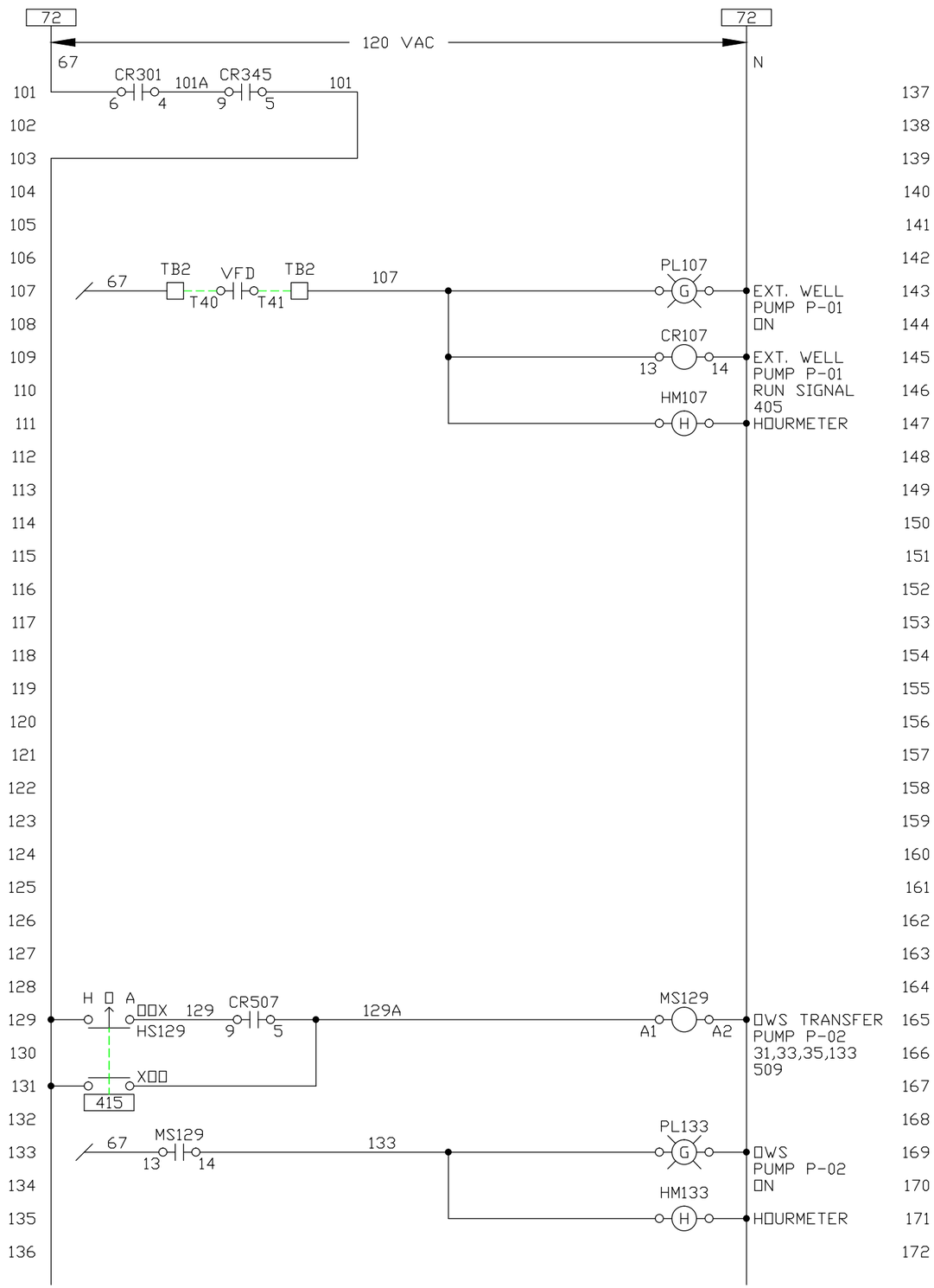
QC:

DATE: 04/21/15

DWG NO: 13653-5-02

SCALE: NTS

SHEET: 03 OF 10



DATE	BY	REVISION
05/14/15	CUST	REV-1
06/09/15	DSH	REV-2

ESD
Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
ELECTRICAL

DRAWN BY: PMG

ENGINEERING: DSH

MFG:

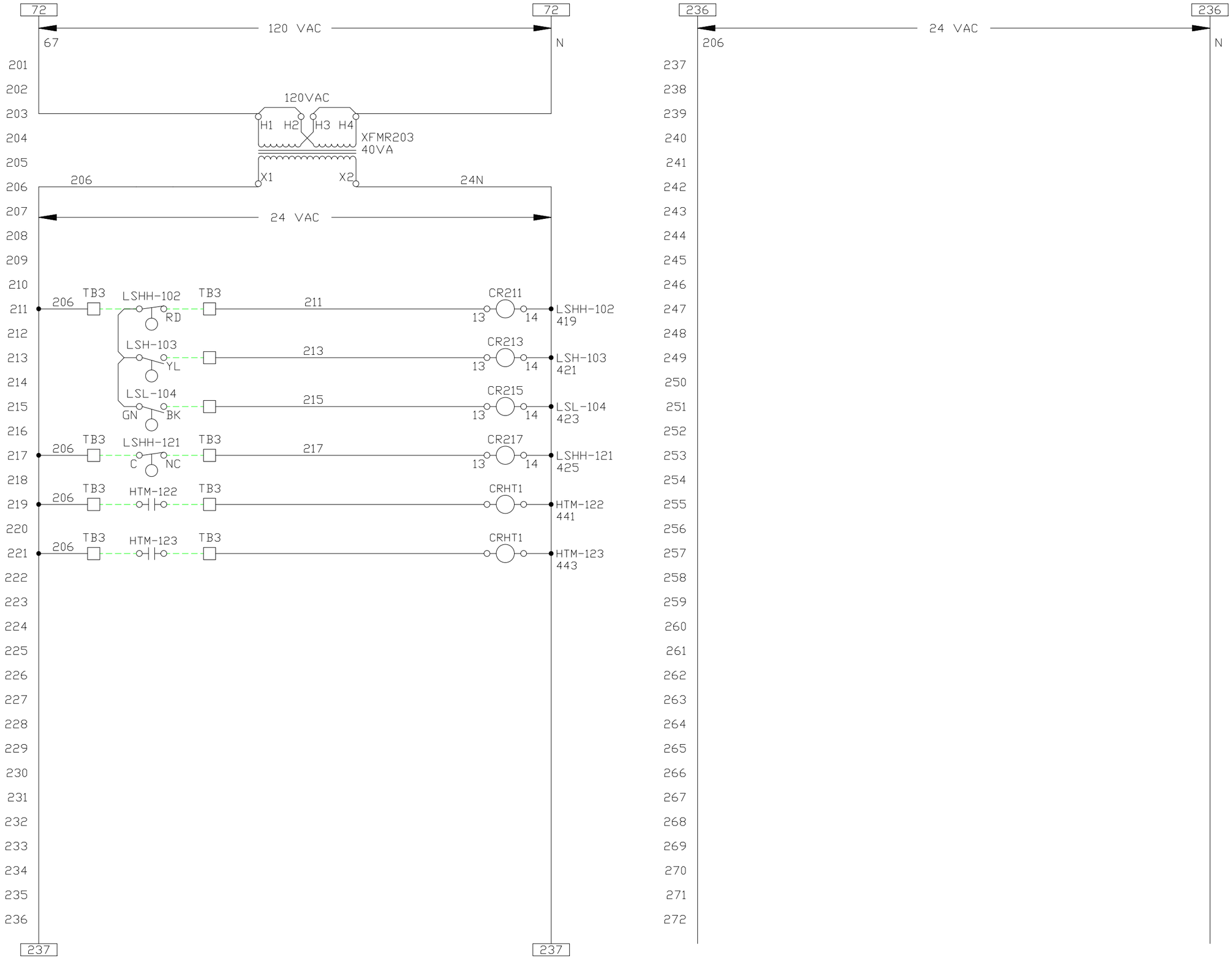
QC:

DATE: 04/21/15

DWG NO: 13653-5-03

SCALE: NTS

SHEET: 04 OF 10



DRAWING TITLE

AS–BUILT CONTROL SCHEMATIC
DRAWING #13653–5–04

DRAWN/REVISED BY: ESD/OL
REVISION DATE: SEP. 30, 2015

SHEET:
5 of 10

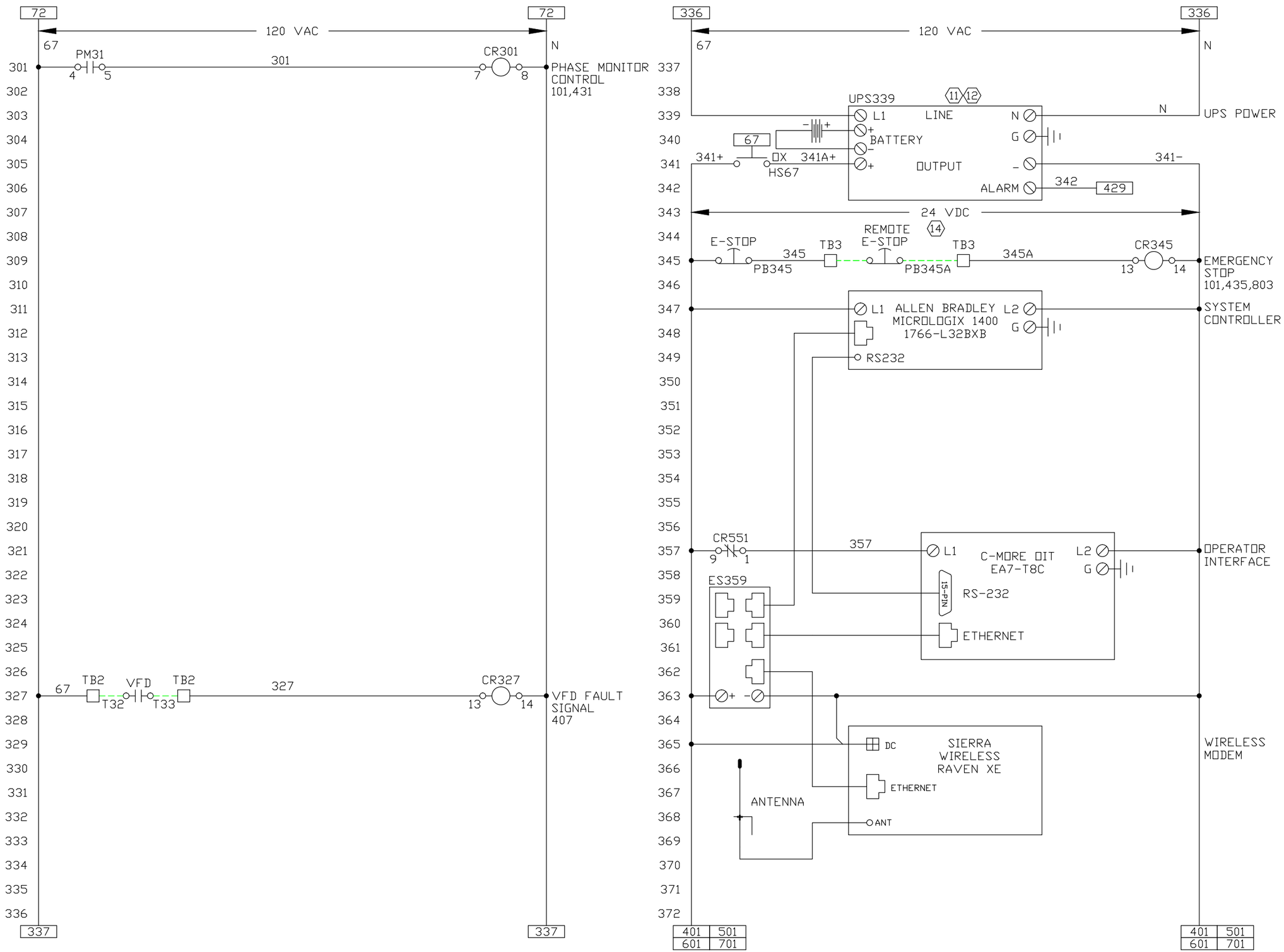
DRAWING TITLE

AS–BUILT ELECTRICAL
SINGLE LINE DIAGRAM

PREPARED FOR

NATIONAL GRID
FORMER CLIFTON
MANUFACTURED GAS PLANT

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924–3001 FAX: (631)924–5001



DATE	BY	REVISION
05/14/15	CUST	REV-1

ESD
Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
ELECTRICAL

DRAWN BY: PMG

ENGINEERING: DSH

MFG:

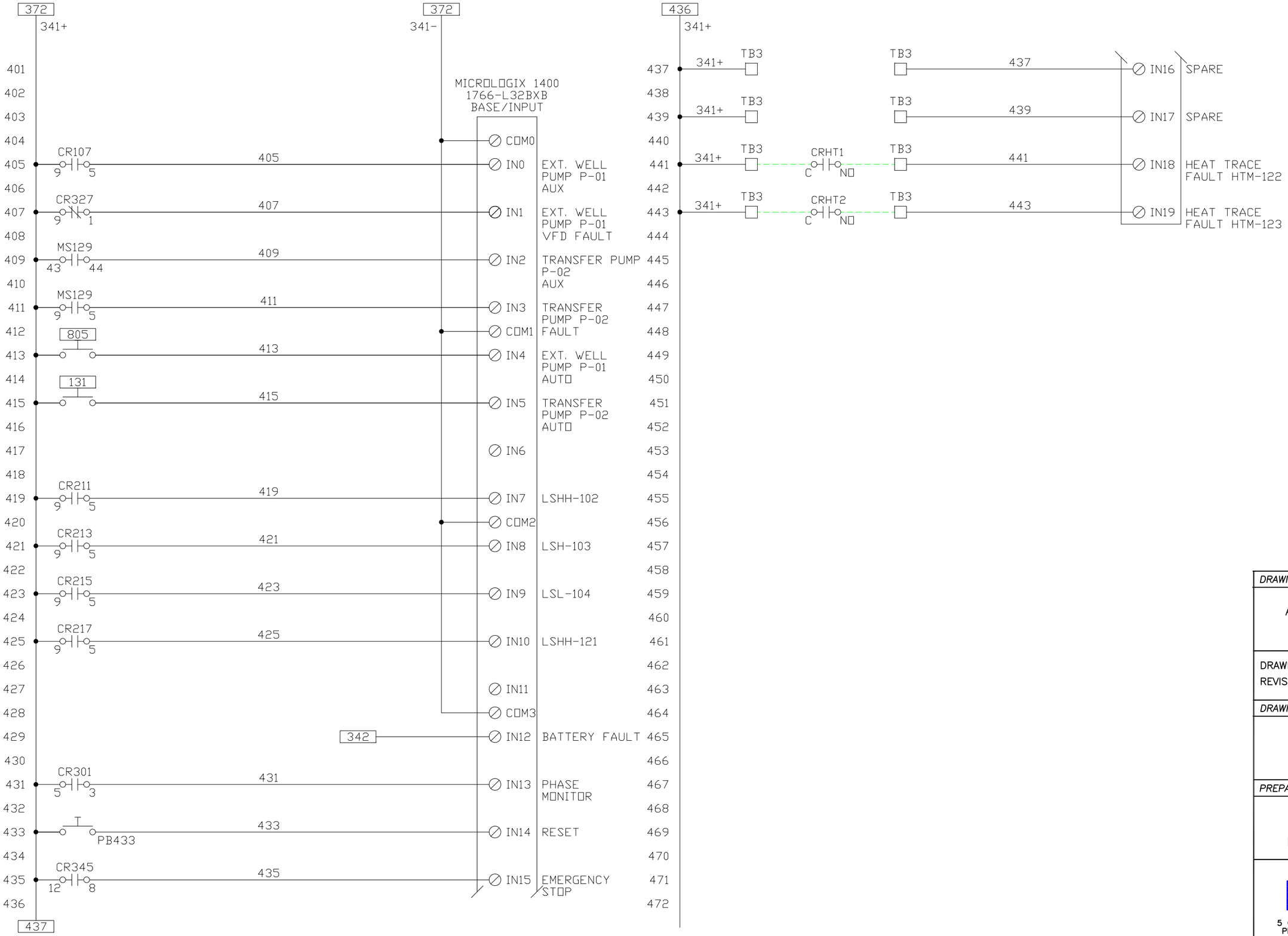
QC:

DATE: 04/21/15

DWG NO: 13653-5-05

SCALE: NTS

SHEET: 06 OF 10



DRAWING TITLE

AS-BUILT CONTROL SCHEMATIC
DRAWING #13653-5-06

DRAWN/REVISED BY: ESD/OL
REVISION DATE: SEP. 30, 2015

SHEET: 7 of 10

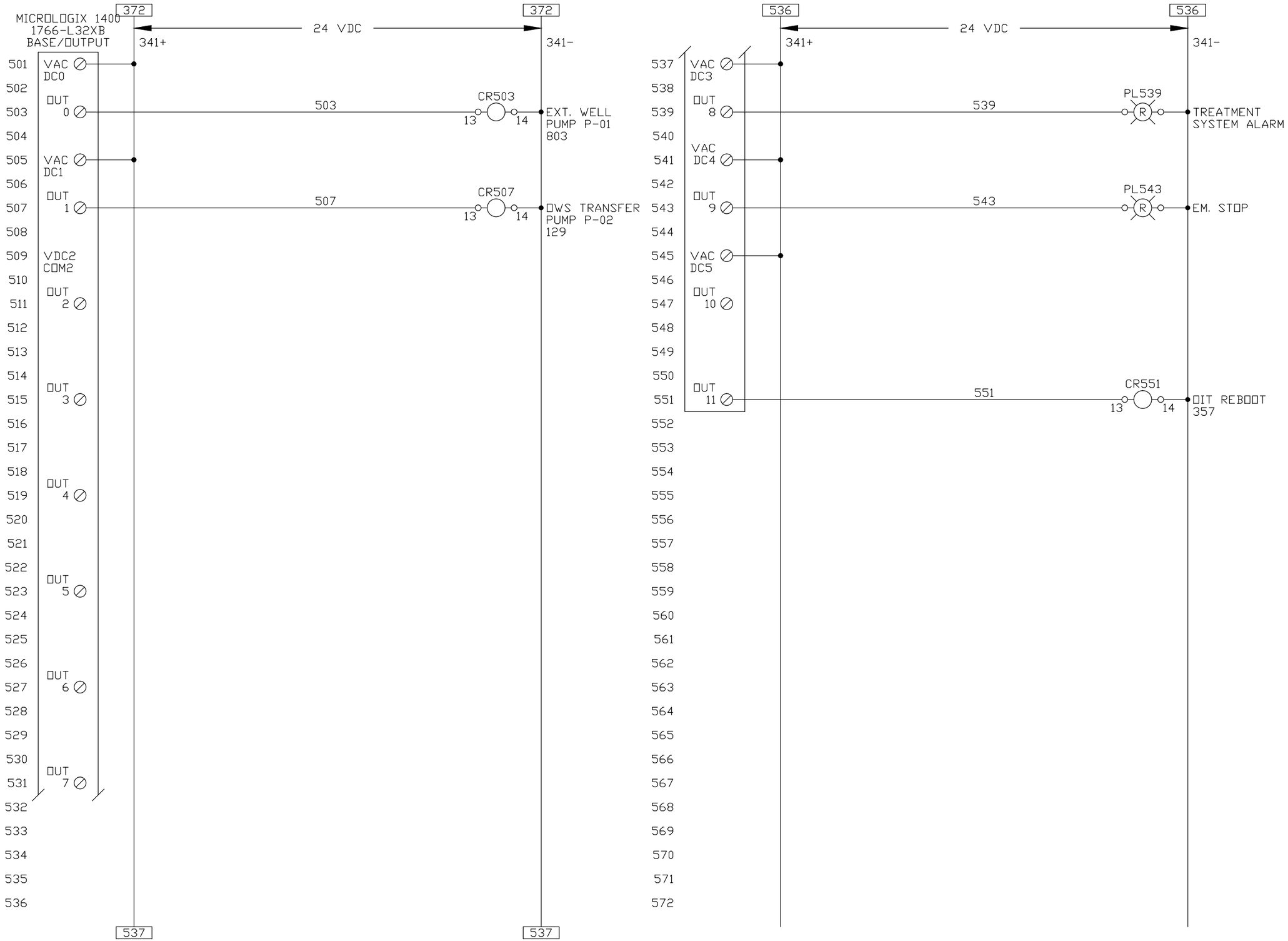
DRAWING TITLE

AS-BUILT ELECTRICAL
SINGLE LINE DIAGRAM

PREPARED FOR

NATIONAL GRID
FORMER CLIFTON
MANUFACTURED GAS PLANT

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001



DATE	BY	REVISION
05/14/15	CUST	REV-1

ESD
Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
ELECTRICAL

DRAWN BY: PMG

ENGINEERING: DSH

MFG:

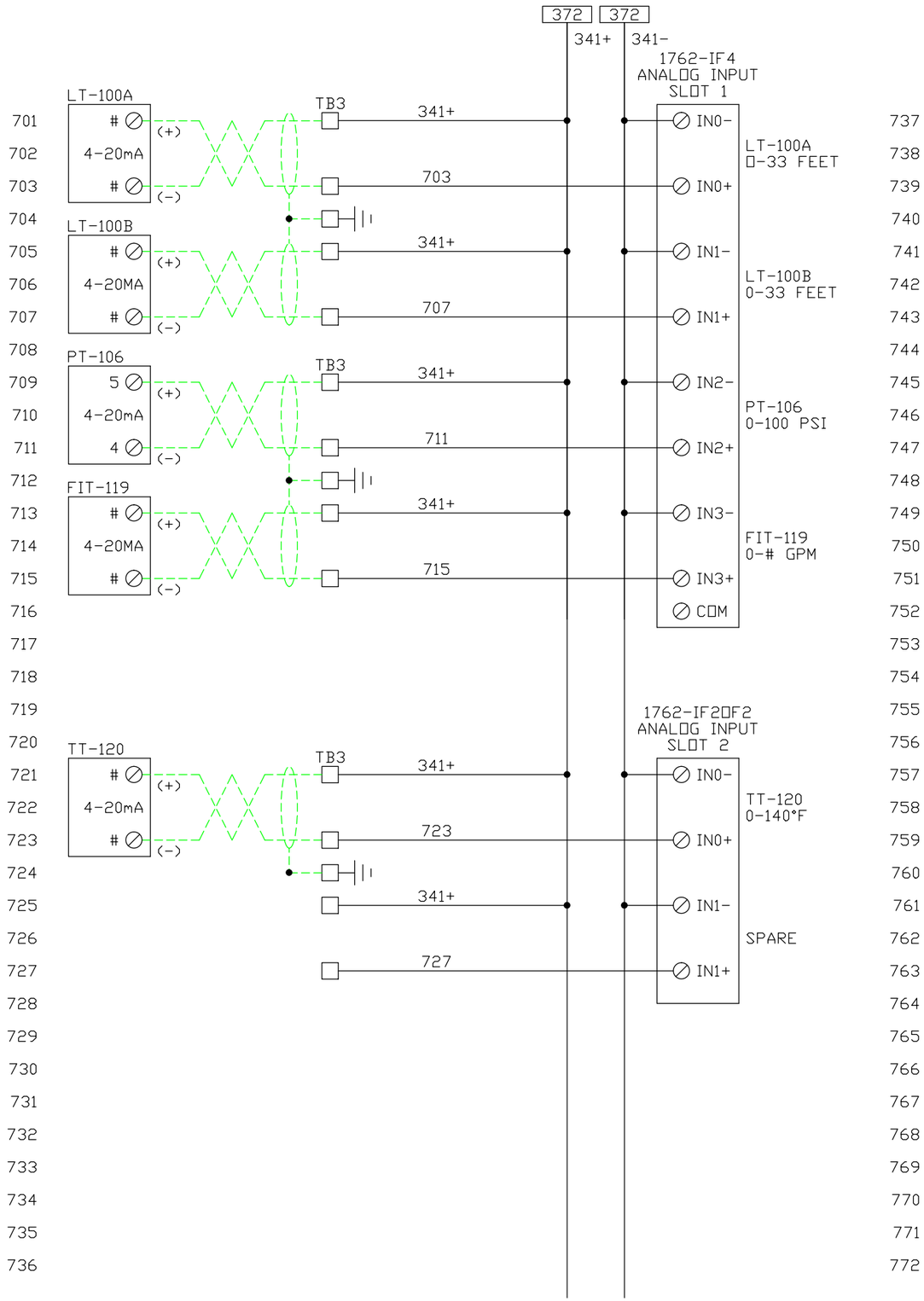
QC:

DATE: 04/21/15

DWG NO: 13653-5-07

SCALE: NTS

SHEET: 08 OF 10



DATE	BY	REVISION
05/14/15	CUST	REV-1

ESD
Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
ELECTRICAL

DRAWN BY: PMG

ENGINEERING: DSH

MFG:

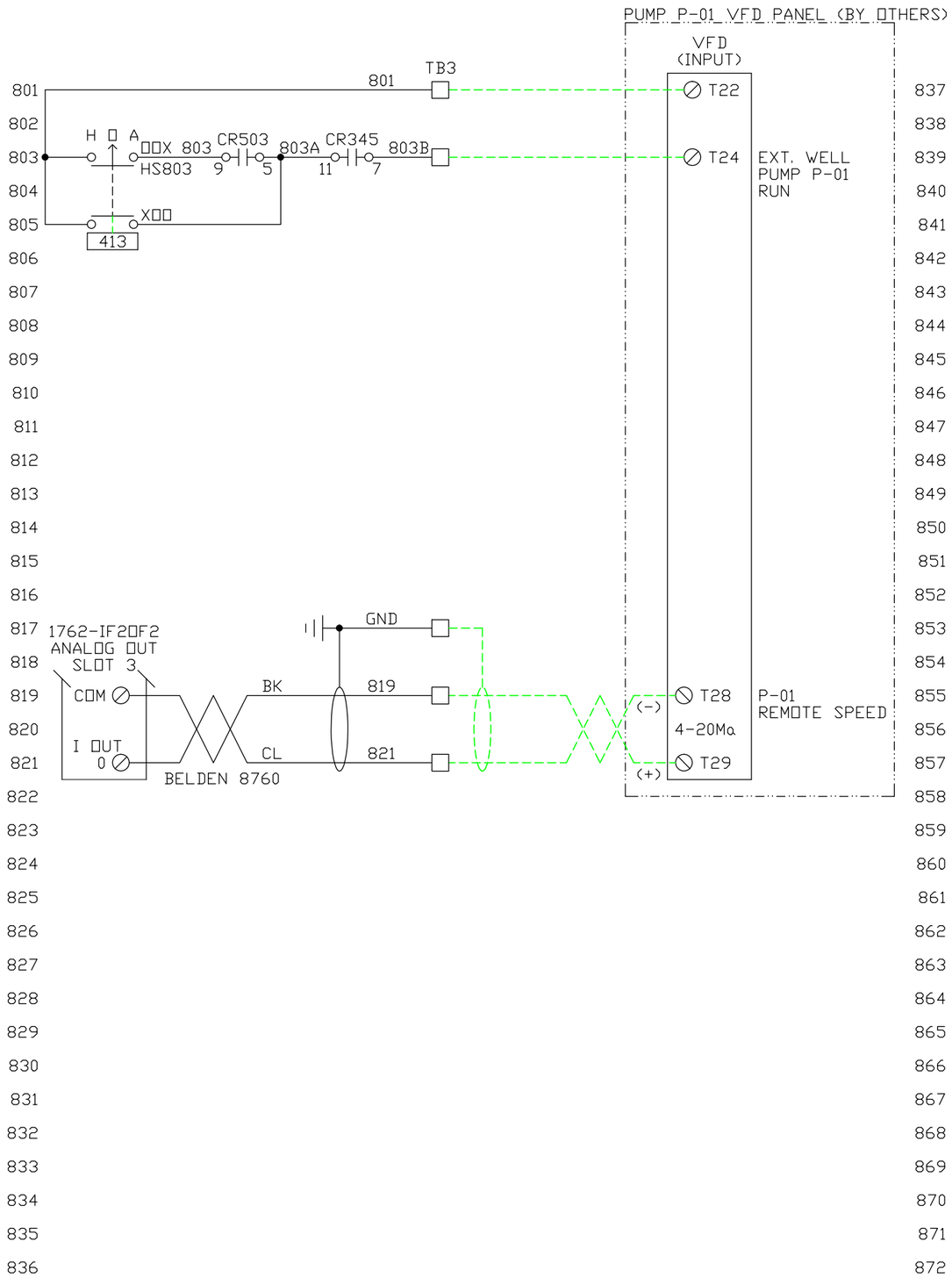
QC:

DATE: 04/21/15

DWG NO: 13653-5-08

SCALE: NTS

SHEET: 09 OF 10



DATE	BY	REVISION
05/14/15	CUST	REV-1

ESD
Waste2Water,Inc.
495 Oak Road
Ocala, FL 34472

PREPARED FOR:
ENVIRO TRAC LTD
YAPHANK, NY

PROJECT NAME:
NATIONAL GRID CLIFTON
FORMER MGP SITE

TITLE:
ELECTRICAL

DRAWN BY: PMG

ENGINEERING: DSH

MFG:

QC:

DATE: 04/21/15

DWG NO: 13653-5-09

SCALE: NTS

SHEET: 10 OF 10

Electrical Load Summary

Project Name: Envirotrac / National Grid
System Voltage/Phase: 208/3
Drawing Number: 13653-7-01
Date: 4/28/15

Created By:	DSH
Engineering:	
Manufacturing:	
Quality Control:	

NAME OF MOTOR LOAD	H/P	VOLT/ PHASE	LINE-1 AMPS	LINE-2 AMPS	LINE-3 AMPS	NEUT. AMPS	PER NEC TABLE
OWS TRANSFER PUMP P-02	1/2	208/3	2.4	2.4	2.4	-	430-250
LIGHTING AND POWER LOADS							
CONTROL TRANSFORMER		120/1	1.2		1.2		
GFCI RECEPTACLE		120/1	16.0			16.0	
TOTAL LOAD			19.6	2.4	3.6	16.0	

NOTE: This document is to be used only for calculating feeder short circuit protection and sizing motor feeder circuit conductors as needed.
Individual motor overload protection must be sized according to motor nameplate only.

Filename: 13653-7-01 LOAD SUMMARY

EnviroTrac

NATIONAL GRID

10:41:00 AM
09-JUN-15

SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

PT-106
PAHH-106
PAH-106
12.3 PSI

TT-120
TAL-120
123.4 °F
INSIDE TEMP.

HTM-122
HTA-122

OWS

LSHH-102
LSH-103

F-01A

F-03

LAL-100A	123.4 "	PAHH-106	123.4 PSI
LAL-100B	123.4 "	PAH-106	123.4 PSI
TAL-120	123.4 °F		
CLOSE			

HTM-123
HTA-123

FIT-119
123.4 GPM

TO SPDES DISCHARGE

P-01
OK

P-01

LT-100A
LAL-100A
12.3 '

LT-100B
LAL-100B
12.3 '

ADJUST SETPOINTS

EXTRACTION WELL
COU1-RWA

MONITORING WELL
COU1-RWB

CONTAINMENT SUMP
LSHH-121

STARTUP | SHUTDOWN | ALARM RESET | SEND REPORT

SYSTEM STATUS:
ALARM STATUS:
MOTOR STATUS:

EnviroTrac

NATIONAL GRID

10:41:00 AM
09-JUN-15

SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

PT-106
PAHH-106
PAH-106
12.3 PSI

TT-120
TAL-120
123.4 °F
INSIDE TEMP.

HTM-122
HTA-122

OWS

LSHH-102
LSH-103
LSL-104

F-01A

F-01B

P-01
OK

P-02
FAULTED

F-02A

FLOWMETER FIT-119
12.3 GPM
123451234 GAL
K Flow
K Total
CLOSE

HTM-123
HTA-123

FIT-119
123.4 GPM

TO SPDES DISCHARGE

LT-100A
LAL-100A
12.3 '

LT-100B
LAL-100B
12.3 '

P-01

EXTRACTION WELL
COU1-RWA

MONITORING WELL
COU1-RWB

CONTAINMENT SUMP
LSHH-121

ADJUST SETPOINTS

STARTUP | SHUTDOWN | ALARM RESET | SEND REPORT

SYSTEM STATUS:
ALARM STATUS:
MOTOR STATUS:

EnviroTrac

NATIONAL GRID

10:52:00 AM
09-JUN-15

SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

PT-106
PAHH-106
PAH-106
12.3 PSI

TT-120
TAL-120
123.4 °F
INSIDE TEMP.

HTM-122
HTA-122

OWS

LSHH-102
LSH-103
LSL-104

F-01A

F-01B

P-02
OK

P-01
FAULTED

F-02A

F-02B

F-02C

F-03

HTM-123
HTA-123

FIT-119
123.4 GPM

TO SPDES DISCHARGE

LT-100A
LAL-100A
12.3 '

LT-100B
LAL-100B
12.3 '

P-01

EXTRACTION WELL
COU1-RWA

MONITORING WELL
COU1-RWB

CONTAINMENT SUMP

LSHH-121

ADJUST SETPOINTS

STARTUP | SHUTDOWN | ALARM RESET | SEND REPORT

SYSTEM STATUS: AUTO

ALARM STATUS: LAL-100A ALARM

MOTOR STATUS: P-01 MOTOR FAULT

EnviroTrac

NATIONAL GRID

09:37:00 AM
09-JUN-15

SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

WELL PUMP
P-01

12.3 HZ
FAULT
OFF
AUTO

HI = 123.4
LO = 123.4

START
STOP
MANUAL
AUTO

PID

CLR
STOP

33.0
24.8
16.5
8.3
0.0

0 2.5 5 7.5 10

OUTPUT 56%

ALARM
AUTO

FEET S.P

P = 123
I = 123
D = 123
SP = 123.4
MAN = 123.4%

AUTO
MANUAL
DIFF
LT-100A
LT-100B

OWS PUMP
P-02

FAULT
ON
MANUAL

START
STOP
MANUAL
AUTO

STARTUP
SHUTDOWN
ALARM RESET

SYSTEM STATUS:
ALARM STATUS:
MOTOR STATUS:

EnviroTrac

NATIONAL GRID

09:37:00 AM
09-JUN-15

SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

Alarm History

Total of 12 Alarms

Entry No	Alarm No	Message	Confirm
1	1	Message-1	
2	2	Message-2	
3	3	Message-3	
4	4	Message-4	
5	5	Message-5	
6	6	Message-6	
7	7	Message-7	
8	8	Message-8	
9	9	Message-9	
10	10	Message-10	
11	11	Message-11	
12	12	Message-12	

ACKNOWLEDGE
ALARM / FAULT?

YES NO

FULL SCREEN / CONTROLS

STARTUP SHUTDOWN ALARM RESET

SYSTEM STATUS:
ALARM STATUS:
MOTOR STATUS:

EnviroTrac

NATIONAL GRID

09:37:00 AM
09-JUN-15

SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

RUN TIMES

	HOURS
EXTRACTION WELL PUMP P-01	123451.2
TRANSFER PUMP P-02	123451.2

SYSTEM TIMER

DAYS TO RUN

S M T W T F S

DAILY CYCLE #1		DAILY CYCLE #2	
START TIME	12: 12	START TIME	12: 12
STOP TIME	12: 12	STOP TIME	12: 12
START HOUR	START MINUTE	START HOUR	START MINUTE
STOP HOUR	STOP MINUTE	STOP HOUR	STOP MINUTE

STARTUP | SHUTDOWN | ALARM RESET

SYSTEM STATUS:

ALARM STATUS:

MOTOR STATUS:

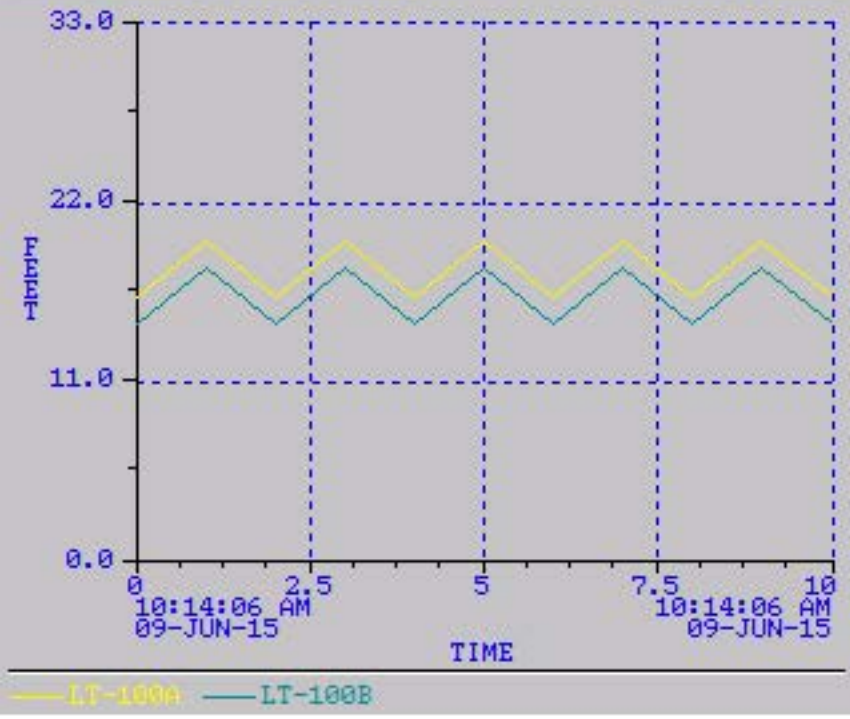
EnviroTrac

NATIONAL GRID

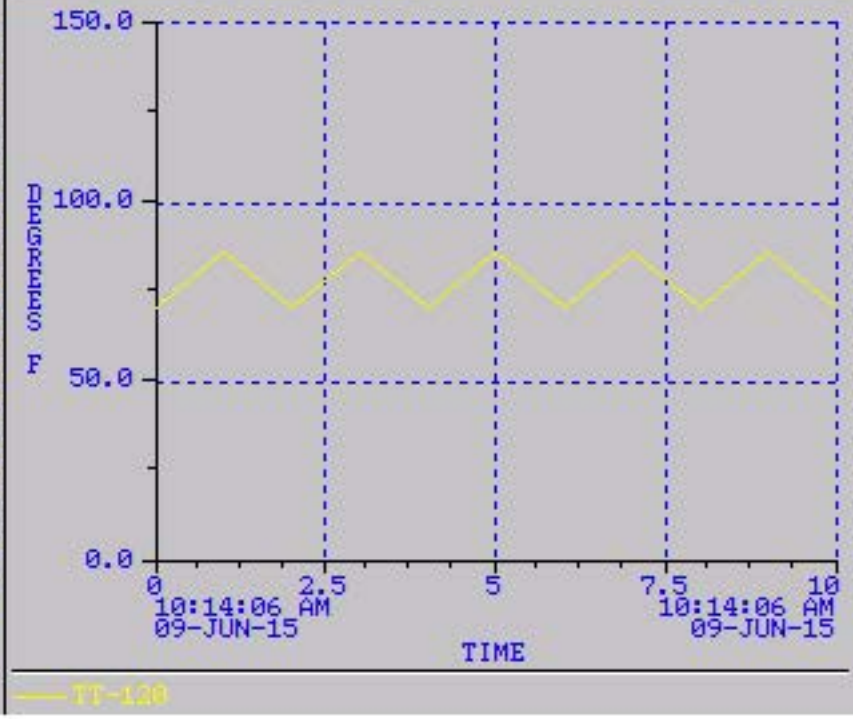
09:37:00 AM
09-JUN-15

SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

CLR STOP



CLR STOP



STARTUP | SHUTDOWN | ALARM RESET

SYSTEM STATUS:

ALARM STATUS:

MOTOR STATUS:

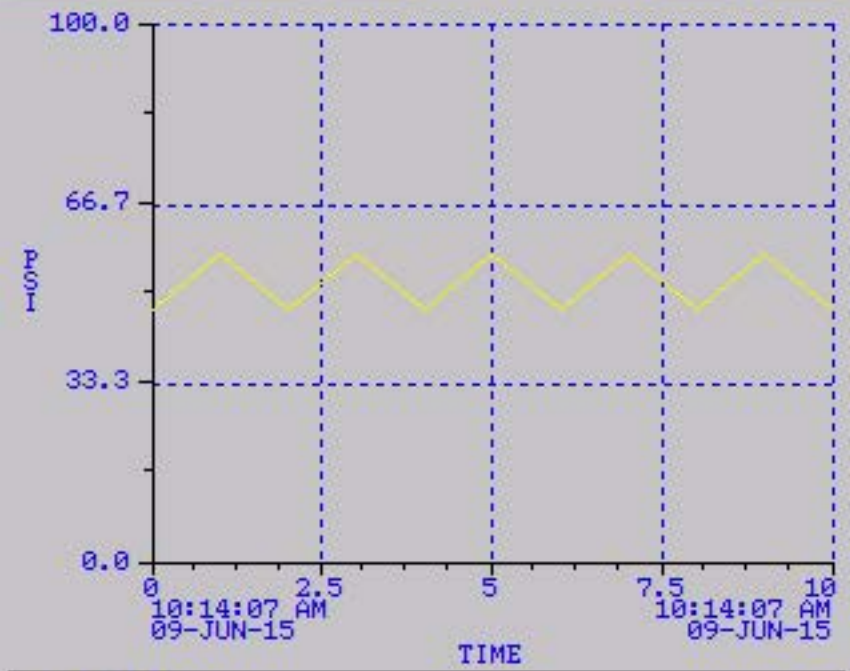
EnviroTrac

NATIONAL GRID

09:37:00 AM
09-JUN-15

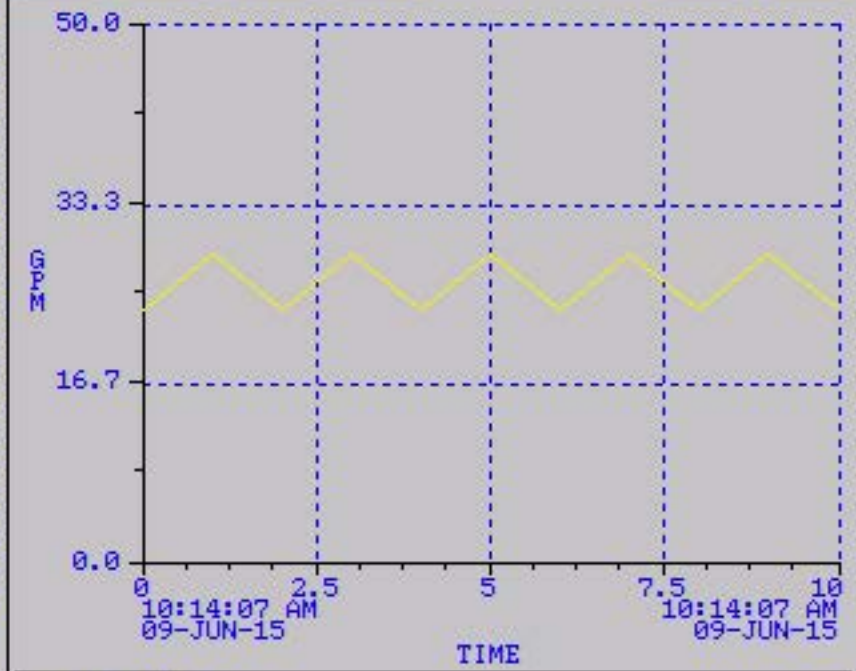
SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

CLR STOP



PT-106

CLR STOP



FIT-119

STARTUP | SHUTDOWN | ALARM RESET

SYSTEM STATUS:

ALARM STATUS:

MOTOR STATUS:

EnviroTrac

NATIONAL GRID

09:37:00 AM
09-JUN-15

SYSTEM | CONTROL | ALARMS | RUNTIMES | TREND 1 | TREND 2 | MAINT

PLC 1763-L32BWA				
IN0	IN8	IN16	O/0	O/8
IN1	IN9	IN17	O/1	O/9
IN2	IN10	IN18	O/2	O/10
IN3	IN11	IN19	O/3	O/11
IN4	IN12		O/4	
IN5	IN13		O/5	
IN6	IN14		O/6	
IN7	IN15		O/7	

SLOT 1 1762-IF4	SLOT 2 1762-IF2OF2
IN0:12345	IN0:12345
IN1:12345	IN1:12345
IN2:12345	O0:12345
IN3:12345	O1:12345

FIT-119 SET GALLONS

UP TO 1 MILLION 123451.2

MILLIONS 12345

INCDEC HOUR

DELAY/TIMER CONTROL

START UP 12345 (SEC)

OWS LEVEL HI-HI LATCH 12345 (SEC)

DAILY REPORT HOUR -12

DAILY REPORT MINUTE -12

SETUP

LT-100A FEET BELOW SURFACE 12345

LT-100B FEET BELOW SURFACE 12345

FIT-119 FLOW @ 20mA 12

BATTERY OK
AC POWER ON

STARTUP | SHUTDOWN | ALARM RESET

SYSTEM STATUS:
ALARM STATUS:
MOTOR STATUS:

Appendix C

Procedures and Forms for System Operation

Treatment System Logsheets for National Grid Clifton site Activities	
Former MGP Site Staten Island, New York	
Table of Contents	
Tab	**Section**

1	**Visitors Log**
2	**Process Log**
3	**Well Monitoring Log**
4	**Sampling Record**
5	**Bag Filter Repacement Log**
6	**Bag Filter Disposal Record**
7	**NAPL Disposal Record**
8	**GAC Replacement Record**
9	**Instrument Calibration**
10	**Operator's Notes**
11	**To Do list**

National Gird Clifton- Staten Island, NY				
Visitors Log				
Name	**Company**	**Date**	**Time In**	**Time Out**

National Gird Clifton- Staten Island, NY						
	Date					
	Time					
	Who					
	Units					
COU1- RWA Level Transmitter						
Level Tranmsitter reading						
Well gauging reading						
Level Tramsnitter reading matches with manual gauging- yes/no?						
COU1-RWB Level Transmitter						
Level Tranmsitter reading						
Well gauging reading						
Level Tramsnitter reading matches with manual gauging- yes/no?						
Vault Inspections (confirm no leaks, mud, etc)						
COU1-RWA						
COU1-RWB						
Recovery Well P-01						
VFD normal status- No error code?						
Amp meter reading when pump running	Amp					
Hour meter reading when	Hours					
Oil Water Separator OW-01						
Volume sludge recovered	Gal.					
Volume DNAPL recovered	Gal.					
Volume LNAPL recovered	Gal.					
Check/clean coalescing media?						
Treatment System Pump						
Tank Liquid Level	Gal					
Pump Frequency	Hz					
Discharge Pressure	psi					
Effluent Flowrate	gpm					
Amp meter reading when pump running	Amp					
Hour meter reading	Hours					
Bag Filters (F-203 A,B,C F-204 A,B,C)						
Filtration mode (**S**eries / **P**arallel)						
Filter size (microns)	micons					
Inlet manifold pressure	psi					
Intermediate manifold pressure	psi					
Outlet manifold pressure	psi					
Lead bank differential pressure	psi					
Combined banks differential pressure	psi					
Change Bags?	Y/N					
Vent filter heads?	Y/N					
GAC Adsorbers						
Filtration mode (**S**eries / **P**arallel)						
Inlet manifold pressure	psi					
Outlet manifold pressure	psi					
Pressure differential	psi					
Backwash Filters? (Tag if Yes)	Y/N:Tag					
Vacuum break leaking?	Y/N					
Miscellaneous Readings						
Effluent Flow Total	gal					
Effluent Flowrate volume	Gal					
Effluent Flowrate time	sec					
Effluent Flowrate	gpm					
Piping or Tank Leaks?						
Floor Sump						
Liquid in sump?						
Check float switches						
Codes: NR = Not Running, **NA** = Not Applicable, **Y** = Yes, **N** = No, **P**=Parallel, **S**=Series						

National Grid- Clifton			Date		
Water Level Monitoring			Who		
Well Number	**Depth to Product (xx.x ft)**	**Depth to Water (xx.x ft)**	**Meter**	**Measuring Order**	**Notes**
Cou-1 RWA			Interface meter	N/A	
COU-1 RWB			Interface meter	N/A	

Sampling Record												
				Laboratory Analysis								
Sample ID	Sample Date	Sampler	BTEX	BTEX w/ Naphthalene	PAH							Notes
Analytical Method	-	-	8260B	8260B	8270C							
Preservatives	-	-	HCL	HCL	NONE							
Container	-	-	40 ml vial, clear	41 ml vial, clear	1L Amber Glass							
Holding Time	-	-	14 DAYS	14 DAYS	7 DAYS							
EFFMMDDYY												Effluent discharge to SPDES
INFMMDDYY												Influent from COU-1
OWEMMDDYY												Oil Water Seperator Effluent
GACMMDDYY												Between lead and lag GAC banks
TB												Trip Blank
EFFMMDDYY												
INFMMDDYY												
OWEMMDDYY												
GACMMDDYY												
TB												
EFFMMDDYY												
INFMMDDYY												
OWEMMDDYY												
GACMMDDYY												
TB												
EFFMMDDYY												
INFMMDDYY												
OWEMMDDYY												
GACMMDDYY												
TB												
EFFMMDDYY												
INFMMDDYY												
OWEMMDDYY												
GACMMDDYY												
TB												
EFFMMDDYY												
INFMMDDYY												
OWEMMDDYY												
GACMMDDYY												
TB												

Bag Filter Replacement Record

Filter	Install Date	Remove Date	Install Effluent Meter Total (gal)	Remove Effluent Meter Total (gal)	Volume Treated (gal)	Volume Treated per Filter (gal)	Install DP at Flow (psi/ gpm)	Removal DP at Flow (psi/ gpm)	Filter Pore Size (um)	Filtration Mode	Filter Disposal Drum Number
F-03A											
F-03B											
F-03A											
F-03B											
F-03A											
F-03B											
F-03A											
F-03B											
F-03A											
F-03B											
F-03A											
F-03B											

Notes

Bag Filter Disposal Record				
AECOM Drum Number	Begin Date	Full Date	Disposal Drum Number	Disposal Date
Date	Number of Filters Added	Cumulative Number		

NAPL Disposal Record						
AECOM Drum Number	Begin Date	Full Date	Disposal Drum Number	Disposal Date	Contents	Notes

Liquid Phase GAC Replacement Record

Filter	Install Lag Position Date	Install Lead Position Date	Remove Date	Install Lag Effluent Meter Total (gal)	Install Lead Effluent Meter Total (gal)	Removal Effluent Meter Total (gal)	Lag Volume Treated (gal)	Lead Volume Treated (gal)	Total Volume Treated (gal)
F-02A									
F-02B									
F-02C									

Disposal Notes:

Calculations:

Disposed drum manifest numbers:

Instrument Calibration

Model No	Serial No	Serial No
Date	COU-01 RWA Level Transmiitter Calibration	COU-01 RWB Level Transmitter Calibration

Notes on operations long form

To Do list		Date		
#	Job	Notes	Who	Status

Appendix D

SPDES Permit Equivalency and Reporting Forms

From:	Richard Dana
To:	Pandya, Shail; Andrew A. Prophete
Cc:	Gardiner Cross
Subject:	Clifton
Date:	Wednesday, September 25, 2013 4:36:11 PM

Andrew & Shail,

Regarding the SPDES Permit Equivalent, because there were no substantial excursions under the SPDES Permit Equivalent for OU-2 remediation, we will relax the monitoring requirements for long term O&M for OU1 as follows:

Additional Condition (7) is changed to read as follows:
"(7) Monitor these parameters daily for 7 consecutive days. If the sampling results for all parameters comply with the limits, the monitoring frequency becomes MONTHLY. If monthly sampling results do not comply with the limit for any parameter, the monitoring frequency becomes DAILY again until the sampling results for all parameters comply with the limits. Thereafter the monitoring frequency changes to MONTHLY."

Dick

Richard Dana
Engineering Geologist 2
Division of Environmental Remediation
N.Y.S. Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7014
Office Phone: 518-402-9662

New York State Department of Environmental Conservation
Division of Water
Bureau of Water Permits, 4th Floor
625 Broadway, Albany, New York 12233-3505
Phone: (518) 402-8111 • **FAX:** (518) 402-9029
Website: www.dec.state.ny.us

Joe Martens
Commissioner

MEMORANDUM

TO:	Gardiner Cross, Section Chief, Remedial C and Richard Dana
FROM:	Paul Kolakowski, BWP, DOW PJK
SUBJECT:	**National Grid – Former Clifton Mfd. Gas Plant ,OU-2, Site # 2-43-023**
DRAINAGE BASIN:	17-01
DATE:	July 26, 2013

In response to your request dated June 6, 2013 to Shayne Mitchell, attached please find effluent limitations and monitoring requirements for the above noted remediation discharge.

This is based on the information sent and the original March 31, 2011 application and associated Permit Equivalent. This will Cover OU-1. The original water quality analysis is applicable, but the volume of flow for this pahse will be reduced to the design capacity of 1440 gal/day.

The DOW does not have any regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. DER will be responsible for ensuring compliance with the attached effluent limitations and monitoring requirements, and approval of all engineering submissions. Footnote 1 identifies the appropriate DER Section Chief as the place to send all effluent results, engineering submissions, and modification requests. The Regional Water Engineer should be kept appraised of the status of this discharge and, in accordance with the attached criteria, receive a copy of the effluent results for informational purposes.

If you have any questions, please call me at 2-8104 .

Attachment (Effluent Limitations and Monitoring Requirements)

cc: Robert Elburn ,Regional Water Engineer, R-2 (w/attach)
Shayne Mitchell, Section Chief, DOW (w/attach)
Ron Entringer/Aslam Mirza DOW (w/attach)

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 2013

and lasting until July 2018

the discharges from the treatment facility to Upper Bay of New York harbor, water index number Item #6, Part 890 , Class I, shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Monthly Avg.	Daily Max		Measurement Frequency	Sample Type
Outfall 001 - Treated Groundwater Remediation Discharge:					
Flow	Monitor	1440	GPD	Continuous	Meter
pH (range)	6.5 to 8.5		SU	Daily	Grab
TSS	Monitor	20	mg/l	Weekly (7)	Grab
Benzene	Monitor	5	ug/l	Weekly (7)	Grab
Ethylbenzene	Monitor	5	ug/l	Weekly (7)	Grab
o-Xylene	Monitor	5	ug/l	Weekly (7)	Grab
m/p-Xylenes	Monitor	10	ug/l	Weekly (7)	Grab
Toluene	Monitor	5	ug/l	Weekly(7)	Grab
Acenaphthene	Monitor	10	ug/l	Weekly(7)	Grab
Acenaphthylene	Monitor	10	ug/l	Weekly(7)	Grab
Antracene	Monitor	10	ug/l	Weekly(7)	Grab
Benz(a)antracene	Monitor	10	ug/l	Weekly(7)	Grab
Benzo(a)pyrene	Monitor	0.09	ug/l	Weekly(7)	Grab
Benzo(b)fluoranthene	Monitor	10	ug/l	Weekly(7)	Grab
Benzo(ghi)perylene	Monitor	10	ug/l	Weekly(7)	Grab
Chrysene	Monitor	10	ug/l	Weekly(7)	Grab
Fluoranthene	Monitor	10	ug/l	Weekly(7)	Grab
Fluorene	Monitor	10	ug/l	Weekly(7)	Grab

Indeno(1,2,3-cd)pyrene	Monitor	10	ug/l	Weekly(7)	Grab
Naphthalene	Monitor	50	ug/l	Weekly(7)	Grab
Phenanthrene	Monitor	10	ug/l	Weekly(7)	Grab
Pyrene	Monitor	10	ug/l	Weekly(7)	Grab
Arsenic	Monitor	10	ug/l	Weekly(7)	24 hr. comp.
Nickel	Monitor	80	ug/l	Weekly(7)	24 hr. comp
Cyanide, Total	Monitor	Monitor	ug/l	Weekly(7)	Grab
Cyanide, Available *	Monitor	10	ug/l	Weekly(7)	Grab
Turbidity	No Increase that will cause a substantial visible contrast to Natural Conditions			Daily	Visual

***Use EPA Method OIA-1677 - Available Cyanide by Flow Injection**

Additional Conditions:

(1) Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

Gardiner Cross, Section Chief
Remedial C
Division of Environmental Remediation
NYSDEC, 625 Broadway, Albany, New York 12233- 7014 ,
518-402-9564
With a copy sent to:
Robert Elburn, Regional Water Engineer, Region - 2
47-40 , 21st Street
Long Island City, 11101
718-482-4930

(2) Only site generated wastewater is authorized for treatment and discharge.

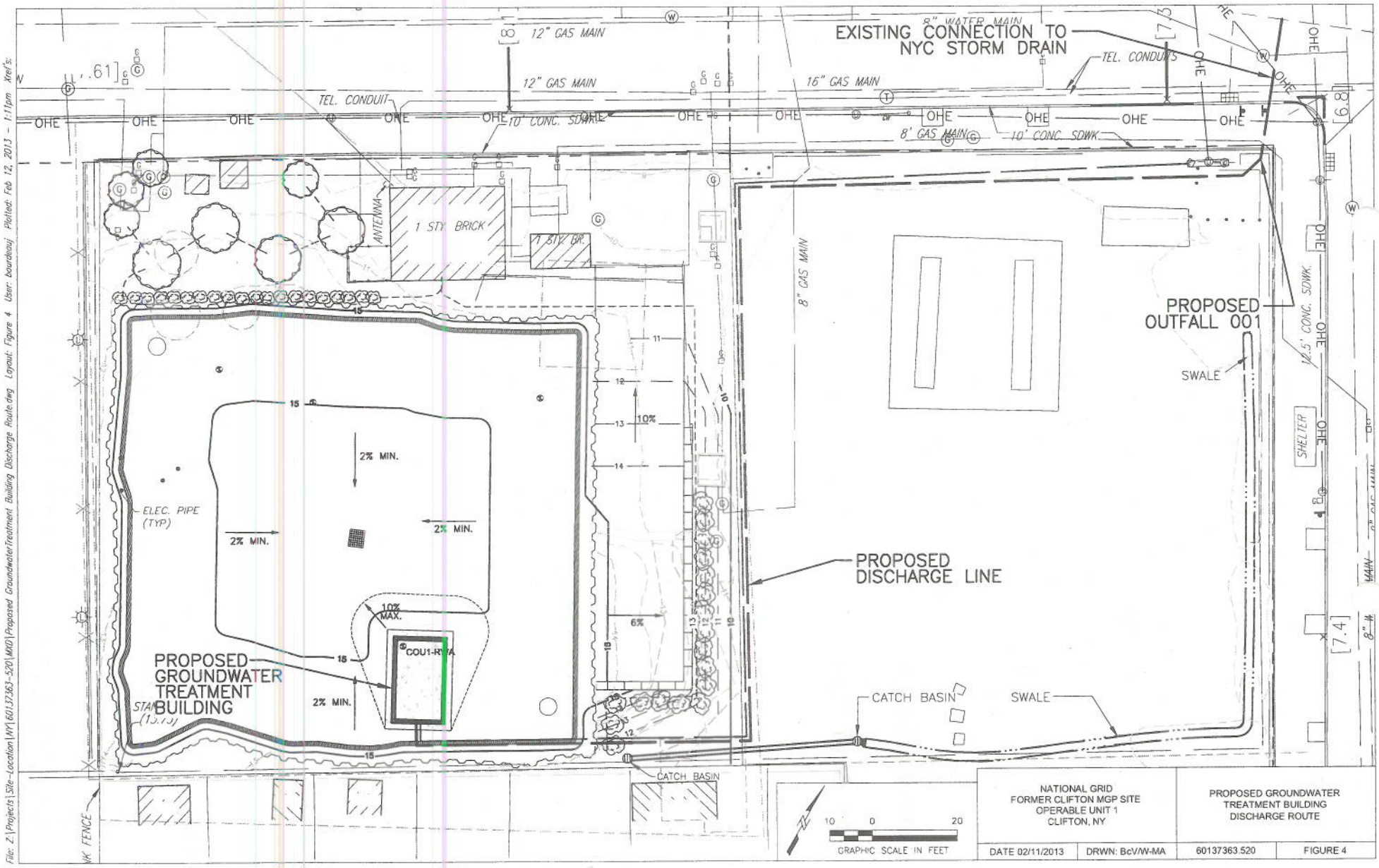
(3) Authorization to discharge is valid only for the period noted above but may be renewed if appropriate. A request for renewal must be received 6 months prior to the expiration date to allow for a review of monitoring data and reassessment of monitoring requirements.

(4) Both concentration (mg/l or µg/l) and mass loadings (lbs/day) must be reported to the Department for all parameters except flow and pH.

(5) Any use of corrosion/scale inhibitors, biocidal-type compounds, or other water treatment chemicals used in the treatment process must be approved by the department prior to use.

(6) This discharge and administration of this discharge must comply with the substantive requirements of 6NYCRR Part 750.

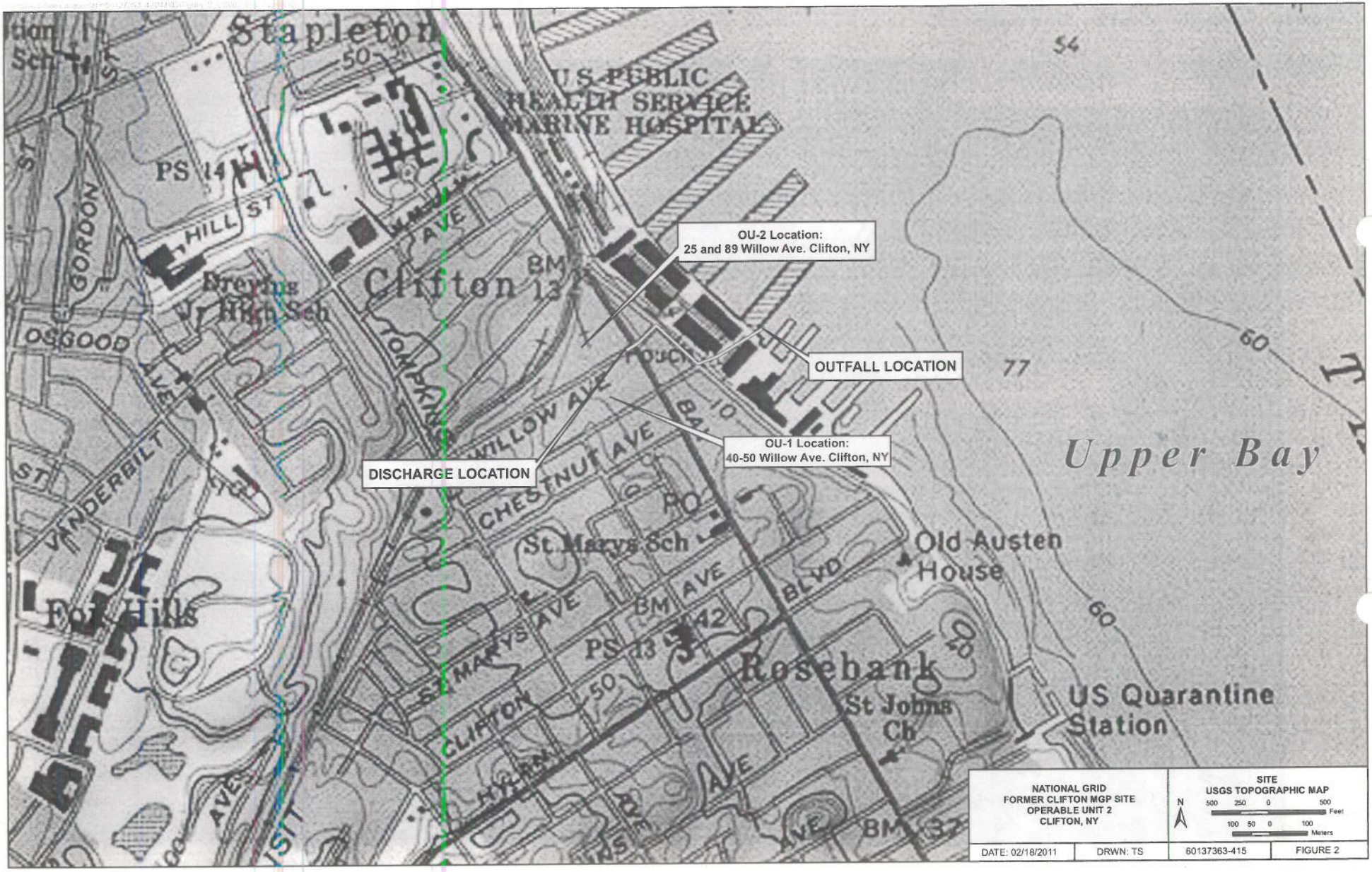
(7) *Monitor these parameters DAILY for **21** consecutive days. If the sampling results for **all** parameters comply with the limits, the monitoring frequency becomes WEEKLY. If weekly sampling results do not comply with limit for **any** parameter, the monitoring frequency becomes DAILY again till the sampling results for **all** parameters comply with the limits. Thereafter the monitoring frequency changes to WEEKLY.*

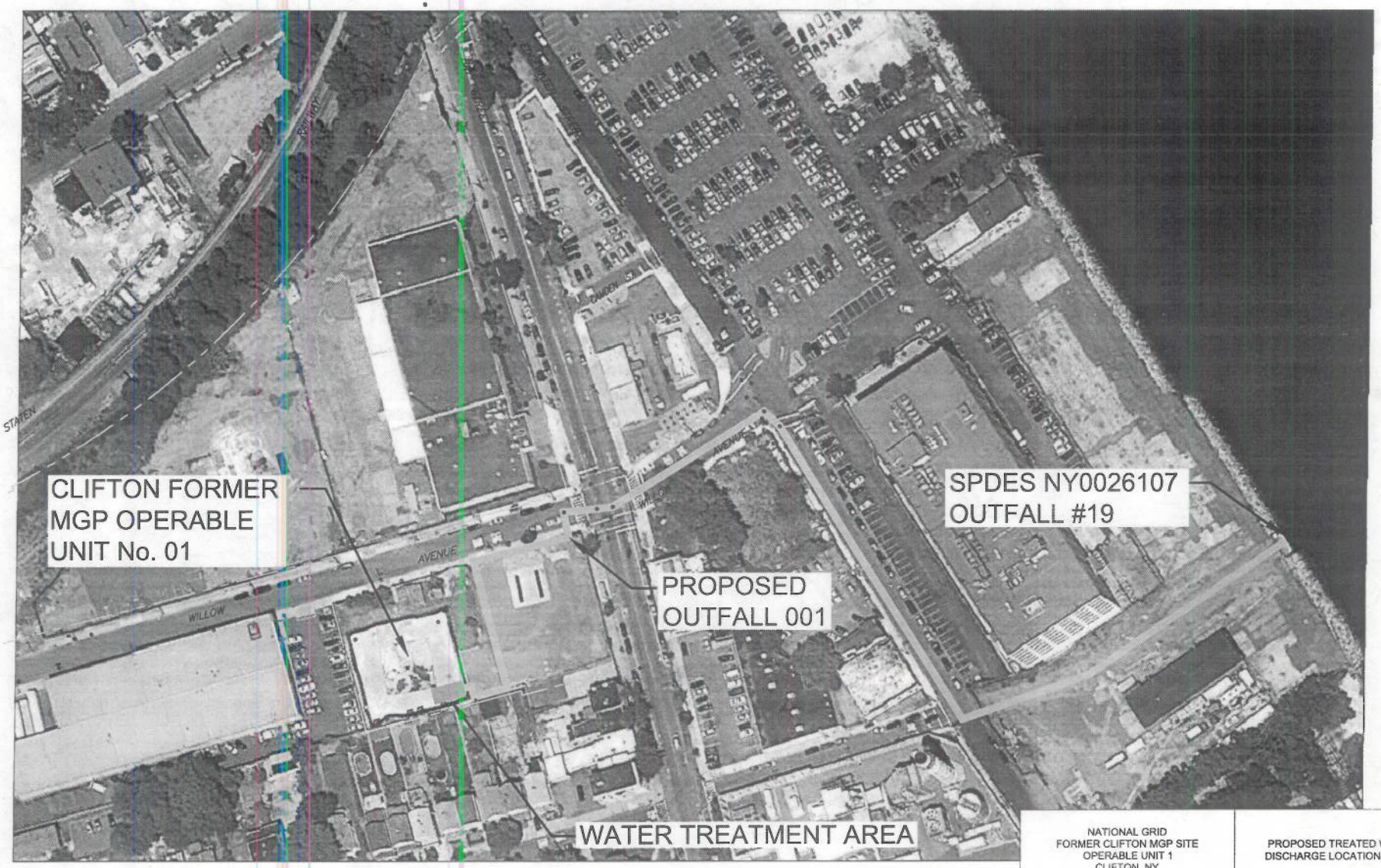


File: Z:\Projects\Site-Location\NY\60137363-520\MXD\Proposed GroundwaterTreatment Building Discharge Route.dwg Layout: Figure 4 User: boundeau Plotted: Feb 12, 2013 - 1:11pm Xref's:

Attachment A

As Built Plan


Stapleton
U.S. PUBLIC HEALTH SERVICE MARINE HOSPITAL
PS 14
HILL ST
GORDON
Drewing Jr High Sch
Clifton
BM 13
OSGOOD
VANDERBILT
TOMPKINS
WILLOW AVE
CHESTNUT AVE
St Marys Sch
Fort Hills
ST MARYS AVE
BM 42
PS 13
CLIFTON
Rosebank
St Johns Ch
Old Austen House
Upper Bay
US Quarantine Station
OU-2 Location:
25 and 89 Willow Ave. Clifton, NY
OUTFALL LOCATION
OU-1 Location:
40-50 Willow Ave. Clifton, NY
DISCHARGE LOCATION
54
77
60
50
NATIONAL GRID
FORMER CLIFTON MGP SITE
OPERABLE UNIT 2
CLIFTON, NY
SITE
USGS TOPOGRAPHIC MAP
N
500 250 0 500 Feet
100 50 0 100 Meters
DATE: 02/18/2011
DRWN: TS
60137363-415
FIGURE 2



NATIONAL GRID FORMER CLIFTON MGP SITE OPERABLE UNIT 1 CLIFTON, NY		PROPOSED TREATED WATER DISCHARGE LOCATION/ROUTE	
DATE 02/07/2013	DRWN: JB	60137363-520	FIGURE 3

File: Z:\Projects\Site-Location\NY\60137363-520\MXD\60137363-415-C01.dwg Layout: 115-3 User: boundsbay Plotted: Feb 07, 2013 - 2:21pm Ref's: