Glen Cove Former MGP Site

GLEN COVE, NASSAU COUNTY, NEW YORK

Interim Site Management Plan

NYSDEC Site Number: 1-30-089P

Prepared for:
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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

FEBRUARY 2015

Professional Engineer Certification

I, Matthew J. O'Neil, certify that I am currently a New York State registered professional engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with NYSDEC DER-10.

2/23/15
Date

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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.

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Abbreviations and Acronyms

AOC	Administrative Order on Consent
ASP	Analytical Sampling Protocol
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulation
DER	Department of Environmental Remediation
DNAPL	Dense Non-Aqueous Phase Liquid
DUSR	Data Usability Summary Report
ECs	Engineering Controls
EC/ICs	Engineering Controls and Institutional Controls
EPA	United States Environmental Protection Agency
EWP	Excavation Work Plan
GEI	GEI Consultants, Inc., P.C.
HASP	Health and Safety Plan
ICs	Institutional Controls
LILCO	Long Island Lighting Company
LIPA	Long Island Power Authority
LIRR	Long Island Railroad
MGP	Manufactured Gas Plant
NAPL	Non-Aqueous Phase Liquid
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OM&M	Operation, Maintenance and Monitoring
PAH	Polycyclic Aromatic Hydrocarbon
PSEG	Public Service Enterprise Group
PVC	Polyvinyl Chloride
Q1	First Quarter
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAOs	Remedial Action Objectives
RAP	Remedial Action Plan
RI	Remedial Investigation
ROW	Right-of-Way
SMP	Site Management Plan
SVI	Soil Vapor Intrusion
Units of Measurement	
bgs	Below Ground Surface
ft-msl	Feet Above Mean Sea Level

1. Introduction and Description of Remedial Program

1.1 Introduction

This Interim Site Management Plan (SMP)document is required as an element of the remedial program at the Glen Cove Former Manufactured Gas Plant (MGP) (hereinafter referred to as the “Site”) under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The Site was remediated in accordance with Administrative Order on Consent (AOC) # D1-001-98-11, Site # 130089, which was executed on March 30, 1999. The Site location map is shown in Figure 1.

1.2 General

National Grid entered into an AOC with the NYSDEC to remediate a 1.9 acre property located in Glen Cove, Nassau County, New York. This AOC required the Remedial Party, National Grid, to investigate and remediate MGP-related materials at the Site. A figure showing the current and historic site conditions is provided in Figure 2. A figure showing the Site location and boundaries of this 1.9-acre site is provided in Figure 3. The AOC covers the former MGP property and a right-of-way which extends north from the former MGP facility along the southern side of the Long Island Rail Road (LIRR) to Hazel Street. Based on the results of the Remedial Investigation (RI), no impacts were observed in the right-of-way, and it is not included in this Interim SMP. The boundaries of the MGP Site are more fully described in the metes and bounds site description that will be part of the Deed Restriction which will be prepared for the Site at the completion of the remedy.

After completion of the remedial work described in the Phase I Remedial Action Work Plan, some MGP-related residuals were left in the subsurface at this Site. The remaining MGP-related residuals are generally located below the water table at depths greater than 8 to 10 ft and do not have the potential for day-to-day exposure to site workers.

In accordance with the Remedial Action Plan (RAP) dated March 2010, additional remedial work, Phase II Remedial Action (RA) will be performed at the Site. This Interim SMP was prepared to manage remaining contamination at the Site until the Phase II RA has been performed, and the Deed Restriction is extinguished in accordance with Environmental Conservation Law Article 71, Title 36. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This Interim SMP was prepared by GEI Consultants, Inc., P.C. (GEI), on behalf of National Grid, in accordance with the requirements in NYSDEC Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This Interim SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required until the completion of the Phase II RA and a final SMP and Deed Restriction is prepared for the Site.

1.2.1 Purpose

As contemplated by the NYSDEC-approved Phase I Remedial Action Work Plan the Site contains MGP-related residuals left after completion of the remedial action. Engineering Controls have been incorporated into the Site remedy to control exposure to remaining impacts during the use of the Site to ensure protection of public health and the environment. The ICs place restrictions on Site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This Interim SMP specifies the methods necessary ensure compliance with all ECs and ICs required by the Deed Restriction for impacts that remains at the Site. This plan has been approved by the NYSDEC, and compliance with this plan is required by National Grid and the Site owner, Long Island Power Authority (LIPA). This Interim SMP may only be revised with the approval of the NYSDEC.

This Interim SMP provides a detailed description of all procedures required to manage remaining impacts at the Site after completion of the Phase I Remedial Action, 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. This SMP also describes which party (the property owner, National Grid, or NYSDEC) is responsible for each of these procedures. This SMP does not address the allocation of costs for any additional work or costs necessitated by development of the Site; that is a private matter to be worked out between National Grid and the property owner.

To address these needs, this Interim SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (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.

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

The Interim SMP will control exposure to remaining impacts until the Phase II Remedial Action is completed, a Certificate of Completion (COC) is granted, and a final SMP is in place. Some of the plans identified above may not be necessary until implementation of the final SMP. Those plans have been described in more detail below.

It is important to note that:

- The Deed Restriction will not accompany this Interim SMP.
- Failure to comply with this Interim SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the Order on Consent (Index # D1-001-98-11, Site # 130089) for the Site, and thereby subject to applicable penalties.

1.2.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager The NYSDEC will provide a notice of any approved changes to the Interim SMP, and append these notices to the Interim SMP that is retained in its files.

1.3 Site Background

1.3.1 Site Location and Description

The Site is located in Glen Cove, Nassau County, New York and is identified as Section 21, Block H and Lot 302 on the Glen Cove Tax Map. The property is owned by the Long Island Power Authority and is zoned I-2 (Light Industrial) on the Glen Cove Zoning Map dated February 2013. The Site is an inverted L-shaped parcel of approximately 1.9 acres presently occupied by an active electrical substation which serves Glen Cove and the surrounding area. Topographically, the Site is a flat depression bounded by approximately 20-foot high slopes to the north, south, and east. The west of the property slopes downward about 17 ft to Glen Cove Creek, a channelized stream, which eventually discharges to Hempstead Bay.

The Site is an approximately 1.9-acre area bounded by a health club parking area to the north with the LIRR tracks to the northwest, mixed commercial/residential properties to the south and to the east, and Glen Cove Arterial Highway (Route 107) right-of-way (ROW) to the west (see Figure 3). The boundaries of the Site are more fully described in Appendix A – Metes and Bounds. Glen Cove creek flows in a general south to north direction along the western property line. It approaches the property via a culvert which passes beneath Route 107 and flows along the property line in an open channelized section. The creek leaves the property boundary at the northwest corner of the Site through a box culvert that directs flow beneath the LIRR tracks. The creek eventually discharges to Mosquito Cove (Hempstead Bay).

Vehicle access to the Site is limited to a one-lane steeply-graded access road from a residential neighborhood terminating at the flat area in the center of the Site. The active

LIPA substation, located on the flat portion of the Site, is an important component of the utility’s infrastructure. The substation is fenced, as is access to the western portion of the Site and access from Grove Street. A separate easement runs along the north boundary of the property parallel to the health club property terminating to the east at Cedar Swamp Road.

1.3.2 Site History

MGP-related activities at the Site began in 1905 under the ownership of the Sea Cliff and Glen Cove Gas Company. The facility’s footprint was relatively small and remained unchanged through its operational period, which ended in 1929. Facility structures were located on the northern section of the property, and consisted of a 60,000 cubic foot gas holder, boilers, purifiers, retorts, coal shed, engine room, tar and oil tank, and approximately eight gas tanks. In 1923, Sea Cliff and Glen Cove Gas Company was purchased or merged with the Long Island Lighting Company (LILCO). A 40,000 cubic foot high pressure Hortonsphere gas holder was added to the facility in the southwestern portion of the Site in 1925 for gas distribution purposes.

In 1929, LILCO terminated MGP operations and demolished the facility’s surface structures sometime, thereafter. Site activities following 1929 consisted solely of natural gas storage in the Hortonsphere gas holder through the 1950s. The Hortonsphere was decommissioned and demolished between 1959 and 1966. A major electrical substation was constructed on the Site in the mid-1960s. In 1998, Brooklyn Union Gas and LILCO merged to form the KeySpan Corporation, at which time the ownership of the substation was transferred to LIPA. In 2007, National Grid acquired responsibility for the former MGP property through the acquisition of KeySpan. Currently, the Site is owned by LIPA and operated by Public Service Enterprise Group (PSEG) under contract to LIPA.

The substation footprint is coincidental with the majority of the main operations area of the former MGP. High voltage transmission lines transverse the fenced substation area and the west and northwest sections of the Site both aerially and below grade.

Through the 2007 acquisition of KeySpan, National Grid has accepted responsibility for addressing the environmental issues at the Site. As such, National Grid will be referenced in the performance of all past and future work throughout the remainder of the document.

1.3.3 Geologic Conditions

1.3.3.1 Geology

The shallow stratigraphy beneath the Site is considered heterogeneous fill and Upper Pleistocene deposits. The stratigraphic sequence consists of outwash deposits overlain by heterogeneous fill. The heterogeneous fill across most of the Site ranges in thickness from approximately 10 ft throughout most of the former Site to 30 ft in the off-site area just north of the Site boundary. The fill composition is primarily poorly sorted and highly permeable sand and gravel with varying percentages of gravel, silt, clay, and coal fragments. The glacial outwash deposits consist mainly of interbedded layers of permeable sand and gravel, and less permeable silty sand. The top of the glacial unit was encountered from approximately 10 ft below ground surface (bgs) on the central portion of the Site to approximately 32 ft bgs from the top of the railroad embankment. The ground surface elevation of the Site is significantly lower than the top of the railroad embankment and when factoring in the ground surface elevation difference, the glacial deposits are encountered at similar elevations across the Site and beneath the railroad embankment.

Glen Cove Creek originally occupied a natural stream channel just to the west of the Site before it was channelized along its present alignment. The natural creek bed is indicated by the alluvial deposits consisting of reworked glacial outwash present along the western boundary of the Site. The alluvial deposits associated with the original stream channel consist of isolated sand and gravelly sand layers encountered in the upper 5 to 10 ft of soils at the western site boundary.

A geologic section is shown in Figure 4.

1.3.3.2 Hydrogeology

The groundwater beneath the Site is considered part of the regional Upper Glacial aquifer. Regionally, this aquifer is not used for drinking water. Drinking water for Long Island is provided by the deeper Magothy aquifer. The Upper Glacial aquifer occurs in the glacial outwash encountered beneath the Site. Outwash soils encountered during well installation were permeable sands and gravelly sands with little to no fines interbedded with less permeable silty sands. These soil types are consistent with the Upper Glacial aquifer matrix description and the observed interbedding of permeable and lower permeability soil is consistent with the regional anisotropy (horizontal to vertical) of 10:1.

The observed interbedding and resulting anisotropy significantly limits the rate of vertical flow and migration as compared to the horizontal direction.

Groundwater elevations of site wells were similar for the shallow and intermediate wells ranging from about 43 to 53 ft above mean sea level (ft-msl). In general, groundwater is encountered near the base of the fill layer at the Site. Groundwater elevation contours indicate a consistent groundwater flow direction to the west for the shallow zone wells (3 to 22 ft bgs) and the west-northwest for the intermediate zone (16 to 36 ft bgs). The potentiometric surface in the shallow groundwater follows the general topography of the Site sloping from east to west. The hydraulic gradient is relatively steep (0.06 ft/foot) in the eastern and western portions of the Site and less steep (0.02 ft/foot) in the central portion of the Site with an average gradient of 0.04 ft/foot. A uniform hydraulic gradient of about 0.01 ft/foot appears in the intermediate groundwater across the Site. The estimated groundwater seepage flow velocities, assuming an effective porosity of 20%, were calculated for the shallow and intermediate aquifer zones as 0.044 and 0.001 ft/day, respectively.

The potential vertical hydraulic gradient in the central portion of the Site indicated a downward potential vertical gradient. An upward potential vertical gradient was present along the Site's western boundary. Wells installed off-site to the north of the Site showed variable potential vertical gradients likely due to recharge from rainfall events.

1.4 Summary of Remedial Investigation Findings

A Remedial Investigation RI was performed to characterize the nature and extent of impacts at the Site. The results of the RI are described in detail in the following reports:

- Final Remedial Investigation Report, Paulus, Sokolowski and Sartor Engineering, P.C., dated November 14, 2008.
- Phase I Site Investigation Report for the Glen Cove Former Manufactured Gas Plant Site, GEI/Atlantic Environmental Division, dated April 21, 1997.
- Due Diligence Investigation, Dvirka and Bartilucci, February 16, 2000.
- Remedial Investigation – Preliminary Data Submittal and Proposed Additional Work Scope, Paulus, Sokolowski and Sartor Engineering, PC, October 2004.
- Pre-Characterization Investigation, GEI, February 2010.
- Oxygen Injection Pilot Test Work Plan, GEI, April 13, 2010.

A number of investigations were performed to characterize the Site conditions and identify impacts to soil. Based on the findings of the previous investigations, the RI program, and subsequent investigations, the following conclusions were reached:

- The shallow stratigraphy beneath the Site consists of approximately 10 to 30 ft of heterogeneous fill soil at the surface overlying Upper Pleistocene glacial deposits. The fill soils are underlain by glacial outwash deposits to the greatest depth investigated (82 ft). The outwash deposit soils consist of highly permeable sands and gravelly sands interbedded with lower-permeability silty sands which appear to have retarded the vertical migration of dense non aqueous phase liquid (DNAPL) at the Site.
- Groundwater was generally encountered near the base of the fill soils at a depth of 8 ft bgs on the Site proper and is part of the regional Upper Glacial Aquifer. Groundwater flows in an east to west direction across the Site to Glen Cove Creek and eventually enters Glen Cove Creek as a non-point discharge.

- The areal extent of the visually apparent residual MGP-related impacts is limited to areas beneath or in the immediate vicinity of the former MGP operations in the northern and western portions of the Site and just beyond the Site limits to the north.

- The vertical distribution of MGP-related visual impacts begins at the water table, at a depth of 8 ft bgs as DNAPL/tar saturation and blebs, and their occurrence reduces with depth. The interbedded lower-permeability silty sand layers appear to have contributed to the limited vertical extent of DNAPL migration beneath the former MGP.

- The fill soils which are predominately above the water table are generally free of MGP residuals indicating that the fill was likely placed after removal of the MGP operation.

- Polycyclic aromatic hydrocarbons (PAHs) and metals are the identified constituents of concern in surface and near surface Site soils. Based on the background surface soil study, the relatively elevated PAHs detected on-site in surface/near surface soils suggests a potential contribution of PAH constituents from activities conducted on the former MGP site after or as part of placement of the surface fill soils. The source of the PAHs detected in soils at depths below the water table are associated with the MGP-related visual impacts, including DNAPL saturated and stained soil, present at the same locations and depths. The background surface soil study indicated similar conditions between on-site and off-site surface soil regarding the detected metals (arsenic, barium, cadmium, chromium, lead and mercury). This indicates that concentrations noted on-site are consistent with local conditions surrounding the Site and are not likely attributable to the activities on the former MGP.

- There are no significant or imminent threats to human health. The on-site risks are associated with potential contact with PAHs detected in the Site surface soils, which are presently prevented through Institutional and Engineering Controls. The Institutional Controls currently in place include Site awareness and worker training. The current Engineering Controls include a clean soil cover over the majority of the Site with a gravel cover in the active substation, which is restricting direct contact with surface soils and preventing fugitive dust generation. Access controls including perimeter fencing is maintained at the Site to restrict public access.

- A number of chemicals of potential ecological concern in soil, sediment and surface water exceed some toxicological benchmark values; however, there is little area for ecological communities to come in contact with contaminated media within the Site. Although the chemicals of potential ecological concern pose a potential risk of impacting local wildlife species this risk is minimal due to several reasons: the industrial/commercial area provides minimal habitat, constant physical disturbance prevents wildlife population from developing; only transient species and few individual animals utilize the area; and the frequency and duration of exposure is limited.

- The observed chemicals detected on-site do not pose a current risk nor is any risk expected in the future.

- Soil vapor samples were collected on properties adjacent to the Site to evaluate the potential migration of chemicals of potential concern impacting adjacent structures. Although the chemicals of potential concern were detected in soil vapor on these properties above the Upper Fence Values of the New York State Department of Health (NYSDOH) Background Outdoor Air Concentrations, the concentrations were too low to present a risk if associated with adjacent structures. They were also too low to determine whether their presence in the soil vapor was related to activities conducted on these properties versus soil vapor migrating from the Site. Therefore, no further investigation regarding off-site soil vapor was found to be warranted.

Geologic cross sections and extent of observed impacts are included in Figure 4.

1.5 Summary of Remedial Actions

The first phase of the remediation (Phase I RA) was performed in accordance with the NYSDEC-approved Phase I Remedial Action Work Plan (RAWP) dated May 2010.

The following is a summary of the Remedial Actions performed at the Site to date:

1. Excavation of MGP-impacted materials exceeding Commercial Use-SCOs listed in Table 375-6.8(b) of the NYSDEC DER-10, to a depth of 15 to 17 ft.

2. Construction and maintenance of a soil cover system consisting of a demarcation barrier and clean fill to prevent human exposure to remaining impacts soil/fill remaining within the excavation area.

1.5.1 Removal of Contaminated Materials from the Site

The Phase I RA consisted of the removal of MGP-impacted materials, via excavation, where they were present and accessible. The Phase I RA included the removal of the top 8 ft of urban fill through a combination of vacuum and conventional excavation methods, which allowed for the subsequent removal of accessible MGP-related source material or “hot spots” located beneath the fill. These “hot spots” were excavated to a depth of approximately 15 to 17ft below grade. A figure showing areas where excavation was performed is shown in Figure 5. The limits of what was considered to be accessible material were defined by the substation infrastructure, utility poles, and the channelized Glen Cove Creek. After removal, the excavated soils were transported off-site for treatment and disposal at an appropriately permitted, National Grid approved, thermal desorption facility. The excavation was lined with a demarcation barrier and brought back to final grade using clean backfill. The Site was then restored to pre-Phase I RA conditions or better under the direction of LIPA, which requested minor changes to the restoration plan to accommodate their upcoming facility upgrades. A total of 3,411.66 tons of impacted soils were transported to Clean Earth of Southeast Pennsylvania located in Morrisville, Pennsylvania for thermal desorption. The excavation was completed in May 21, 2011.

After the completion of the Phase I RA, an additional area of shallow PAH-impacted soils was removed to accommodate substation construction. A total 243.54 tons of PAH-impacted soils were transported offsite to Clean Earth of Southeast Pennsylvania for thermal desorption.

1.5.2 Site-Related Treatment Systems

A pilot test was conducted to collect data that will be used to design of an oxygen injection system. The results of the test were used to determine the injection well spacing and depth required within the area targeted for enhanced bioremediation. The system will be installed as Phase II of the remedy.

1.5.3 Remaining MGP-Related Residuals

The RA performed above was the first phase of the remedy planned at the Site. Therefore, the Remedial Action Objectives (RAOs) have not yet been achieved at the Site and remaining impacts were left in the subsurface at the Site.

The Phase II RA proposed for the Glen Cove former MGP is to treat contaminated groundwater that is likely to migrate from the Site and to remove mobile non aqueous phase liquid (NAPL). Specifically, the Phase II RA will entail:

- Groundwater Treatment: An oxygen injection system will be installed in a position to treat groundwater impacted with MGP-related contaminants as it migrates off the Site.

- Monitoring Well Installation: Monitoring wells will be installed downgradient of the oxygen injection system to monitor system effectiveness.

The second phase of the RA (Phase II RA) will commence when construction activities associated with LIPA's upgrades to the Glen Cove substation are inactive. A Phase II RAWP will be prepared describing the work in detail.

After the Phase II RA has been performed, a Final Engineer's Report will be prepared for the Site, including discussion of impacts remaining at the Site. In addition, a final SMP will be prepared to manage those impacts. Until that time, this Interim SMP was prepared to manage remaining impacts at the Site.

Table 1 summarizes the results of all soil samples remaining at the Site after completion of Remedial Action. Samples that exceed the Unrestricted Use are identified on the table. Samples that exceed the site specific use SCOs identified in the Decision Document (Commercial Use or Industrial Use) are also identified on the table. The lateral extent of soil impacts is depicted on Figure 3.

2. Engineering and Institutional Control Plan

2.1 Introduction

2.1.1 General

Because the full remedy has not been performed and soil and groundwater impacted by MGP-related residuals remain beneath the Site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. In general, the Engineering and Institutional Controls have not changed from those identified in the RI report (i.e. site and worker awareness, soil cover, fencing and gates). This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the Site and identifies future Engineering and Institutional Controls that will be included in the final SMP. The Engineering and Institutional Control Plan is one component of the Interim SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the Site.
- The basic implementation and intended role of each EC/IC.
- 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 EC/ICs, such as the implementation of the Excavation Work Plan (EWP) for the proper handling of remaining impacts that may be disturbed during maintenance or redevelopment work on the Site.
- A description of the roles and responsibilities of each party with respect to this SMP.
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

2.2 Engineering Controls

It is important to note that two of the Engineering Controls discussed below will be installed as part of the Phase II RA.

2.2.1 Soil Cover

The existing site grade acts as a "cover system" by limiting exposure to remaining impacts in soil/fill at the Site. After removal of excavated soils as part of the Phase I RA, the excavation was lined with a demarcation barrier and brought back to final grade using clean backfill. The Site was then restored to pre-Phase I RA conditions or better under the direction of LIPA, which requested minor changes to the restoration plan to accommodate their upcoming facility upgrades. Following completion of the Phase I RA, LIPA completed construction of an upgrade to the substation. During the construction, the elevation of the southern portion of the Site was increased by a minimum of 3 to 5 ft with imported clean fill. Surface soils within the existing substation consist of urban fill materials which have exhibited minor exceedances of Commercial Use SCOs for individual PAHs.

The Excavation Work Plan that appears in Appendix B outlines the procedures required to be implemented in the event the soil cover is breached, penetrated or temporarily removed, such that its structural integrity is compromised, and any underlying remaining MGP-related residuals within the substation footprint are disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this Interim SMP.

The soil cover is a passive Engineering Control and no operation of the control is required. The quality and integrity of the system will be ensured by the use of Institutional Controls, as discussed below. Any changes to the soil cover will be performed in accordance the EWP.

2.2.2 Access Controls

While the active substation is in operation, additional engineering controls will be in place to prevent access to the Site and limit exposure to remaining impacts for workers within the substation. These controls include the following:

- **Security Fence –** The Site is enclosed by a security fence topped with a triple stand of razor wire. Access to the locked gates is restricted to substation operation.

- **Site Warning Signs –** Signs indicating restricted access and the physical hazards associated with the substation equipment are installed at the Site. Additional signs will be installed on the substation gates alerting LIPA substation personnel not to dig on Site without prior approval from substation operations.

- **Hazard Communication Program –** Employees accessing the substation to conduct work at the Site will be required to review the hazard communication program documents posted in the control house prior to starting work on the Site.

- **Standard Operating Procedures –** LIPA internal operating procedures for intrusive work within substations include the additional notifications and requirements for intrusive work on the Orchard Substation (Glen Cove Former MGP Site). A copy of GO-10421: General Operation Procedure for Excavation in LIPA Substations and National Grid Facilities and Construction Standard CS-3575 Portable Grounding Assemblies is included in Appendix C.

- **Utility Mapping System –** The Orchard Substation (Glen Cove Former MGP Site) is included in the National Grid Gas Operations Mapping System as well as the LIPA Electrical Service Mapping System. This will alert utility workers to the presence of impacts prior to beginning work at the Site.

2.2.3 Oxygen Injection System

As part of the Phase II RA, an oxygen injection system will be installed in order to position to treat groundwater impacted with MGP-related contaminants as it migrates off the Site. Monitoring wells will be installed downgradient of the oxygen injection system to monitor system effectiveness.

Procedures for operating and maintaining the oxygen injection system will be documented in the Operation, Maintenance, and Monitoring (OM&M) Plan.

2.2.4 NAPL Recovery Wells

NAPL recovery wells were installed downgradient of the footprint of the 60,000-cubic ft former gas holder to remove mobile NAPL from the subsurface. The recovery wells are currently monitored for NAPL accumulation semi-annually during groundwater monitoring events. The recovery wells will be monitored quarterly after installation of the oxygen injection system when groundwater monitoring frequency increases to quarterly sampling.

2.2.5 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 6.6 of NYSDEC DER-10.

2.3 Institutional Controls

A series of Institutional Controls is required by the Decision Document to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining MGP-related residuals by controlling disturbances of those subsurface residuals; and, (3) limit the use and development of the Site to commercial or industrial uses only. Adherence to these Institutional Controls on the Site will be is required by the deed restriction and will be implemented under this Interim Site Management Plan. These Institutional Controls are:

- Compliance with the Deed Restriction and this SMP by the Grantor and the Grantor’s successors and assigns.
- All Engineering Controls must be operated and maintained by National Grid or the property owner as specified in this Interim SMP, including the Matrix of Responsibilities included as Table 2.
- All Engineering Controls on the Controlled Property must be inspected by National Grid at a frequency and in a manner defined in this Interim SMP.
- Groundwater and other environmental or public health monitoring must be performed by National Grid as defined in this Interim SMP.
- Data and information pertinent to Site Management of the Controlled Property must be reported by National Grid at the frequency and in a manner defined in this Interim SMP.

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

The Site has a series of Institutional Controls in the form of Site restrictions. Adherence to these Institutional Controls is required by the Deed Restriction. Site restrictions that apply to the Controlled Property are:

- The property may only be used for commercial or industrial use provided that the long-term Engineering and Institutional Controls included in this Interim SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted or restricted residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC. This Interim SMP does not address the cost of any additional remediation required by a higher level of use.
- All future intrusive activities on the property that will disturb remaining MGP-related residuals material must be conducted in accordance with this Interim SMP.
- The use of the groundwater underlying the property is prohibited without the approval of the NYSDEC.

- The potential for vapor intrusion must be evaluated for any buildings developed on the Site, and any potential impacts that are identified must be monitored or mitigated.

- Vegetable gardens and farming on the property are prohibited.

- The Site owner 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 SMP. 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.

2.3.1 Excavation Work Plan

Any future intrusive work that will penetrate the soil cover, or encounter or disturb the remaining MGP-related residuals, including any modifications or repairs to the existing soil cover to maintain its structural integrity, will be performed in compliance with the EWP that is attached as Appendix B to this Interim SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the Site. A sample HASP and CAMP are attached as Appendix D and Appendix E, respectively. The sample HASP and CAMP are in current compliance with NYSDEC DER-10, and 29 Code of Federal Regulation (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 HASP and CAMP will be updated and re-submitted for NYSDEC approval. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The Site owner and parties performing this work, are jointly and completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining impacts, and for structures that may be affected by excavations (such as building foundations and bridge footings). The Site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this Interim SMP.

2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining MGP-related residuals and the potential for soil vapor intrusion (SVI) has been identified, an SVI evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This 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 SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded by National Grid, in accordance with the Responsibility Matrix, attached as Table 2, to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. Validated SVI data will be transmitted to the property owner within 30 days of validation. If any indoor air test results exceed NYSDOH guidelines, relevant NYSDOH fact sheets will be provided to all tenants and occupants of the property within 15 days of receipt of validated data.

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

2.4 Inspections and Notifications

2.4.1 Inspections

Inspections of all remedial components installed at the Site will be conducted by National Grid, in accordance with the Responsibility Matrix, attached as Table 2, at the frequency specified in the Interim SMP Monitoring Plan schedule. A comprehensive site-wide inspection 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 Interim SMP 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.
- 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 Interim SMP (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 ECs occurs, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the Site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

The Site Owner will notify the NYSDEC and National Grid, as needed, for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent, 6NYCRR Part 375, and/or Environmental Conservation Law.
- 30 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, 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 the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any proposed change in the ownership of the Site, the use of the Site, or the responsibility for implementing this Interim SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC and National Grid 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, and all approved work plans and reports, including this Interim SMP

- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 Contingency Plan

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions. An Emergency Response Plan and Contingency Plan are included in Appendix D as part of the HASP. A truck transport route is included in Figure 6. Directions and a map of the route to the closest hospital are included in Figure 7.

2.5.1 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 below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to National Grid. These emergency contact lists must be maintained in an easily accessible location at the Site. A list of emergency contact numbers is included in Table 3. A list of contact numbers for site personnel is included in Table 4.

2.5.2 Map and Directions to Nearest Health Facility

A map and directions to the Glen Cove Hospital is included on Figure 7.

Site Location:	Intersection of Grove Street and Stanco Street, Glen Cove, New York
Nearest Hospital Name:	Glen Cove Hospital
Hospital Location:	101 Saint Andrews Lane, Glen Cove, New York

Hospital Telephone:	(516) 674-7325 Emergency (516) 674-7300 General

Directions to the Hospital:

1. Head east on Grove Street toward Cedar Swamp Road
2. Left on Cedar Swamp Road
3. Continue onto Glen Street after 0.2 miles
4. Turn right onto Pearsall Ave. after 0.2 miles
5. Bear left onto Walnut Road and continue 0.6 miles
6. Turn left onto Saint Andrews Lane
7. Hospital will be on the left

Total Distance:	1.5 Miles
Total Estimated Time:	6 Minutes

2.5.3 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 on Table 3.

Amendments to the contingency plan may be proposed for future construction based on project specific basis. Changes to the contingency plan must be approved by National Grid and NYSDEC.

2.5.4 Spill Response Plan and Notification

Spill response will be handled similarly to other emergencies, with additional calls to National Grid’s spill response contractor and National Grid project manager.

3. Site 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 MGP-related residuals at the Site, the soil cover, and all affected site media identified below. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. During these inspections, an inspection form (Appendix F) will be completed.

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, 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.
- 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 (QA/QC) requirements.
- Inspection and maintenance requirements for monitoring wells.

- Monitoring well decommissioning procedures.
- Annual inspection and periodic certification.

Semi-Annual monitoring of the performance of the remedy will be conducted by National Grid, in accordance with the Responsibility Matrix, attached as Table 2, until the oxygen injection system is installed as part of Phase II of the overall site remedy. 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 5 and outlined in detail in Sections 3.2 and 3.3 below.

3.2 Cover System Monitoring

Annual inspections will be conducted to ensure that the clean soil cover continues to be effective at preventing direct exposure to residual impacts throughout the Site. Inspections of the clean soil cover will also be conducted whenever a severe condition, such as major erosion or flooding occurs at the Site. The owner will notify National Grid if conditions at the Site indicate that the integrity of the clean surface cover may be compromised from a severe condition at the Site. Inspection reports and records of any repairs made to the Site cover will be included, as described in Section 5.

3.3 Media Monitoring Program

3.3.1 Groundwater Monitoring

As part of the long term monitoring of the remedy, National Grid began quarterly monitoring of the groundwater at the Site in First Quarter (Q1) 2010. This data, and the subsequent 2011 semiannual data, will provide a seasonal baseline of groundwater analytical results to compare against post-remedy concentrations and evaluate the overall effectiveness of the RA.

Groundwater monitoring will continue to be performed on a semi-annual basis by National Grid to assess the performance of the remedy. A groundwater sampling list is provided in Table 6. The sampling list includes an inventory of on-site and off-site monitoring wells and piezometers, sampling frequency, and analytical testing required at the wells.

The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the Site. The location of each of the monitoring wells in the network is included on Figure 8.

Monitoring well construction logs are included in Appendix G.

The sampling frequency may be modified with the approval NYSDEC. The Interim SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified below.

3.3.2 Sampling Protocol

All monitoring well sampling activities performed by National Grid, in accordance with the Responsibility Matrix, attached as Table 2, will be recorded in a field book and a groundwater-sampling log presented in Appendix H. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network. Monitoring wells or recovery wells which contain measureable levels of NAPL will not be sampled.

Specific protocols for sampling various media at the Site is included in the Field Sampling Plan included in Appendix I.

3.3.3 Monitoring Well Repairs, Replacement and Decommissioning

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped performed by National Grid, in accordance with the Responsibility Matrix, attached as Table 2. Additionally, monitoring wells will be properly decommissioned and replaced performed by National Grid (as per the Monitoring Plan), in accordance with the Responsibility Matrix, attached as Table 2, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed by National Grid, in accordance with the Responsibility Matrix, attached as Table 2 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 NYSDEC. Well abandonment will be performed in accordance with 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.

3.3.4 NAPL Monitoring and Recovery

A network of NAPL monitoring and recovery wells was installed at the Site as part of the Phase II RA. Semi-annual monitoring of NAPL in the wells by National Grid will continue until the installation of the oxygen injection system. Following installation of oxygen injection system, monitoring will be conducted quarterly.

3.4 Site-Wide Inspection

Site-wide inspections will be performed by National Grid, in accordance with the Responsibility Matrix, attached as Table 2 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 F). The form will compile sufficient information to assess the following:

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

3.5 Monitoring Quality Assurance/Quality Control

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

- QA/QC Objectives for Data Measurement.
- Sampling Program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the NYSDEC Analytical Sampling Protocol (ASP) requirements.

  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.

- Sample Tracking and Custody Procedures.

- Calibration Procedures:

  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.

  - The laboratory will follow all calibration procedures and schedules as specified in EPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.

- Analytical Procedures.

- Preparation of a Data Usability Summary Report (DUSR), 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 QC and Checks.

- QA Performance and System Audits.

- Preventative Maintenance Procedures and Schedules.

- Corrective Action Measures.

3.6 Monitoring Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections will be kept on file by National Grid. 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 Interim SMP.

All monitoring results will be reported to NYSDEC by National Grid, in accordance with the Responsibility Matrix, attached as Table 2 on a periodic basis in a Semi-Annual Monitoring Report for 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.

- A determination as to whether groundwater conditions have changed since the last reporting event.

- All types of reports that will be submitted within a calendar year and what information will be provided in each type of report.

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 7.

4. Operation, Maintenance and Monitoring Plan

Procedures for operating and maintaining the oxygen injection system will be documented in the Operation, Maintenance and Monitoring (OM&M) Plan. Details of the plan will be amended here for the final SMP.

No other OM&M Plan will be required for the existing or proposed Engineering Controls.

5. Inspections, Reporting and Certifications

5.1 Site Inspections

5.1.1 Inspection Frequency

All inspections will be conducted by National Grid in accordance with the Responsibility Matrix, attached as Table 2 at the frequency specified in the schedule provided in Section 3 Monitoring Plan of this Interim SMP. At a minimum, a site-wide inspection 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 condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

A general site-wide inspection form will be completed during the site-wide inspection (see Appendix F). This form is subject to NYSDEC revision.

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 monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs 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 remedy continues to be protective of public health and the environment and is performing as designed in the RAWP.

5.2 Certification of Engineering and Institutional Controls

No certification of the institutional controls will be required as part of the Interim SMP. After the Phase II RAWP has been implemented, as part of the final SMP, a qualified environmental professional will prepare a certification for the engineering and institutional controls.

5.3 Periodic Review Report

A Periodic Review Report will be submitted by National Grid in accordance with the Responsibility Matrix, attached as Table 2 to the Department every year, beginning fifteen months after the Certificate of Completion or equivalent document is issued. 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 ECs/ICs required by the remedy for the Site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable inspection forms and other records generated for the Site 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), 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 evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document.
    - 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 impacts 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.

  - The overall performance and effectiveness of the remedy.

- A performance summary for all treatment systems at the Site during the calendar year, including information such as:

  - The number of days the system was run for the reporting period.

  - The average, high, and low flows per day.

  - The contaminant mass removed.

  - A description of breakdowns and/or repairs along with an explanation for any significant downtime.

  - A description of the resolution of performance problems.

  - A summary of the performance, effluent and/or effectiveness monitoring.

  - Comments, conclusions, and recommendations based on data evaluation.

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 NYSDOH 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 by National Grid or the property owner, in accordance with the Responsibility Matrix, attached as Table 2, 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.

Tables

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

						GCSS-45	GCHA-101	GCHA-103	GCHA-104	GCMW-17I2	GCMW-17I2	GCMW-19I2	GCMW-19I2
Location Name						GCSS-45	GCHA-101	GCHA-103	GCHA-104	GCMW-17I2	GCMW-17I2	GCMW-19I2	GCMW-19I2
Sample Name						GCSS 45	GCHA-101 (0'-2')	GCHA-103 (0'-2')	GCHA-104 (0'-2')	GCMW-17I2 (25-27)	GCMW-17I2 (43-45)	GCMW-19I2 (23-25)	GCMW-19I2 (25-27)
Start Depth						0	0	0	0	25	43	23	25
End Depth						0.21	2	2	2	27	45	25	27
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						4/15/2005	6/1/2011	6/1/2011	6/1/2011	2/4/2010	2/5/2010	2/8/2010	2/8/2010
Parent Sample													
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	NA	0.012 U	0.013 U	0.011 U	0.011 U	0.011 U	0.11 U	0.011 U
Toluene		108-88-3	0.7	500	1000	NA	0.012 U	0.013 U	0.011 U	0.011 U	0.011 U	**0.06 J**	0.011 U
Ethylbenzene		100-41-4	1	390	780	NA	0.012 U	0.013 U	0.011 U	0.011 U	0.011 U	**6.5 D**	**0.006 J**
Total Xylene		1330-20-7	0.26	500	1000	NA	0.012 U	0.013 U	0.011 U	0.011 U	0.011 U	**18 D**	**0.011**
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	NA	ND	ND	ND	ND	ND	**24.56**	**0.017**
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	0.012 U	0.013 U	0.011 U	0.011 U	0.011 U	0.11 U	0.011 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.013 U
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	**0.003 J**
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	0.011 U	0.011 U	**0.022 J**	**0.012**
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	0.011 U	0.011 U	0.11 U	0.011 U
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						GCSS-45	GCHA-101	GCHA-103	GCHA-104	GCMW-17I2	GCMW-17I2	GCMW-19I2	GCMW-19I2
Sample Name						GCSS 45	GCHA-101 (0'-2')	GCHA-103 (0'-2')	GCHA-104 (0'-2')	GCMW-17I2 (25-27)	GCMW-17I2 (43-45)	GCMW-19I2 (23-25)	GCMW-19I2 (25-27)
Start Depth						0	0	0	0	25	43	23	25
End Depth						0.21	2	2	2	27	45	25	27
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						4/15/2005	6/1/2011	6/1/2011	6/1/2011	2/4/2010	2/5/2010	2/8/2010	2/8/2010
Parent Sample													
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.52 U	**0.1 J**	4.2 U	**0.17 J**	**8.5 J**	**0.088 J**	**340 D**	**23 J**
Acenaphthylene		208-96-8	100	500	1000	0.52 U	**3.1**	**37**	**3**	**24 D**	**0.091 J**	**27 J**	**8.8 J**
Anthracene		120-12-7	100	500	1000	**0.31 J**	**0.97**	**11**	**2.5**	**100 D**	**0.4**	**130 D**	**43 D**
Benzo(a)anthracene		56-55-3	1	5.6	11	**2**	**5.9**	**77 D**	**5.3**	**57 D**	**0.3 J**	**140 D**	**53 D**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**3.6**	**7.4 D**	**87 D**	**10 D**	**37 D**	**0.22 J**	**79 D**	**27 D**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**1.7**	**8.8 D**	**63**	**5.2**	**21 D**	**0.14 J**	**36 J**	**15 J**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**0.57**	**4.1**	**38**	**3.8**	**21 D**	**0.17 J**	**43 J**	**15 J**
Benzo(a)pyrene		50-32-8	1	1	1.1	**2.1**	**8.6 D**	**70 D**	**9.1 D**	**51 D**	**0.31 J**	**120 D**	**43 D**
Chrysene		218-01-9	1	56	110	**2.4**	**7 D**	**77 D**	**5.9**	**110 D**	**0.51**	**100 D**	**39 D**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	**0.24 J**	**1.2**	**11**	**1.1**	**3.2 J**	0.36 U	**4.9 J**	**2.4 J**
Fluoranthene		206-44-0	100	500	1000	**4.8**	**6 J**	**74 J**	**5.2 J**	**100 D**	**0.44**	**310 D**	**110 D**
Fluorene		86-73-7	30	500	1000	**0.11 J**	**0.35 J**	**2.8 J**	**0.23 J**	**29 D**	**0.15 J**	**160 D**	**5.7 J**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**0.72**	**3.9**	**35**	**3.5**	**18 J**	**0.12 J**	**38 J**	**13 J**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.52 U	**2.4**	**7.1**	**0.21 J**	**17 J**	**0.097 J**	**360 D**	**3.1**
Naphthalene		91-20-3	12	500	1000	0.52 U	**7.9 D**	**20**	**0.59**	**14 J**	**0.15 J**	**1100 D**	**11 J**
Phenanthrene		85-01-8	100	500	1000	**2.1**	**2.4**	**12**	**0.69**	**170 D**	**0.63**	**760 D**	**270 D**
Pyrene		129-00-0	100	500	1000	**4.4**	**7.7 D**	**120 D**	**9.2 D**	**150 D**	**0.76**	**440 D**	**160 D**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**25.05**	**77.82**	**741.9**	**65.69**	**930.7**	**4.576**	**4187.9**	**842**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	**0.38 J**	**0.085 J**	**0.32 J**	**0.23 J**
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	0.38 UJ	0.36 U	0.36 UJ	0.37 U
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	**0.37 J**	0.36 U	**2.4**	**0.16 J**
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 UJ
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	**3.2**	**0.098 J**	**23 J**	**4.1**
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	0.38 UJ	0.36 U	0.36 UJ	0.37 U

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					Sample Name	GCSS 45	GCHA-101 (0'-2')	GCHA-103 (0'-2')	GCHA-104 (0'-2')	GCMW-17I2 (25-27)	GCMW-17I2 (43-45)	GCMW-19I2 (23-25)	GCMW-19I2 (25-27)
					Start Depth	0	0	0	0	25	43	23	25
					End Depth	0.21	2	2	2	27	45	25	27
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/15/2005	6/1/2011	6/1/2011	6/1/2011	2/4/2010	2/5/2010	2/8/2010	2/8/2010
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	0.95 U	0.92 U	0.91 U	0.93 U
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	0.95 U	0.92 U	0.91 U	0.93 U
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	0.38 UJ	0.36 U	0.36 U	0.37 UJ
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	0.38 UJ	0.36 UJ	0.36 UJ	0.37 UJ
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	0.95 U	0.92 U	0.91 U	0.93 U
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	0.95 U	0.92 U	0.91 U	0.93 U
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	0.95 U	0.92 U	0.91 U	0.93 U
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 UJ	0.37 U
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	0.95 U	0.92 U	0.91 U	0.93 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	**1.3**	0.92 U	0.91 U	0.93 U
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	0.95 U	0.92 U	0.91 UJ	0.93 U
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	0.38 U	0.36 U	0.36 U	0.37 U
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCSS-45**	**GCHA-101**	**GCHA-103**	**GCHA-104**	**GCMW-17I2**	**GCMW-17I2**	**GCMW-19I2**	**GCMW-19I2**
					Sample Name	**GCSS 45**	**GCHA-101 (0'-2')**	**GCHA-103 (0'-2')**	**GCHA-104 (0'-2')**	**GCMW-17I2 (25-27)**	**GCMW-17I2 (43-45)**	**GCMW-19I2 (23-25)**	**GCMW-19I2 (25-27)**
					Start Depth	**0**	**0**	**0**	**0**	**25**	**43**	**23**	**25**
					End Depth	**0.21**	**2**	**2**	**2**	**27**	**45**	**25**	**27**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/15/2005**	**6/1/2011**	**6/1/2011**	**6/1/2011**	**2/4/2010**	**2/5/2010**	**2/8/2010**	**2/8/2010**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Sample Name	GCSS 45	GCHA-101 (0'-2')	GCHA-103 (0'-2')	GCHA-104 (0'-2')	GCMW-17I2 (25-27)	GCMW-17I2 (43-45)	GCMW-19I2 (23-25)	GCMW-19I2 (25-27)
					Start Depth	0	0	0	0	25	43	23	25
					End Depth	0.21	2	2	2	27	45	25	27
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/15/2005	6/1/2011	6/1/2011	6/1/2011	2/4/2010	2/5/2010	2/8/2010	2/8/2010
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	**2910 ***	**3450 ***	**4250 ***	**2160 J**
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	**0.66 J**	**0.61 J**	**0.69 J**	**0.34 J**
Arsenic		7440-38-2	13	16	16	**26.5**	NA	NA	NA	**0.59 J**	**0.37 J**	**1 J**	**0.98 J**
Barium		7440-39-3	350	400	10000	**181 E**	NA	NA	NA	**34.1**	**35**	**78.1**	**28.5**
Beryllium		7440-41-7	7.2	590	2700		NA	NA	NA	**0.2 J**	**0.22 J**	**0.16 J**	**0.12 J**
Cadmium		7440-43-9	2.5	9.3	60	**0.51 B**	NA	NA	NA	0.039 U	0.037 U	**0.038 J**	0.038 U
Calcium		7440-70-2	NE	NE	NE		NA	NA	NA	**1830**	**1480**	**1620**	**805**
Chromium		7440-47-3	NE	NE	NE	**24.4 ***	NA	NA	NA	**10.5 J**	**9 J**	**20.9 J**	**7.3 J**
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	**4.3 J**	**4.4 J**	**7.2**	**3.9 J**
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	**5.8**	**4.6**	**8.1**	**3.5**
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	**8170 J**	**8380 J**	**10200 J**	**5390 J**
Lead		7439-92-1	63	1000	3900	**113 *E**	NA	NA	NA	**3.4 J**	**4 J**	**2.2 J**	**2.4 J**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	**1390 ***	**1690 ***	**3370 ***	**844 ***
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	**174 J**	**139 J**	**419 J**	**87.1 J**
Mercury		7439-97-6	0.18	2.8	5.7	**0.29**	NA	NA	NA	0.019 U	0.018 U	0.018 U	0.019 U
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	**8.2**	**8.2**	**14.8**	**6.6**
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	**964**	**1060**	**862**	**518 J**
Selenium		7782-49-2	3.9	1500	6800	**1.7**	NA	NA	NA	0.28 UJ	0.27 UJ	0.27 UJ	0.28 UJ
Silver		7440-22-4	2	1500	6800	0.21 U	NA	NA	NA	0.094 U	0.091 U	0.091 U	0.093 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	**77.4 J**	**70.7 J**	**77.9 J**	**55 J**
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	**0.56 J**	**0.54 J**	**0.55 J**	0.36 U
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	**11.5**	**11.8**	**14.4**	**7.3**
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	**21 J**	**16 J**	**17 J**	**9.1 J**
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						**GCSS-45**	**GCHA-101**	**GCHA-103**	**GCHA-104**	**GCMW-17I2**	**GCMW-17I2**	**GCMW-19I2**	**GCMW-19I2**
Sample Name						**GCSS 45**	**GCHA-101 (0'-2')**	**GCHA-103 (0'-2')**	**GCHA-104 (0'-2')**	**GCMW-17I2 (25-27)**	**GCMW-17I2 (43-45)**	**GCMW-19I2 (23-25)**	**GCMW-19I2 (25-27)**
Start Depth						**0**	**0**	**0**	**0**	**25**	**43**	**23**	**25**
End Depth						**0.21**	**2**	**2**	**2**	**27**	**45**	**25**	**27**
Depth Unit						**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
Sample Date						**4/15/2005**	**6/1/2011**	**6/1/2011**	**6/1/2011**	**2/4/2010**	**2/5/2010**	**2/8/2010**	**2/8/2010**
Parent Sample													
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	NA	NA	NA	NA	NA	NA	NA	NA
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	Na	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**36.1**	**13.3**	**21.9**	**11.5**	**12.2**	**9.4**	**9**	**11**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCMW-19I2**	**GCMW-19I2**	**GCSB-20**	**GCSB-20**	**GCSB-20**	**GCSB-20**	**GCSB-21**
					Sample Name	**GCDUP-01**	**GCMW-19I2 (43-45)**	**GCSB-20 (13-15)**	**GCSB-20 (19-23)**	**DUP-GC01**	**GCSB-20 (50-52)**	**GCSB-21 (29-31)**
					Start Depth	**25**	**43**	**13**	**19**	**19**	**50**	**29**
					End Depth	**27**	**45**	**15**	**23**	**23**	**52**	**31**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/8/2010**	**2/8/2010**	**6/4/2014**	**6/4/2014**	**6/4/2014**	**6/5/2014**	**5/20/2014**
					Parent Sample	**GCMW-19I2 (25-27)**				**GCSB-20 (19-23')**		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**							
BTEX	mg/kg											
Benzene		71-43-2	0.06	44	89	0.011 U	0.011 U	**0.016**	0.006 U	0.006 U	0.007 U	0.007 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.011 U	**0.015**	0.006 U	0.006 U	0.007 U	0.007 U
Ethylbenzene		100-41-4	1	390	780	**0.003 J**	0.011 U	**0.091**	0.006 U	0.006 U	0.007 U	0.007 U
Total Xylene		1330-20-7	0.26	500	1000	**0.005 J**	0.011 U	**0.023**	0.006 U	0.006 U	**0.003 J**	0.007 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	**0.008**	ND	**0.145**	ND	ND	**0.003**	ND
Other VOCs	mg/kg											
Acetone		67-64-1	0.05	500	1000	0.011 U	0.011 U	**0.016**	**0.003 J**	**0.002 J**	**0.004 J**	**0.056**
Bromodichloromethane		75-27-4	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Bromoform		75-25-2	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Bromomethane		74-83-9	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Carbon disulfide		75-15-0	NE	NE	NE	0.011 U	0.011 U	**0.002 J**	0.006 U	0.006 U	0.007 U	**0.0009 J**
Carbon tetrachloride		56-23-5	0.76	22	44	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Chlorobenzene		108-90-7	1.1	500	1000	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Chloroethane		75-00-3	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Chloroform		67-66-3	0.37	350	700	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Chloromethane		74-87-3	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 UJ
Dibromochloromethane		124-48-1	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
1,1-Dichloroethane		75-34-3	0.27	240	480	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
1,2-Dichloroethane		107-06-2	0.02	30	60	0.011 U	0.011 U	0.006 UJ	0.006 UJ	0.006 UJ	0.007 U	0.007 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
2-Hexanone		591-78-6	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	0.011 U	0.011 U	**0.004 J**	0.006 U	**0.001 J**	0.007 U	**0.012**
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.011 U	0.011 U	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Methylene chloride		75-09-2	0.05	500	1000	0.011 UJ	0.011 UJ	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Styrene		100-42-5	NE	NE	NE	0.011 U	0.011 U	**0.009**	0.006 U	0.006 U	0.007 UJ	0.007 U
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	**0.002 J**	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
Vinyl chloride		75-01-4	0.02	13	27	0.011 U	0.011 U	0.006 U	0.006 U	0.006 U	0.007 U	0.007 U
TCLP VOCs	ug/L											
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCMW-19I2**	**GCMW-19I2**	**GCSB-20**	**GCSB-20**	**GCSB-20**	**GCSB-20**	**GCSB-21**
					Sample Name	**GCDUP-01**	**GCMW-19I2 (43-45)**	**GCSB-20 (13-15)**	**GCSB-20 (19-23)**	**DUP-GC01**	**GCSB-20 (50-52)**	**GCSB-21 (29-31)**
					Start Depth	**25**	**43**	**13**	**19**	**19**	**50**	**29**
					End Depth	**27**	**45**	**15**	**23**	**23**	**52**	**31**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/8/2010**	**2/8/2010**	**6/4/2014**	**6/4/2014**	**6/4/2014**	**6/5/2014**	**5/20/2014**
					Parent Sample	**GCMW-19I2 (25-27)**				**GCSB-20 (19-23')**		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**							
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg											
Acenaphthene		83-32-9	20	500	1000	**39 J**	0.37 U	**58**	**0.23 J**	**0.25 J**	**0.28 J**	0.38 UJ
Acenaphthylene		208-96-8	100	500	1000	**12 J**	**0.08 J**	**8.7 J**	**0.1 J**	**0.12 J**	**0.46**	0.38 UJ
Anthracene		120-12-7	100	500	1000	**40 D**	**0.1 J**	**53**	**0.67**	**0.52**	**0.82**	0.38 UJ
Benzo(a)anthracene		56-55-3	1	5.6	11	**41 D**	**0.092 J**	**29**	**0.45**	**0.53**	**0.52**	0.38 UJ
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**20 D**	0.37 U	**20**	**0.43**	**0.47**	**0.39**	0.38 UJ
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**13 J**	0.37 U	**8.1 J**	**0.19 J**	**0.2 J**	**0.15 J**	0.38 UJ
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**5.1 J**	0.37 U	**15 J**	**0.32 J**	**0.35 J**	**0.25 J**	0.38 UJ
Benzo(a)pyrene		50-32-8	1	1	1.1	**33 D**	0.37 U	**27**	**0.44**	**0.49**	**0.49**	0.38 UJ
Chrysene		218-01-9	1	56	110	**36 D**	**0.08 J**	**38**	**0.95**	**0.85**	**0.69**	0.38 UJ
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	**1.6 J**	0.37 U	**2.2 J**	0.37 U	0.38 U	0.39 U	0.38 UJ
Fluoranthene		206-44-0	100	500	1000	**85 D**	**0.17 J**	**76**	**0.9**	**1.1**	**1.4**	0.38 UJ
Fluorene		86-73-7	30	500	1000	**27 D**	0.37 U	**44**	**0.24 J**	**0.28 J**	**0.53**	0.38 UJ
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**5.2 J**	0.37 U	**10 J**	**0.23 J**	**0.26 J**	**0.2 J**	0.38 UJ
2-Methylnaphthalene		91-57-6	NE	NE	NE	**1.8**	**0.38**	**1**	0.37 U	0.38 U	**0.38 J**	0.38 UJ
Naphthalene		91-20-3	12	500	1000	**15 J**	**0.52**	**3.7**	**0.08 J**	**0.093 J**	**0.62**	0.38 UJ
Phenanthrene		85-01-8	100	500	1000	**220 D**	**0.4**	**200**	**1.5**	**1.6**	**2.9**	0.38 UJ
Pyrene		129-00-0	100	500	1000	**120 D**	**0.29 J**	**110**	**1.3**	**1.6**	**1.9**	0.38 UJ
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**714.7**	**2.112**	**703.7**	**8.03**	**8.713**	**11.98**	ND
NYSDEC PAH17 Other SVOCs	mg/kg											
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	0.36 U	0.37 U	0.37 UJ	0.37 UJ	0.38 UJ	0.39 UJ	0.38 UJ
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	**0.27 J**	**0.094 J**	0.37 UJ	0.37 UJ	0.38 UJ	**0.085 J**	0.38 UJ
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Butyl benzyl phthalate		85-68-7	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Carbazole		86-74-8	NE	NE	NE	**0.1 J**	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
4-Chloroaniline		106-47-8	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
2-Chloronaphthalene		91-58-7	NE	NE	NE	0.36 UJ	0.37 UJ	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
2-Chlorophenol		95-57-8	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Dibenzofuran		132-64-9	7	350	1000	**4.1**	0.37 U	**5.4 J**	0.37 U	0.38 U	0.39 U	0.38 UJ
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
1,3-Dichlorobenzene		541-73-1	2.4	280	560	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
1,4-Dichlorobenzene		106-46-7	1.8	130	250	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCMW-19I2**	**GCMW-19I2**	**GCSB-20**	**GCSB-20**	**GCSB-20**	**GCSB-20**	**GCSB-21**
					Sample Name	**GCDUP-01**	**GCMW-19I2 (43-45)**	**GCSB-20 (13-15)**	**GCSB-20 (19-23)**	**DUP-GC01**	**GCSB-20 (50-52)**	**GCSB-21 (29-31)**
					Start Depth	**25**	**43**	**13**	**19**	**19**	**50**	**29**
					End Depth	**27**	**45**	**15**	**23**	**23**	**52**	**31**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/8/2010**	**2/8/2010**	**6/4/2014**	**6/4/2014**	**6/4/2014**	**6/5/2014**	**5/20/2014**
					Parent Sample	**GCMW-19I2 (25-27)**				**GCSB-20 (19-23')**		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**							
2,4-Dichlorophenol		120-83-2	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Diethyl phthalate		84-66-2	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Dimethyl phthalate		131-11-3	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
2,4-Dimethylphenol		105-67-9	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Di-n-butyl phthalate		84-74-2	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	0.91 U	0.93 U	0.93 U	0.94 U	0.95 U	0.97 U	0.97 UJ
2,4-Dinitrophenol		51-28-5	NE	NE	NE	0.91 U	0.93 U	0.93 U	0.94 U	0.95 U	0.97 U	0.97 UJ
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Di-n-octyl phthalate		117-84-0	NE	NE	NE	0.36 UJ	0.37 U	0.37 UJ	0.37 U	0.38 U	0.39 U	0.38 UJ
Hexachlorobenzene		118-74-1	0.33	6	12	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	0.36 UJ	0.37 UJ	0.37 UJ	0.37 UJ	0.38 UJ	0.39 UJ	0.38 UJ
Hexachloroethane		67-72-1	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Isophorone		78-59-1	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
2-Nitroaniline		88-74-4	NE	NE	NE	0.91 U	0.93 U	0.93 UJ	0.94 UJ	0.95 UJ	0.97 UJ	0.97 UJ
3-Nitroaniline		99-09-2	NE	NE	NE	0.91 U	0.93 U	0.93 U	0.94 U	0.95 U	0.97 U	0.97 UJ
4-Nitroaniline		100-01-6	NE	NE	NE	0.91 U	0.93 U	0.93 U	0.94 U	0.95 U	0.97 U	0.97 UJ
Nitrobenzene		98-95-3	NE	NE	NE	0.36 U	0.37 U	0.37 UJ	0.37 UJ	0.38 UJ	0.39 UJ	0.38 UJ
2-Nitrophenol		88-75-5	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
4-Nitrophenol		100-02-7	NE	NE	NE	0.91 U	0.93 U	0.93 UJ	0.94 UJ	0.95 UJ	0.97 UJ	0.97 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
Pentachlorophenol		87-86-5	0.8	6.7	55	0.91 U	0.93 U	0.93 U	0.94 U	0.95 U	0.97 U	0.97 UJ
Phenol		108-95-2	0.33	500	1000	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	0.91 U	0.93 U	0.93 U	0.94 U	0.95 U	0.97 U	0.97 UJ
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	0.36 U	0.37 U	0.37 U	0.37 U	0.38 U	0.39 U	0.38 UJ
TCLP SVOCs	ug/L											
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCMW-19I2	GCMW-19I2	GCSB-20	GCSB-20	GCSB-20	GCSB-20	GCSB-21
					Sample Name	GCDUP-01	GCMW-19I2 (43-45)	GCSB-20 (13-15)	GCSB-20 (19-23)	DUP-GC01	GCSB-20 (50-52)	GCSB-21 (29-31)
					Start Depth	25	43	13	19	19	50	29
					End Depth	27	45	15	23	23	52	31
					Depth Unit	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/8/2010	2/8/2010	6/4/2014	6/4/2014	6/4/2014	6/5/2014	5/20/2014
					Parent Sample	GCMW-19I2 (25-27)				GCSB-20 (19-23')		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**							
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg											
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg											
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L											
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCMW-19I2	GCMW-19I2	GCSB-20	GCSB-20	GCSB-20	GCSB-20	GCSB-21
					Sample Name	GCDUP-01	GCMW-19I2 (43-45)	GCSB-20 (13-15)	GCSB-20 (19-23)	DUP-GC01	GCSB-20 (50-52)	GCSB-21 (29-31)
					Start Depth	25	43	13	19	19	50	29
					End Depth	27	45	15	23	23	52	31
					Depth Unit	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/8/2010	2/8/2010	6/4/2014	6/4/2014	6/4/2014	6/5/2014	5/20/2014
					Parent Sample	GCMW-19I2 (25-27)				GCSB-20 (19-23')		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**							
Herbicides	mg/kg											
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L											
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg											
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg											
Aluminum		7429-90-5	NE	NE	NE	**1190 J**	**2600 ***	**4400**	**3960 J**	**1790 J**	**1090**	**5720**
Antimony		7440-36-0	NE	NE	NE	**0.34 J**	**0.55 J**	0.18 U	0.18 U	0.18 U	0.19 U	0.19 U
Arsenic		7440-38-2	13	16	16	**1.5 J**	**1.3 J**	**1.9**	**1.9**	0.64 UJ	0.51 UJ	**1.9**
Barium		7440-39-3	350	400	10000	**12.7 J**	**31.1**	**43.6**	**103**	**69.3**	**10.3 J**	**27**
Beryllium		7440-41-7	7.2	590	2700	**0.22 J**	**0.19 J**	**0.43 J**	**0.19 J**	0.091 UJ	0.035 UJ	**0.17 J**
Cadmium		7440-43-9	2.5	9.3	60	0.037 U	0.038 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U
Calcium		7440-70-2	NE	NE	NE	**659**	**1300**	**897**	**1530 J**	**726 J**	**717**	**575 J**
Chromium		7440-47-3	NE	NE	NE	**4.2 J**	**7.5 J**	**24.1**	**13.6 J**	**5.7 J**	**8.6**	**11.3**
Cobalt		7440-48-4	NE	NE	NE	**4.9 J**	**3.6 J**	**5 J**	**3.5 J**	**1.9 J**	**1.1 J**	**4.7 J**
Copper		7440-50-8	50	270	10000	**4.4**	**5.5**	**19.2**	**7.6**	**4.3**	**3.1**	**6.2**
Iron		7439-89-6	NE	NE	NE	**5660 J**	**6710 J**	**11000**	**7330 J**	**3390 J**	**2970**	**6620**
Lead		7439-92-1	63	1000	3900	**2.5 J**	**3.1 J**	**6.1**	**2.5 J**	**1.3 J**	**1.2**	**6.8**
Magnesium		7439-95-4	NE	NE	NE	**519 J**	**1180 ***	**1290**	**1300 J**	**614 J**	**535 J**	**1090**
Manganese		7439-96-5	1600	10000	10000	**48.4 J**	**154 J**	**78.2**	**1040**	**707**	**42.2**	**112**
Mercury		7439-97-6	0.18	2.8	5.7	0.018 U	0.019 U	0.019 UJ	0.019 UJ	0.018 UJ	0.019 UJ	0.019 UJ
Nickel		7440-02-0	30	310	10000	**8.1**	**7.1**	**22.5**	**8.6**	**4.8**	**2.3 J**	**6.5**
Potassium		7440-09-7	NE	NE	NE	**350 J**	**802**	**665**	**935**	**459 J**	**272 J**	**484 J**
Selenium		7782-49-2	3.9	1500	6800	0.27 UJ	0.28 UJ	0.16 U	0.17 U	0.17 U	0.17 U	0.17 U
Silver		7440-22-4	2	1500	6800	0.091 U	0.092 U	**1.1**	**0.75 J**	**0.35 J**	0.28 UJ	**0.64 J**
Sodium		7440-23-5	NE	NE	NE	**29.8 J**	**61.7 J**	**44.5 J**	**58.2 J**	**39.9 J**	**26.2 J**	**25.9 J**
Thallium		7440-28-0	NE	NE	NE	**0.41 J**	0.36 U	0.39 U	0.4 U	0.4 U	0.41 U	0.42 U
Vanadium		7440-62-2	NE	NE	NE	**5.8**	**10.1**	**12.6**	**12.4**	**5.4 J**	**3.7 J**	**11.7**
Zinc		7440-66-6	109	10000	10000	**10.4 J**	**12.9 J**	**71.3**	**14.9**	**7.1**	**4.6**	**13.6**
TCLP Metals	ug/L											
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCMW-19I2	GCMW-19I2	GCSB-20	GCSB-20	GCSB-20	GCSB-20	GCSB-21
					Sample Name	GCDUP-01	GCMW-19I2 (43-45)	GCSB-20 (13-15)	GCSB-20 (19-23)	DUP-GC01	GCSB-20 (50-52)	GCSB-21 (29-31)
					Start Depth	25	43	13	19	19	50	29
					End Depth	27	45	15	23	23	52	31
					Depth Unit	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/8/2010	2/8/2010	6/4/2014	6/4/2014	6/4/2014	6/5/2014	5/20/2014
					Parent Sample	GCMW-19I2 (25-27)				GCSB-20 (19-23')		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**							
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg											
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	NA	NA	0.54 U	0.57 U	0.54 U	0.56 U	0.58 U
Other												
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**8.8**	**10.3**	**11.4**	**11.9**	**12.4**	**15.1**	**14.6**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA

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Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-21	GCSB-22	GCSB-22	GCSB-32	GCSB-32	GCSB-32	GCSB-33	GCSB-33	GCSB-33
					Sample Name	GCSB-21 (49-51)	GCSB-22 (15-19)	GCSB-22 (50-56)	GCSB-32 (10-12)	GCSB-32 (18-20)	GCSB-32 (50-52)	GCSB-33 (12-14)	GCSB-33 (21-23)	GCSB-33 (30-32)
					Start Depth	49	15	50	10	18	50	12	21	30
					End Depth	51	19	56	12	20	52	14	23	32
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	5/20/2014	5/30/2014	6/2/2014	1/22/2004	1/22/2004	1/23/2004	2/5/2004	2/5/2004	2/9/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
BTEX	mg/kg													
Benzene		71-43-2	0.06	44	89	0.007 U	0.009 U	0.007 U	0.012 U	0.012 U	0.011 U	0.011 U	0.11 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.007 U	0.009 U	0.007 U	0.012 U	0.012 U	0.011 U	0.011 U	**1.8 J**	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.007 U	0.009 U	0.007 U	0.012 U	0.012 U	0.011 U	**0.003 J**	**25 D**	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.007 U	0.009 U	0.007 U	0.012 U	0.012 U	0.011 U	**0.007 J**	**87 D**	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	ND	ND	**0.01**	**113.8**	ND
Other VOCs	mg/kg													
Acetone		67-64-1	0.05	500	1000	**0.007**	**0.005 J**	**0.003 J**	NA	NA	NA	**0.037**	0.11 U	0.011 U
Bromodichloromethane		75-27-4	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Bromoform		75-25-2	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Bromomethane		74-83-9	NE	NE	NE	0.007 U	0.009 UJ	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Carbon disulfide		75-15-0	NE	NE	NE	0.007 UJ	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Carbon tetrachloride		56-23-5	0.76	22	44	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Chlorobenzene		108-90-7	1.1	500	1000	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Chloroethane		75-00-3	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Chloroform		67-66-3	0.37	350	700	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Chloromethane		74-87-3	NE	NE	NE	0.007 UJ	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Dibromochloromethane		124-48-1	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
1,1-Dichloroethane		75-34-3	0.27	240	480	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
1,2-Dichloroethane		107-06-2	0.02	30	60	0.007 U	0.009 U	0.007 UJ	NA	NA	NA	0.011 U	0.11 U	0.011 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
2-Hexanone		591-78-6	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Methylene chloride		75-09-2	0.05	500	1000	0.007 U	0.009 U	0.007 U	NA	NA	NA	**0.004 J**	**0.065 J**	**0.006 J**
Styrene		100-42-5	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	**27 D**	0.011 U
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
Vinyl chloride		75-01-4	0.02	13	27	0.007 U	0.009 U	0.007 U	NA	NA	NA	0.011 U	0.11 U	0.011 U
TCLP VOCs	ug/L													
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-21	GCSB-22	GCSB-22	GCSB-32	GCSB-32	GCSB-32	GCSB-33	GCSB-33	GCSB-33
					Sample Name	GCSB-21 (49-51)	GCSB-22 (15-19)	GCSB-22 (50-56)	GCSB-32 (10-12)	GCSB-32 (18-20)	GCSB-32 (50-52)	GCSB-33 (12-14)	GCSB-33 (21-23)	GCSB-33 (30-32)
					Start Depth	49	15	50	10	18	50	12	21	30
					End Depth	51	19	56	12	20	52	14	23	32
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	5/20/2014	5/30/2014	6/2/2014	1/22/2004	1/22/2004	1/23/2004	2/5/2004	2/5/2004	2/9/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg													
Acenaphthene		83-32-9	20	500	1000	0.39 UJ	0.37 U	0.38 U	**0.15 J**	0.38 U	0.37 U	**3**	**9.3**	0.37 U
Acenaphthylene		208-96-8	100	500	1000	0.39 UJ	0.37 U	0.38 U	0.39 U	0.38 U	0.37 U	**0.88**	**83**	0.37 U
Anthracene		120-12-7	100	500	1000	**0.096 J**	0.37 U	0.38 U	**0.92**	0.38 U	0.37 U	**3.3**	**41**	**0.078 J**
Benzo(a)anthracene		56-55-3	1	5.6	11	**0.12 J**	0.37 U	0.38 U	**0.54**	0.38 U	0.37 U	**3**	**33**	0.37 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.39 UJ	0.37 U	0.38 U	0.39 U	0.38 U	0.37 U	**0.96**	**11**	0.37 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.39 UJ	0.37 U	0.38 U	0.39 U	0.38 U	0.37 U	**1.9**	**21**	0.37 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.39 UJ	0.37 U	0.38 U	0.39 U	0.38 U	0.37 U	**1.6**	**15**	0.37 U
Benzo(a)pyrene		50-32-8	1	1	1.1	**0.11 J**	0.37 U	0.38 U	**0.15 J**	0.38 U	0.37 U	**2.7**	**28**	0.37 U
Chrysene		218-01-9	1	56	110	**0.12 J**	0.37 U	**0.086 J**	**0.78**	0.38 U	0.37 U	**2.8**	**31**	0.37 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.39 UJ	0.37 U	0.38 U	0.39 U	0.38 U	0.37 U	0.37 U	7.3 U	0.37 U
Fluoranthene		206-44-0	100	500	1000	**0.23 J**	0.37 U	**0.12 J**	0.39 U	0.38 U	0.37 U	**5.2**	**66**	0.37 U
Fluorene		86-73-7	30	500	1000	0.39 UJ	0.37 U	0.38 U	**0.49**	0.38 U	0.37 U	**4.5**	**49**	0.37 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.39 UJ	0.37 U	0.38 U	0.39 U	0.38 U	0.37 U	**1.2**	**12**	0.37 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	0.39 U	0.38 U	0.37 U	**5.2**	**330 D**	0.37 U
Naphthalene		91-20-3	12	500	1000	0.39 UJ	0.37 U	0.38 U	0.39 U	0.38 U	0.37 U	**4.2**	**1000 D**	0.37 U
Phenanthrene		85-01-8	100	500	1000	**0.36 J**	0.37 U	**0.099 J**	0.39 U	0.38 U	0.37 U	**13 D**	**200 D**	**0.15 J**
Pyrene		129-00-0	100	500	1000	**0.37 J**	0.37 U	**0.16 J**	**1.9**	0.38 U	0.37 U	**7.2 D**	**73**	0.37 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**1.406**	ND	**0.465**	**4.93**	ND	ND	**60.64**	**2002.3**	**0.228**
NYSDEC PAH17 Other SVOCs	mg/kg													
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	**0.13 J**	7.3 U	0.37 U
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Butyl benzyl phthalate		85-68-7	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Carbazole		86-74-8	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
4-Chloroaniline		106-47-8	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
2-Chloronaphthalene		91-58-7	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
2-Chlorophenol		95-57-8	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Dibenzofuran		132-64-9	7	350	1000	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	**0.52**	**7.5**	0.37 U
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
1,3-Dichlorobenzene		541-73-1	2.4	280	560	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
1,4-Dichlorobenzene		106-46-7	1.8	130	250	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U

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Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						GCSB-21	GCSB-22	GCSB-22	GCSB-32	GCSB-32	GCSB-32	GCSB-33	GCSB-33	GCSB-33
Sample Name						GCSB-21 (49-51)	GCSB-22 (15-19)	GCSB-22 (50-56)	GCSB-32 (10-12)	GCSB-32 (18-20)	GCSB-32 (50-52)	GCSB-33 (12-14)	GCSB-33 (21-23)	GCSB-33 (30-32)
Start Depth						49	15	50	10	18	50	12	21	30
End Depth						51	19	56	12	20	52	14	23	32
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						5/20/2014	5/30/2014	6/2/2014	1/22/2004	1/22/2004	1/23/2004	2/5/2004	2/5/2004	2/9/2004
Parent Sample														
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4-Dichlorophenol		120-83-2	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Diethyl phthalate		84-66-2	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Dimethyl phthalate		131-11-3	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
2,4-Dimethylphenol		105-67-9	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Di-n-butyl phthalate		84-74-2	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	0.97 UJ	0.92 U	0.95 U	NA	NA	NA	0.94 U	18 U	0.93 U
2,4-Dinitrophenol		51-28-5	NE	NE	NE	0.97 UJ	0.92 U	0.95 U	NA	NA	NA	0.94 U	18 U	0.93 U
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Di-n-octyl phthalate		117-84-0	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Hexachlorobenzene		118-74-1	0.33	6	12	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Hexachloroethane		67-72-1	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Isophorone		78-59-1	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
2-Nitroaniline		88-74-4	NE	NE	NE	0.97 UJ	0.92 UJ	0.95 UJ	NA	NA	NA	0.94 U	18 U	0.93 U
3-Nitroaniline		99-09-2	NE	NE	NE	0.97 UJ	0.92 U	0.95 U	NA	NA	NA	0.94 U	18 U	0.93 U
4-Nitroaniline		100-01-6	NE	NE	NE	0.97 UJ	0.92 U	0.95 U	NA	NA	NA	0.94 U	18 U	0.93 U
Nitrobenzene		98-95-3	NE	NE	NE	0.39 UJ	0.37 U	0.38 UJ	NA	NA	NA	0.37 U	7.3 U	0.37 U
2-Nitrophenol		88-75-5	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
4-Nitrophenol		100-02-7	NE	NE	NE	0.97 UJ	0.92 UJ	0.95 R	NA	NA	NA	0.94 U	18 U	0.93 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
Pentachlorophenol		87-86-5	0.8	6.7	55	0.97 UJ	0.92 U	0.95 U	NA	NA	NA	0.94 U	18 U	0.93 U
Phenol		108-95-2	0.33	500	1000	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	0.97 UJ	0.92 U	0.95 U	NA	NA	NA	0.94 U	18 U	0.93 U
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	0.39 UJ	0.37 U	0.38 U	NA	NA	NA	0.37 U	7.3 U	0.37 U
TCLP SVOCs	ug/L													
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-21	GCSB-22	GCSB-22	GCSB-32	GCSB-32	GCSB-32	GCSB-33	GCSB-33	GCSB-33
					Sample Name	GCSB-21 (49-51)	GCSB-22 (15-19)	GCSB-22 (50-56)	GCSB-32 (10-12)	GCSB-32 (18-20)	GCSB-32 (50-52)	GCSB-33 (12-14)	GCSB-33 (21-23)	GCSB-33 (30-32)
					Start Depth	49	15	50	10	18	50	12	21	30
					End Depth	51	19	56	12	20	52	14	23	32
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	5/20/2014	5/30/2014	6/2/2014	1/22/2004	1/22/2004	1/23/2004	2/5/2004	2/5/2004	2/9/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg													
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg													
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L													
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan

Glen Cove Former MGP Site

Glen Cove, Nassau County, New York

					Location Name	GCSB-21	GCSB-22	GCSB-22	GCSB-32	GCSB-32	GCSB-32	GCSB-33	GCSB-33	GCSB-33
					Sample Name	GCSB-21 (49-51)	GCSB-22 (15-19)	GCSB-22 (50-56)	GCSB-32 (10-12)	GCSB-32 (18-20)	GCSB-32 (50-52)	GCSB-33 (12-14)	GCSB-33 (21-23)	GCSB-33 (30-32)
					Start Depth	49	15	50	10	18	50	12	21	30
					End Depth	51	19	56	12	20	52	14	23	32
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	5/20/2014	5/30/2014	6/2/2014	1/22/2004	1/22/2004	1/23/2004	2/5/2004	2/5/2004	2/9/2004
					Parent Sample									
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO									
Herbicides	mg/kg													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg													
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg													
Aluminum		7429-90-5	NE	NE	NE	**1450**	**6260**	**2120**	NA	NA	NA	**6280 ***	**2200 ***	**2760 E**
Antimony		7440-36-0	NE	NE	NE	0.19 U	0.18 U	0.19 U	NA	NA	NA	0.29 U	**0.39 BN**	**0.29 BN**
Arsenic		7440-38-2	13	16	16	1.1 UJ	**1.7**	0.75 UJ	**1.3**	**0.52 B**	**1.1 B**	**1.1 B**	**0.27 B**	**1.6**
Barium		7440-39-3	350	400	10000	**14.7 J**	**45.5**	**40**	**22 B**	**8.6 B**	**36.7**	**74.1 ***	**25.2 ***	**28.8 E**
Beryllium		7440-41-7	7.2	590	2700	0.059 UJ	**0.25 J**	0.046 UJ	NA	NA	NA	**0.085 B**	**0.11 B**	**0.12 B**
Cadmium		7440-43-9	2.5	9.3	60	0.017 U	0.016 U	0.017 U	**0.053 B**	**0.074 B**	**0.074 B**	0.023 U	0.022 U	0.022 U
Calcium		7440-70-2	NE	NE	NE	**368 J**	**5100**	**6780**	NA	NA	NA	**709**	**548 B**	**1280**
Chromium		7440-47-3	NE	NE	NE	**7**	**18.1**	**12.8**	**6.4**	**11.7**	**10.1**	**13.5 ***	**4.6 ***	**8.9**
Cobalt		7440-48-4	NE	NE	NE	**1.5 J**	**6.5**	**2.4 J**	NA	NA	NA	**3.9 B**	**2 B**	**3.3 B**
Copper		7440-50-8	50	270	10000	**3.2**	**12.3**	**6.2**	NA	NA	NA	**5.1**	**3.5**	**7.3**
Iron		7439-89-6	NE	NE	NE	**3340**	**12100**	**5050**	NA	NA	NA	**8240 ***	**3710 ***	**7230**
Lead		7439-92-1	63	1000	3900	**3**	**3.1**	**1.9**	**0.79**	**0.65**	**1.9**	**2.3 ***	**1.6 ***	**2.5**
Magnesium		7439-95-4	NE	NE	NE	**498 J**	**4330**	**4490**	NA	NA	NA	**1790 ***	**677 ***	**1300**
Manganese		7439-96-5	1600	10000	10000	**67.8**	**180**	**337**	NA	NA	NA	**104 ***	**50.8 ***	**93.6**
Mercury		7439-97-6	0.18	2.8	5.7	0.02 UJ	0.018 UJ	0.019 UJ	0.02 U	0.019 U	0.018 U	0.019 U	0.019 U	0.019 U
Nickel		7440-02-0	30	310	10000	**3.3 J**	**9.8**	**4.9**	NA	NA	NA	**8.2**	**3.8 B**	**6.4**
Potassium		7440-09-7	NE	NE	NE	**399 J**	**1470**	**698**	NA	NA	NA	**425 B**	**452 B**	**812**
Selenium		7782-49-2	3.9	1500	6800	0.17 U	0.16 U	0.17 U	0.23 U	0.23 U	0.22 U	0.26 U	**0.3 BN**	0.26 U
Silver		7440-22-4	2	1500	6800	0.28 UJ	**1.2**	**0.51 J**	0.047 U	0.046 U	0.044 U	0.045 U	0.044 U	0.045 U
Sodium		7440-23-5	NE	NE	NE	**16.8 J**	**51.3 J**	**53.4 J**	NA	NA	NA	**40.6 BE**	**28.9 BE**	**57.1 BE**
Thallium		7440-28-0	NE	NE	NE	0.42 U	0.39 U	0.41 U	NA	NA	NA	0.27 U	0.27 U	0.27 U
Vanadium		7440-62-2	NE	NE	NE	**5.2 J**	**19.3**	**7.9**	NA	NA	NA	**13.1 ***	**5.9 ***	**10.1 E**
Zinc		7440-66-6	109	10000	10000	**7**	**24.8**	**9.6**	NA	NA	NA	**26.4 ***	**7.5 ***	**10.8**
TCLP Metals	ug/L													
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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Glen Cove, Nassau County, New York

Location Name						**GCSB-21**	**GCSB-22**	**GCSB-22**	**GCSB-32**	**GCSB-32**	**GCSB-32**	**GCSB-33**	**GCSB-33**	**GCSB-33**
Sample Name						**GCSB-21 (49-51)**	**GCSB-22 (15-19)**	**GCSB-22 (50-56)**	**GCSB-32 (10-12)**	**GCSB-32 (18-20)**	**GCSB-32 (50-52)**	**GCSB-33 (12-14)**	**GCSB-33 (21-23)**	**GCSB-33 (30-32)**
Start Depth						**49**	**15**	**50**	**10**	**18**	**50**	**12**	**21**	**30**
End Depth						**51**	**19**	**56**	**12**	**20**	**52**	**14**	**23**	**32**
Depth Unit						**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
Sample Date						**5/20/2014**	**5/30/2014**	**6/2/2014**	**1/22/2004**	**1/22/2004**	**1/23/2004**	**2/5/2004**	**2/5/2004**	**2/9/2004**
Parent Sample														
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg													
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.57 U	0.51 U	0.57 U	0.59 U	0.58 U	0.55 U	0.56 U	0.56 U	0.56 U
Other														
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**14.9**	**10.2**	**13.5**	**14.7**	**13.4**	**9.6**	**11.4**	**10**	**10.6**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
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					Location Name	GCSB-33	GCSB-34	GCSB-34	GCSB-34	GCSB-35	GCSB-35	GCSB-35	GCSB-35	GCSB-36
					Sample Name	GCSB-33 (50-52)	GCSB-34 (13-15)	GCSB-34 (20-22)	GCSB-34 (46-48)	GCSB-35 (9-11)	GCSB-35 (14-16)	GCSB-35 (24-26)	GCSB-35 (50-52)	GCSB-36 (12-14)
					Start Depth	50	13	20	46	9	14	24	50	12
					End Depth	52	15	22	48	11	16	26	52	14
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/9/2004	2/26/2004	2/26/2004	2/27/2004	2/2/2004	2/2/2004	2/2/2004	2/2/2004	6/23/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
BTEX	mg/kg													
Benzene		71-43-2	0.06	44	89	0.011 U	0.055 U	0.011 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.055 U	0.011 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.011 U	**0.91**	0.011 U	0.011 U	0.012 U	**0.007 J**	0.012 U	0.011 U	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	**0.82**	0.011 U	0.011 U	0.012 U	**0.008 J**	0.012 U	0.011 U	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	**1.73**	ND	ND	ND	**0.015**	ND	ND	ND
Other VOCs	mg/kg													
Acetone		67-64-1	0.05	500	1000	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Bromodichloromethane		75-27-4	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Bromoform		75-25-2	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Bromomethane		74-83-9	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Carbon disulfide		75-15-0	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Carbon tetrachloride		56-23-5	0.76	22	44	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Chlorobenzene		108-90-7	1.1	500	1000	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Chloroethane		75-00-3	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Chloroform		67-66-3	0.37	350	700	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Chloromethane		74-87-3	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Dibromochloromethane		124-48-1	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
1,1-Dichloroethane		75-34-3	0.27	240	480	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
1,2-Dichloroethane		107-06-2	0.02	30	60	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
2-Hexanone		591-78-6	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Methylene chloride		75-09-2	0.05	500	1000	**0.006 J**	NA	NA	NA	NA	NA	NA	NA	**0.023 B**
Styrene		100-42-5	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
Vinyl chloride		75-01-4	0.02	13	27	0.011 U	NA	NA	NA	NA	NA	NA	NA	0.011 U
TCLP VOCs	ug/L													
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-33**	**GCSB-34**	**GCSB-34**	**GCSB-34**	**GCSB-35**	**GCSB-35**	**GCSB-35**	**GCSB-35**	**GCSB-36**
					Sample Name	**GCSB-33 (50-52)**	**GCSB-34 (13-15)**	**GCSB-34 (20-22)**	**GCSB-34 (46-48)**	**GCSB-35 (9-11)**	**GCSB-35 (14-16)**	**GCSB-35 (24-26)**	**GCSB-35 (50-52)**	**GCSB-36 (12-14)**
					Start Depth	**50**	**13**	**20**	**46**	**9**	**14**	**24**	**50**	**12**
					End Depth	**52**	**15**	**22**	**48**	**11**	**16**	**26**	**52**	**14**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/9/2004**	**2/26/2004**	**2/26/2004**	**2/27/2004**	**2/2/2004**	**2/2/2004**	**2/2/2004**	**2/2/2004**	**6/23/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg													
Acenaphthene		83-32-9	20	500	1000	0.37 U	**73**	0.36 U	0.37 U	**13**	**0.78**	0.38 U	0.38 U	0.35 U
Acenaphthylene		208-96-8	100	500	1000	0.37 U	**14**	0.36 U	0.37 U	**12**	**0.17 J**	0.38 U	0.38 U	0.35 U
Anthracene		120-12-7	100	500	1000	**0.12 J**	**85**	**0.15 J**	0.37 U	**47**	**0.76**	0.38 U	0.38 U	0.35 U
Benzo(a)anthracene		56-55-3	1	5.6	11	0.37 U	**70**	**0.098 J**	0.37 U	**31**	**0.46**	0.38 U	0.38 U	0.35 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.37 U	**45**	0.36 U	0.37 U	**11**	0.37 U	0.38 U	0.38 U	0.35 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.37 U	**27**	0.36 U	0.37 U	**17**	**0.27 J**	0.38 U	0.38 U	0.35 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.37 U	**19**	0.36 U	0.37 U	**14**	**0.19 J**	0.38 U	0.38 U	0.35 U
Benzo(a)pyrene		50-32-8	1	1	1.1	0.37 U	**62**	**0.081 J**	0.37 U	**26**	**0.37**	0.38 U	0.38 U	0.35 U
Chrysene		218-01-9	1	56	110	0.37 U	**63**	**0.1 J**	0.37 U	**28**	**0.46**	0.38 U	0.38 U	0.35 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.37 U	**4.4 J**	0.36 U	0.37 U	3.8 U	0.37 U	0.38 U	0.38 U	0.35 U
Fluoranthene		206-44-0	100	500	1000	0.37 U	**130**	**0.26 J**	0.37 U	**60**	**1.2**	0.38 U	0.38 U	0.35 U
Fluorene		86-73-7	30	500	1000	0.37 U	**85**	0.36 U	0.37 U	**25**	**0.62**	0.38 U	0.38 U	0.35 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.37 U	**16**	0.36 U	0.37 U	**11**	**0.14 J**	0.38 U	0.38 U	0.35 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.37 U	**57**	0.36 U	0.37 U	3.8 U	**0.29 J**	**0.13 J**	0.38 U	0.35 U
Naphthalene		91-20-3	12	500	1000	**0.098 J**	**200 D**	0.36 U	0.37 U	**0.81 J**	**1**	**1.3**	0.38 U	0.35 U
Phenanthrene		85-01-8	100	500	1000	**0.16 J**	**450 D**	**0.37**	0.37 U	**180 D**	**3**	0.38 U	0.38 U	0.35 U
Pyrene		129-00-0	100	500	1000	**0.086 J**	**230 D**	**0.34 J**	0.37 U	**110 D**	**1.6**	0.38 U	0.38 U	0.35 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**0.464**	**1630.4**	**1.399**	ND	**585.81**	**11.31**	**1.43**	ND	ND
NYSDEC PAH17 Other SVOCs	mg/kg													
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	**0.21 J**
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Butyl benzyl phthalate		85-68-7	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Carbazole		86-74-8	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
4-Chloroaniline		106-47-8	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
2-Chloronaphthalene		91-58-7	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
2-Chlorophenol		95-57-8	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Dibenzofuran		132-64-9	7	350	1000	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
1,3-Dichlorobenzene		541-73-1	2.4	280	560	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
1,4-Dichlorobenzene		106-46-7	1.8	130	250	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U

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					Location Name	GCSB-33	GCSB-34	GCSB-34	GCSB-34	GCSB-35	GCSB-35	GCSB-35	GCSB-35	GCSB-36
					Sample Name	GCSB-33 (50-52)	GCSB-34 (13-15)	GCSB-34 (20-22)	GCSB-34 (46-48)	GCSB-35 (9-11)	GCSB-35 (14-16)	GCSB-35 (24-26)	GCSB-35 (50-52)	GCSB-36 (12-14)
					Start Depth	50	13	20	46	9	14	24	50	12
					End Depth	52	15	22	48	11	16	26	52	14
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/9/2004	2/26/2004	2/26/2004	2/27/2004	2/2/2004	2/2/2004	2/2/2004	2/2/2004	6/23/2004
					Parent Sample									
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO									
2,4-Dichlorophenol		120-83-2	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Diethyl phthalate		84-66-2	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Dimethyl phthalate		131-11-3	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
2,4-Dimethylphenol		105-67-9	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Di-n-butyl phthalate		84-74-2	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	0.92 U	NA	NA	NA	NA	NA	NA	NA	0.88 U
2,4-Dinitrophenol		51-28-5	NE	NE	NE	0.92 U	NA	NA	NA	NA	NA	NA	NA	0.88 U
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Di-n-octyl phthalate		117-84-0	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Hexachlorobenzene		118-74-1	0.33	6	12	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Hexachloroethane		67-72-1	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Isophorone		78-59-1	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
2-Nitroaniline		88-74-4	NE	NE	NE	0.92 U	NA	NA	NA	NA	NA	NA	NA	0.88 U
3-Nitroaniline		99-09-2	NE	NE	NE	0.92 U	NA	NA	NA	NA	NA	NA	NA	0.88 U
4-Nitroaniline		100-01-6	NE	NE	NE	0.92 U	NA	NA	NA	NA	NA	NA	NA	0.88 U
Nitrobenzene		98-95-3	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
2-Nitrophenol		88-75-5	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
4-Nitrophenol		100-02-7	NE	NE	NE	0.92 U	NA	NA	NA	NA	NA	NA	NA	0.88 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
Pentachlorophenol		87-86-5	0.8	6.7	55	0.92 U	NA	NA	NA	NA	NA	NA	NA	0.88 U
Phenol		108-95-2	0.33	500	1000	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	0.92 U	NA	NA	NA	NA	NA	NA	NA	0.88 U
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	0.37 U	NA	NA	NA	NA	NA	NA	NA	0.35 U
TCLP SVOCs	ug/L													
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GCSB-33	GCSB-34	GCSB-34	GCSB-34	GCSB-35	GCSB-35	GCSB-35	GCSB-35	GCSB-36
					Sample Name	GCSB-33 (50-52)	GCSB-34 (13-15)	GCSB-34 (20-22)	GCSB-34 (46-48)	GCSB-35 (9-11)	GCSB-35 (14-16)	GCSB-35 (24-26)	GCSB-35 (50-52)	GCSB-36 (12-14)
					Start Depth	50	13	20	46	9	14	24	50	12
					End Depth	52	15	22	48	11	16	26	52	14
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/9/2004	2/26/2004	2/26/2004	2/27/2004	2/2/2004	2/2/2004	2/2/2004	2/2/2004	6/23/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg													
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg													
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L													
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Sample Name	**GCSB-33 (50-52)**	**GCSB-34 (13-15)**	**GCSB-34 (20-22)**	**GCSB-34 (46-48)**	**GCSB-35 (9-11)**	**GCSB-35 (14-16)**	**GCSB-35 (24-26)**	**GCSB-35 (50-52)**	**GCSB-36 (12-14)**
					Start Depth	**50**	**13**	**20**	**46**	**9**	**14**	**24**	**50**	**12**
					End Depth	**52**	**15**	**22**	**48**	**11**	**16**	**26**	**52**	**14**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/9/2004**	**2/26/2004**	**2/26/2004**	**2/27/2004**	**2/2/2004**	**2/2/2004**	**2/2/2004**	**2/2/2004**	**6/23/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Herbicides	mg/kg													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg													
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg													
Aluminum		7429-90-5	NE	NE	NE	**3610 E**	NA	NA	NA	NA	NA	NA	NA	**5180**
Antimony		7440-36-0	NE	NE	NE	0.29 U	NA	NA	NA	NA	NA	NA	NA	**0.73 BN**
Arsenic		7440-38-2	13	16	16	**0.78 B**	**1.1**	**1.2**	**0.97 B**	**0.75 B**	**3.1**	**1 B**	**1.1 B**	**2 ***
Barium		7440-39-3	350	400	10000	**35.1 E**	**28.6**	**33.1**	**32.5**	**16.2 B***	**98 ***	**39.6 ***	**13.3 B***	**25.9**
Beryllium		7440-41-7	7.2	590	2700	**0.17 B**	NA	NA	NA	NA	NA	NA	NA	**0.26 B**
Cadmium		7440-43-9	2.5	9.3	60	0.022 U	**0.19 B**	**0.098 B**	**0.08 B**	0.023 U	0.022 U	0.023 U	0.023 U	**0.49 B**
Calcium		7440-70-2	NE	NE	NE	**1290**	NA	NA	NA	NA	NA	NA	NA	**608**
Chromium		7440-47-3	NE	NE	NE	**9.2**	**13**	**9.5**	**9.1**	**14.7 ***	**6.7 ***	**10.3 ***	**5.6 ***	**9.7**
Cobalt		7440-48-4	NE	NE	NE	**4.5 B**	NA	NA	NA	NA	NA	NA	NA	**3.5 B**
Copper		7440-50-8	50	270	10000	**7.7**	NA	NA	NA	NA	NA	NA	NA	**7.6 ***
Iron		7439-89-6	NE	NE	NE	**8720**	NA	NA	NA	NA	NA	NA	NA	**9460**
Lead		7439-92-1	63	1000	3900	**2.9**	**1.1**	**2.3**	**2**	**1.8 ***	**2.8 ***	**2.7 ***	**3.4 ***	**4.9 ***
Magnesium		7439-95-4	NE	NE	NE	**1470**	NA	NA	NA	NA	NA	NA	NA	**1240**
Manganese		7439-96-5	1600	10000	10000	**92.7**	NA	NA	NA	NA	NA	NA	NA	**166 N**
Mercury		7439-97-6	0.18	2.8	5.7	0.018 U	0.018 U	0.018 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	**0.028 B**
Nickel		7440-02-0	30	310	10000	**9.1**	NA	NA	NA	NA	NA	NA	NA	**8.9**
Potassium		7440-09-7	NE	NE	NE	**985**	NA	NA	NA	NA	NA	NA	NA	**527 B**
Selenium		7782-49-2	3.9	1500	6800	0.25 U	0.22 U	0.22 U	0.22 U	**0.32 BN**	**1.2 N**	**0.41 BN**	0.26 U	0.19 U
Silver		7440-22-4	2	1500	6800	0.044 U	**0.09 B**	**0.081 B**	0.045 U	0.047 U	0.045 U	0.047 U	0.046 U	0.08 U
Sodium		7440-23-5	NE	NE	NE	**54.4 BE**	NA	NA	NA	NA	NA	NA	NA	**43.6 B**
Thallium		7440-28-0	NE	NE	NE	0.27 U	NA	NA	NA	NA	NA	NA	NA	0.29 U
Vanadium		7440-62-2	NE	NE	NE	**12.4 E**	NA	NA	NA	NA	NA	NA	NA	**12.1**
Zinc		7440-66-6	109	10000	10000	**15.4**	NA	NA	NA	NA	NA	NA	NA	**18.1**
TCLP Metals	ug/L													
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-33**	**GCSB-34**	**GCSB-34**	**GCSB-34**	**GCSB-35**	**GCSB-35**	**GCSB-35**	**GCSB-35**	**GCSB-36**
					Sample Name	**GCSB-33 (50-52)**	**GCSB-34 (13-15)**	**GCSB-34 (20-22)**	**GCSB-34 (46-48)**	**GCSB-35 (9-11)**	**GCSB-35 (14-16)**	**GCSB-35 (24-26)**	**GCSB-35 (50-52)**	**GCSB-36 (12-14)**
					Start Depth	**50**	**13**	**20**	**46**	**9**	**14**	**24**	**50**	**12**
					End Depth	**52**	**15**	**22**	**48**	**11**	**16**	**26**	**52**	**14**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/9/2004**	**2/26/2004**	**2/26/2004**	**2/27/2004**	**2/2/2004**	**2/2/2004**	**2/2/2004**	**2/2/2004**	**6/23/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg													
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.55 U	0.55 U	0.55 U	0.56 U	0.58 U	0.56 U	0.58 U	0.57 U	0.53 U
Other														
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**9.8**	**9.7**	**8.5**	**10.5**	**14**	**10.9**	**14.2**	**12.2**	NA
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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Glen Cove, Nassau County, New York

					Location Name	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-37**	**GCSB-37**	**GCSB-37**	**GCSB-37**
					Sample Name	**GCSB-36 (14-16)**	**GCSB-36 (22-24)**	**GCSB-36 (30-32)**	**GCSB-36 (34-36)**	**GCSB-36 (66-68)**	**GCSB-37 (9-11)**	**GCSB-37 (22-24)**	**GCSB-37 (36-38)**	**GCSB-37 (46-48)**
					Start Depth	**14**	**22**	**30**	**34**	**66**	**9**	**22**	**36**	**46**
					End Depth	**16**	**24**	**32**	**36**	**68**	**11**	**24**	**38**	**48**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**6/23/2004**	**6/23/2004**	**6/23/2004**	**6/23/2004**	**6/24/2004**	**6/30/2004**	**6/30/2004**	**6/30/2004**	**6/30/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
BTEX	mg/kg													
Benzene		71-43-2	0.06	44	89	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	**0.26**	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	**0.36**	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	ND	ND	ND	**0.62**	ND
Other VOCs	mg/kg													
Acetone		67-64-1	0.05	500	1000	0.011 U	0.011 U	**0.21**	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Bromodichloromethane		75-27-4	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Bromoform		75-25-2	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Bromomethane		74-83-9	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Carbon disulfide		75-15-0	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Carbon tetrachloride		56-23-5	0.76	22	44	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Chlorobenzene		108-90-7	1.1	500	1000	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Chloroethane		75-00-3	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Chloroform		67-66-3	0.37	350	700	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Chloromethane		74-87-3	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Dibromochloromethane		124-48-1	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
1,1-Dichloroethane		75-34-3	0.27	240	480	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
1,2-Dichloroethane		107-06-2	0.02	30	60	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
2-Hexanone		591-78-6	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	0.011 U	0.011 U	**0.052**	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Methylene chloride		75-09-2	0.05	500	1000	**0.022 B**	**0.009 J**	**0.033 B**	**0.053 B**	**0.049 B**	**0.008 J**	**0.01 J**	**0.03 J**	**0.006 J**
Styrene		100-42-5	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
Vinyl chloride		75-01-4	0.02	13	27	0.011 U	0.011 U	0.014 U	0.012 U	0.011 U	0.012 U	0.011 U	0.058 U	0.011 U
TCLP VOCs	ug/L													
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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					Location Name	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-37**	**GCSB-37**	**GCSB-37**	**GCSB-37**
					Sample Name	**GCSB-36 (14-16)**	**GCSB-36 (22-24)**	**GCSB-36 (30-32)**	**GCSB-36 (34-36)**	**GCSB-36 (66-68)**	**GCSB-37 (9-11)**	**GCSB-37 (22-24)**	**GCSB-37 (36-38)**	**GCSB-37 (46-48)**
					Start Depth	**14**	**22**	**30**	**34**	**66**	**9**	**22**	**36**	**46**
					End Depth	**16**	**24**	**32**	**36**	**68**	**11**	**24**	**38**	**48**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**6/23/2004**	**6/23/2004**	**6/23/2004**	**6/23/2004**	**6/24/2004**	**6/30/2004**	**6/30/2004**	**6/30/2004**	**6/30/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg													
Acenaphthene		83-32-9	20	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	**350 D**	0.37 U
Acenaphthylene		208-96-8	100	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	**47 J**	0.37 U
Anthracene		120-12-7	100	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	**150 D**	0.37 U
Benzo(a)anthracene		56-55-3	1	5.6	11	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	**0.32 J**	**110 D**	0.37 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	**0.49**	**57 J**	0.37 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	**0.26 J**	**3.3**	0.37 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	**0.092 J**	**2.2**	0.37 U
Benzo(a)pyrene		50-32-8	1	1	1.1	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	**0.086 J**	**0.33 J**	**80 D**	0.37 U
Chrysene		218-01-9	1	56	110	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	**0.15 J**	**0.43**	**4.2**	0.37 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	**0.94**	0.37 U
Fluoranthene		206-44-0	100	500	1000	0.37 U	0.35 U	**0.096 J**	0.41 U	0.37 U	**0.11 J**	**0.42**	**260 D**	0.37 U
Fluorene		86-73-7	30	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	**240 D**	0.37 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	**0.13 J**	**2.7**	0.37 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	**0.17 J**	**0.45**	**2.1**	**0.19 J**
Naphthalene		91-20-3	12	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	**0.1 J**	**0.19 J**	**28 J**	0.37 U
Phenanthrene		85-01-8	100	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	**0.11 J**	**0.33 J**	**790 D**	**0.13 J**
Pyrene		129-00-0	100	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	**0.15 J**	**0.51**	**370 D**	0.37 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	ND	ND	**0.096**	ND	ND	**0.876**	**3.952**	**2497.44**	**0.32**
NYSDEC PAH17 Other SVOCs	mg/kg													
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	**0.17 J**	**0.1 J**	0.37 U	0.38 U	0.37 U
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Butyl benzyl phthalate		85-68-7	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Carbazole		86-74-8	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
4-Chloroaniline		106-47-8	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
2-Chloronaphthalene		91-58-7	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
2-Chlorophenol		95-57-8	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Dibenzofuran		132-64-9	7	350	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	**31 J**	0.37 U
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
1,3-Dichlorobenzene		541-73-1	2.4	280	560	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
1,4-Dichlorobenzene		106-46-7	1.8	130	250	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
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Glen Cove, Nassau County, New York

					Location Name	GCSB-36	GCSB-36	GCSB-36	GCSB-36	GCSB-36	GCSB-37	GCSB-37	GCSB-37	GCSB-37
					Sample Name	GCSB-36 (14-16)	GCSB-36 (22-24)	GCSB-36 (30-32)	GCSB-36 (34-36)	GCSB-36 (66-68)	GCSB-37 (9-11)	GCSB-37 (22-24)	GCSB-37 (36-38)	GCSB-37 (46-48)
					Start Depth	14	22	30	34	66	9	22	36	46
					End Depth	16	24	32	36	68	11	24	38	48
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	6/23/2004	6/23/2004	6/23/2004	6/23/2004	6/24/2004	6/30/2004	6/30/2004	6/30/2004	6/30/2004
					Parent Sample									
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO									
2,4-Dichlorophenol		120-83-2	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Diethyl phthalate		84-66-2	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Dimethyl phthalate		131-11-3	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
2,4-Dimethylphenol		105-67-9	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Di-n-butyl phthalate		84-74-2	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	0.93 U	0.89 U	1.2 U	1 U	0.92 U	0.97 U	0.93 U	0.96 U	0.93 U
2,4-Dinitrophenol		51-28-5	NE	NE	NE	0.93 U	0.89 U	1.2 U	1 U	0.92 U	0.97 U	0.93 U	0.96 U	0.93 U
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Di-n-octyl phthalate		117-84-0	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Hexachlorobenzene		118-74-1	0.33	6	12	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Hexachloroethane		67-72-1	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Isophorone		78-59-1	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
2-Nitroaniline		88-74-4	NE	NE	NE	0.93 U	0.89 U	1.2 U	1 U	0.92 U	0.97 U	0.93 U	0.96 U	0.93 U
3-Nitroaniline		99-09-2	NE	NE	NE	0.93 U	0.89 U	1.2 U	1 U	0.92 U	0.97 U	0.93 U	0.96 U	0.93 U
4-Nitroaniline		100-01-6	NE	NE	NE	0.93 U	0.89 U	1.2 U	1 U	0.92 U	0.97 U	0.93 U	0.96 U	0.93 U
Nitrobenzene		98-95-3	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
2-Nitrophenol		88-75-5	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
4-Nitrophenol		100-02-7	NE	NE	NE	0.93 U	0.89 U	1.2 U	1 U	0.92 U	0.97 U	0.93 U	0.96 U	0.93 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
Pentachlorophenol		87-86-5	0.8	6.7	55	0.93 U	0.89 U	1.2 U	1 U	0.92 U	0.97 U	0.93 U	0.96 U	0.93 U
Phenol		108-95-2	0.33	500	1000	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	0.93 U	0.89 U	1.2 U	1 U	0.92 U	0.97 U	0.93 U	0.96 U	0.93 U
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	0.37 U	0.35 U	0.47 U	0.41 U	0.37 U	0.39 U	0.37 U	0.38 U	0.37 U
TCLP SVOCs	ug/L													
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-36**	**GCSB-37**	**GCSB-37**	**GCSB-37**	**GCSB-37**
					Sample Name	**GCSB-36 (14-16)**	**GCSB-36 (22-24)**	**GCSB-36 (30-32)**	**GCSB-36 (34-36)**	**GCSB-36 (66-68)**	**GCSB-37 (9-11)**	**GCSB-37 (22-24)**	**GCSB-37 (36-38)**	**GCSB-37 (46-48)**
					Start Depth	**14**	**22**	**30**	**34**	**66**	**9**	**22**	**36**	**46**
					End Depth	**16**	**24**	**32**	**36**	**68**	**11**	**24**	**38**	**48**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**6/23/2004**	**6/23/2004**	**6/23/2004**	**6/23/2004**	**6/24/2004**	**6/30/2004**	**6/30/2004**	**6/30/2004**	**6/30/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg													
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg													
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L													
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GCSB-36	GCSB-36	GCSB-36	GCSB-36	GCSB-36	GCSB-37	GCSB-37	GCSB-37	GCSB-37
					Sample Name	GCSB-36 (14-16)	GCSB-36 (22-24)	GCSB-36 (30-32)	GCSB-36 (34-36)	GCSB-36 (66-68)	GCSB-37 (9-11)	GCSB-37 (22-24)	GCSB-37 (36-38)	GCSB-37 (46-48)
					Start Depth	14	22	30	34	66	9	22	36	46
					End Depth	16	24	32	36	68	11	24	38	48
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	6/23/2004	6/23/2004	6/23/2004	6/23/2004	6/24/2004	6/30/2004	6/30/2004	6/30/2004	6/30/2004
					Parent Sample									
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO									
Herbicides	mg/kg													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg													
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg													
Aluminum		7429-90-5	NE	NE	NE	**8150**	**3650**	**9870**	**3620**	**2360**	**7740**	**4250**	**2010**	**2190**
Antimony		7440-36-0	NE	NE	NE	**0.59 BN**	0.38 U	**0.31 BN**	0.44 U	0.39 U	**0.55 BN***	**18.5 N***	**0.38 BN***	**0.28 BN***
Arsenic		7440-38-2	13	16	16	**2.4 ***	**1.6 ***	**3 ***	**0.57 B***	**0.72 B***	**8.8 N***	**5.8 N***	**3.1 N***	**0.52 BN***
Barium		7440-39-3	350	400	10000	**39.6**	**17.4 B**	**41.3**	**23.4 B**	**25.5**	**51.2**	**35.9**	**17.4 B**	**22.1 B**
Beryllium		7440-41-7	7.2	590	2700	**0.4 B**	**0.17 B**	**0.39 B**	**0.18 B**	**0.073 B**	**0.53 B**	**0.28 B**	**0.16 B**	**0.12 B**
Cadmium		7440-43-9	2.5	9.3	60	**0.63**	**0.31 B**	**0.57 B**	**0.27 B**	**0.21 B**	0.035 U	0.034 U	0.035 U	0.034 U
Calcium		7440-70-2	NE	NE	NE	**844**	**466 B**	**1300**	**1040**	**1200**	**6120**	**901**	**875**	**868**
Chromium		7440-47-3	NE	NE	NE	**15**	**7**	**16.7**	**7.5**	**7.7**	**11.5 ***	**10.7 ***	**5.3 ***	**7 ***
Cobalt		7440-48-4	NE	NE	NE	**5.9**	**2.9 B**	**4.4 B**	**3.4 B**	**3.3 B**	**6.3**	**4.1 B**	**3.5 B**	**2.3 B**
Copper		7440-50-8	50	270	10000	**12.8 ***	**5.1 ***	**12.9 ***	**5.3 ***	**5.4 ***	**24.4 N***	**52.6 N***	**3.6 N***	**4.9 N***
Iron		7439-89-6	NE	NE	NE	**13500**	**7790**	**12500**	**7990**	**5420**	**16900**	**10700**	**3720**	**5170**
Lead		7439-92-1	63	1000	3900	**11.5 ***	**9.5 ***	**21.1 ***	**2.2 ***	**1.5 ***	**25.2 ***	**40.2 ***	**3 ***	**2 ***
Magnesium		7439-95-4	NE	NE	NE	**2980**	**979**	**1640**	**1180**	**1620**	**3390**	**967**	**640**	**990**
Manganese		7439-96-5	1600	10000	10000	**261 N**	**163 N**	**206 N**	**165 N**	**77.9 N**	**146 ***	**174 ***	**64.4 ***	**116 ***
Mercury		7439-97-6	0.18	2.8	5.7	**0.062**	**0.018 B**	**0.23**	0.021 U	0.018 U	**0.28 N**	**0.34 N**	**0.3 N**	**0.5 N**
Nickel		7440-02-0	30	310	10000	**17.2**	**4.9**	**9.1**	**5.4**	**9.8**	**15.1**	**8.1**	**6.2**	**4.7**
Potassium		7440-09-7	NE	NE	NE	**1120**	**349 B**	**537 B**	**803**	**568**	**375 B**	**324 B**	**320 B**	**568**
Selenium		7782-49-2	3.9	1500	6800	0.33 U	0.32 U	0.43 U	0.37 U	0.33 U	**2 N**	**1.5 N**	0.24 U	**0.55 BN**
Silver		7440-22-4	2	1500	6800	0.084 U	0.081 U	0.11 U	**0.1 B**	0.083 U	**0.1 B**	0.056 U	0.058 U	0.056 U
Sodium		7440-23-5	NE	NE	NE	**74.8 B**	**29.3 B**	**66.3 B**	**36.4 B**	**52.5 B**	**91.9 B**	**59.7 B**	**44.1 B**	**45.9 B**
Thallium		7440-28-0	NE	NE	NE	0.3 U	0.29 U	0.38 U	0.34 U	0.3 U	**0.4 B**	0.31 U	0.32 U	0.31 U
Vanadium		7440-62-2	NE	NE	NE	**20.4**	**8.7**	**19.7**	**11.3**	**7.6**	**29.9**	**12.7**	**5.6 B**	**8**
Zinc		7440-66-6	109	10000	10000	**33.7**	**12**	**33**	**23.2**	**12.1**	**40.8 ***	**33.1 ***	**10.4 ***	**11.5 ***
TCLP Metals	ug/L													
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan

Glen Cove Former MGP Site

Glen Cove, Nassau County, New York

					Location Name	GCSB-36	GCSB-36	GCSB-36	GCSB-36	GCSB-36	GCSB-37	GCSB-37	GCSB-37	GCSB-37
					Sample Name	GCSB-36 (14-16)	GCSB-36 (22-24)	GCSB-36 (30-32)	GCSB-36 (34-36)	GCSB-36 (66-68)	GCSB-37 (9-11)	GCSB-37 (22-24)	GCSB-37 (36-38)	GCSB-37 (46-48)
					Start Depth	14	22	30	34	66	9	22	36	46
					End Depth	16	24	32	36	68	11	24	38	48
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	6/23/2004	6/23/2004	6/23/2004	6/23/2004	6/24/2004	6/30/2004	6/30/2004	6/30/2004	6/30/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg													
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0 U	0 U	0 U	0 U	0 U	0.58 U	0.56 U	0.58 U	0.56 U
Other														
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	NA	NA	NA	NA	NA	**14.3**	**11.1**	**13.7**	**11.1**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						GCSB-37	GCSB-38	GCSB-39	GCSB-39	GCSB-39	GCSB-39	GCSB-39	GCSB-40
Sample Name						GCSB-37 (68-70)	GCSB - 38 (50-52)	GCSB-39 (18-20)	GCSB-39 (26-28)	GCSB-39 (34-36)	GCSB-39 (68-70)	GCSB-39 (70-72)	GCSB - 40 (17-19)
Start Depth						68	50	18	26	34	68	70	17
End Depth						70	52	20	28	36	70	72	19
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						6/30/2004	1/9/2004	6/25/2004	6/25/2004	6/25/2004	6/29/2004	6/29/2004	1/6/2004
Parent Sample													
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Bromodichloromethane		75-27-4	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Bromoform		75-25-2	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Bromomethane		74-83-9	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Carbon disulfide		75-15-0	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Carbon tetrachloride		56-23-5	0.76	22	44	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Chlorobenzene		108-90-7	1.1	500	1000	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Chloroethane		75-00-3	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Chloroform		67-66-3	0.37	350	700	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Chloromethane		74-87-3	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Dibromochloromethane		124-48-1	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
1,1-Dichloroethane		75-34-3	0.27	240	480	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
1,2-Dichloroethane		107-06-2	0.02	30	60	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
2-Hexanone		591-78-6	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Methylene chloride		75-09-2	0.05	500	1000	**0.006 J**	NA	**0.1 B**	**0.16 B**	**0.11 B**	**0.006 J**	**0.006 J**	**0.007 J**
Styrene		100-42-5	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Vinyl chloride		75-01-4	0.02	13	27	0.011 U	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-37**	**GCSB-38**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-40**
					Sample Name	**GCSB-37 (68-70)**	**GCSB - 38 (50-52)**	**GCSB-39 (18-20)**	**GCSB-39 (26-28)**	**GCSB-39 (34-36)**	**GCSB-39 (68-70)**	**GCSB-39 (70-72)**	**GCSB - 40 (17-19)**
					Start Depth	**68**	**50**	**18**	**26**	**34**	**68**	**70**	**17**
					End Depth	**70**	**52**	**20**	**28**	**36**	**70**	**72**	**19**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**6/30/2004**	**1/9/2004**	**6/25/2004**	**6/25/2004**	**6/25/2004**	**6/29/2004**	**6/29/2004**	**1/6/2004**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.36 U	0.36 U	**0.28 J**	0.37 U	0.38 U	0.37 U	0.36 U	**0.11 J**
Acenaphthylene		208-96-8	100	500	1000	0.36 U	0.36 U	**0.13 J**	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Anthracene		120-12-7	100	500	1000	0.36 U	0.36 U	**1.1**	0.37 U	0.38 U	0.37 U	0.36 U	**0.11 J**
Benzo(a)anthracene		56-55-3	1	5.6	11	0.36 U	0.36 U	**2.3**	0.37 U	0.38 U	0.37 U	0.36 U	**0.096 J**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.36 U	0.36 U	**1.5**	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.36 U	0.36 U	**1.8**	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.36 U	0.36 U	**1.1**	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Benzo(a)pyrene		50-32-8	1	1	1.1	0.36 U	0.36 U	**1.8**	0.37 U	0.38 U	0.37 U	0.36 U	**0.075 J**
Chrysene		218-01-9	1	56	110	0.36 U	0.36 U	**2.5**	0.37 U	0.38 U	0.37 U	0.36 U	**0.085 J**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.36 U	0.36 U	**0.64**	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Fluoranthene		206-44-0	100	500	1000	0.36 U	0.36 U	**5.2**	0.37 U	0.38 U	**0.081 J**	0.36 U	**0.24 J**
Fluorene		86-73-7	30	500	1000	0.36 U	0.36 U	**0.36 J**	0.37 U	0.38 U	0.37 U	0.36 U	**0.1 J**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.36 U	0.36 U	**1.2**	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	**0.22 J**	0.36 U	**0.44**	0.37 U	0.38 U	**0.12 J**	0.36 U	0.37 U
Naphthalene		91-20-3	12	500	1000	0.36 U	0.36 U	**0.43**	0.37 U	0.38 U	**0.57**	0.36 U	0.37 U
Phenanthrene		85-01-8	100	500	1000	**0.086 J**	0.36 U	**3.6**	0.37 U	**0.12 J**	**0.091 J**	0.36 U	**0.39**
Pyrene		129-00-0	100	500	1000	0.36 U	0.36 U	**3.9**	0.37 U	0.38 U	**0.08 J**	0.36 U	**0.33 J**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**0.306**	ND	**28.28**	ND	**0.12**	**0.942**	ND	**1.536**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	**0.096 J**	NA	**1**	**0.11 J**	0.38 U	0.37 U	0.36 U	0.37 U
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Butyl benzyl phthalate		85-68-7	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Carbazole		86-74-8	NE	NE	NE	0.36 U	NA	**0.46**	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
4-Chloroaniline		106-47-8	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2-Chloronaphthalene		91-58-7	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2-Chlorophenol		95-57-8	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Dibenzofuran		132-64-9	7	350	1000	0.36 U	NA	**0.23 J**	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
1,3-Dichlorobenzene		541-73-1	2.4	280	560	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
1,4-Dichlorobenzene		106-46-7	1.8	130	250	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-37**	**GCSB-38**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-40**
					Sample Name	**GCSB-37 (68-70)**	**GCSB - 38 (50-52)**	**GCSB-39 (18-20)**	**GCSB-39 (26-28)**	**GCSB-39 (34-36)**	**GCSB-39 (68-70)**	**GCSB-39 (70-72)**	**GCSB - 40 (17-19)**
					Start Depth	**68**	**50**	**18**	**26**	**34**	**68**	**70**	**17**
					End Depth	**70**	**52**	**20**	**28**	**36**	**70**	**72**	**19**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**6/30/2004**	**1/9/2004**	**6/25/2004**	**6/25/2004**	**6/25/2004**	**6/29/2004**	**6/29/2004**	**1/6/2004**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Diethyl phthalate		84-66-2	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	**1**
Dimethyl phthalate		131-11-3	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2,4-Dimethylphenol		105-67-9	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Di-n-butyl phthalate		84-74-2	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	0.92 U	NA	0.94 U	0.92 U	0.94 U	0.94 U	0.91 U	0.92 U
2,4-Dinitrophenol		51-28-5	NE	NE	NE	0.92 U	NA	0.94 U	0.92 U	0.94 U	0.94 U	0.91 U	0.92 U
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Di-n-octyl phthalate		117-84-0	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Hexachlorobenzene		118-74-1	0.33	6	12	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Hexachloroethane		67-72-1	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Isophorone		78-59-1	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2-Nitroaniline		88-74-4	NE	NE	NE	0.92 U	NA	0.94 U	0.92 U	0.94 U	0.94 U	0.91 U	0.92 U
3-Nitroaniline		99-09-2	NE	NE	NE	0.92 U	NA	0.94 U	0.92 U	0.94 U	0.94 U	0.91 U	0.92 U
4-Nitroaniline		100-01-6	NE	NE	NE	0.92 U	NA	0.94 U	0.92 U	0.94 U	0.94 U	0.91 U	0.92 U
Nitrobenzene		98-95-3	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2-Nitrophenol		88-75-5	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
4-Nitrophenol		100-02-7	NE	NE	NE	0.92 U	NA	0.94 U	0.92 U	0.94 U	0.94 U	0.91 U	0.92 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
Pentachlorophenol		87-86-5	0.8	6.7	55	0.92 U	NA	0.94 U	0.92 U	0.94 U	0.94 U	0.91 U	0.92 U
Phenol		108-95-2	0.33	500	1000	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	0.92 U	NA	0.94 U	0.92 U	0.94 U	0.94 U	0.91 U	0.92 U
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	0.36 U	NA	0.37 U	0.37 U	0.38 U	0.37 U	0.36 U	0.37 U
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-37	GCSB-38	GCSB-39	GCSB-39	GCSB-39	GCSB-39	GCSB-39	GCSB-40
					Sample Name	GCSB-37 (68-70)	GCSB - 38 (50-52)	GCSB-39 (18-20)	GCSB-39 (26-28)	GCSB-39 (34-36)	GCSB-39 (68-70)	GCSB-39 (70-72)	GCSB - 40 (17-19)
					Start Depth	68	50	18	26	34	68	70	17
					End Depth	70	52	20	28	36	70	72	19
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	6/30/2004	1/9/2004	6/25/2004	6/25/2004	6/25/2004	6/29/2004	6/29/2004	1/6/2004
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4		NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8		NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14		NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23		NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000		NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47		NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94		NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120		NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180		NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8		NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920		NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920		NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920		NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410		NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29		NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-37**	**GCSB-38**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-40**
					Sample Name	**GCSB-37 (68-70)**	**GCSB - 38 (50-52)**	**GCSB-39 (18-20)**	**GCSB-39 (26-28)**	**GCSB-39 (34-36)**	**GCSB-39 (68-70)**	**GCSB-39 (70-72)**	**GCSB - 40 (17-19)**
					Start Depth	**68**	**50**	**18**	**26**	**34**	**68**	**70**	**17**
					End Depth	**70**	**52**	**20**	**28**	**36**	**70**	**72**	**19**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**6/30/2004**	**1/9/2004**	**6/25/2004**	**6/25/2004**	**6/25/2004**	**6/29/2004**	**6/29/2004**	**1/6/2004**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	**3750**	NA	**2370**	**4070**	**4330**	**2770**	**1420**	**6150**
Antimony		7440-36-0	NE	NE	NE	**0.28 BN***	NA	**27.9 N**	**0.21 BN**	0.4 U	0.27 U	0.26 U	0.31 U
Arsenic		7440-38-2	13	16	16	**1.4 N***	**1.4**	**6.6 ***	**1.7 ***	**2.8 ***	**0.92 BN***	**0.87 BN***	**1.6**
Barium		7440-39-3	350	400	10000	**40.4**	**8.9 B**	**33.6**	**18.6 B**	**94.9**	**34.2**	**14.9 B**	**41.5**
Beryllium		7440-41-7	7.2	590	2700	**0.23 B**	NA	**0.25 B**	**0.18 B**	**0.23 B**	**0.16 B**	**0.1 B**	**0.36 B**
Cadmium		7440-43-9	2.5	9.3	60	0.033 U	**1.2**	**0.59**	**0.31 B**	**0.41 B**	0.034 U	0.033 U	**0.16 B**
Calcium		7440-70-2	NE	NE	NE	**1460**	NA	**3610**	**502 B**	**930**	**1680**	**914**	**1460 E**
Chromium		7440-47-3	NE	NE	NE	**10.8 ***	**7.3**	**6.7**	**7.1**	**10.7**	**8.2 ***	**5.1 ***	**12.8**
Cobalt		7440-48-4	NE	NE	NE	**4.6 B**	NA	**3.8 B**	**3.4 B**	**6.6**	**3.8 B**	**3.3 B**	**5.2 B**
Copper		7440-50-8	50	270	10000	**8.1 N***	NA	**22.7 ***	**4.6 ***	**7.2 ***	**7.5 N***	**4.6 N***	**8.3**
Iron		7439-89-6	NE	NE	NE	**8890**	NA	**10600**	**7140**	**9630**	**6970**	**4410**	**10900**
Lead		7439-92-1	63	1000	3900	**3.2 ***	**0.81 N**	**50.5 ***	**3 ***	**3.2 ***	**2.4 ***	**1.6 ***	**2.5 N**
Magnesium		7439-95-4	NE	NE	NE	**1620**	NA	**1760**	**847**	**1300**	**1210**	**583**	**2110**
Manganese		7439-96-5	1600	10000	10000	**143 ***	NA	**92.8 N**	**196 N**	**827 N**	**76.9 ***	**61.5 ***	**167**
Mercury		7439-97-6	0.18	2.8	5.7	**0.46 N**	0.018 U	**0.16**	**0.019 B**	0.019 U	**0.12 N**	**0.18 N**	0.018 U
Nickel		7440-02-0	30	310	10000	**9.4**	NA	**9.5**	**5.8**	**9.5**	**8**	**5.3**	**9.9**
Potassium		7440-09-7	NE	NE	NE	**953**	NA	**343 B**	**299 B**	**814**	**726**	**319 B**	**1630**
Selenium		7782-49-2	3.9	1500	6800	**0.81 N**	0.22 U	**0.53 B**	0.33 U	0.34 U	**0.6 N**	**0.61 N**	0.22 U
Silver		7440-22-4	2	1500	6800	0.055 U	0.044 U	**0.097 B**	**0.056 B**	0.085 U	0.056 U	0.055 U	0.044 U
Sodium		7440-23-5	NE	NE	NE	**61.4 B**	NA	**55.7 B**	**30.2 B**	**44.3 B**	**69.1 B**	**47.1 B**	**53.9 B**
Thallium		7440-28-0	NE	NE	NE	0.31 U	NA	0.31 U	0.3 U	0.31 U	0.32 U	0.31 U	0.25 U
Vanadium		7440-62-2	NE	NE	NE	**12.7**	NA	**10**	**9.1**	**14.1**	**10.5**	**5.8**	**15.6**
Zinc		7440-66-6	109	10000	10000	**20.3 ***	NA	**41.4**	**19.3**	**19.5**	**14.4 ***	**10.2 ***	**23.6**
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						**GCSB-37**	**GCSB-38**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-39**	**GCSB-40**
Sample Name						**GCSB-37 (68-70)**	**GCSB - 38 (50-52)**	**GCSB-39 (18-20)**	**GCSB-39 (26-28)**	**GCSB-39 (34-36)**	**GCSB-39 (68-70)**	**GCSB-39 (70-72)**	**GCSB - 40 (17-19)**
Start Depth						**68**	**50**	**18**	**26**	**34**	**68**	**70**	**17**
End Depth						**70**	**52**	**20**	**28**	**36**	**70**	**72**	**19**
Depth Unit						**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
Sample Date						**6/30/2004**	**1/9/2004**	**6/25/2004**	**6/25/2004**	**6/25/2004**	**6/29/2004**	**6/29/2004**	**1/6/2004**
Parent Sample													
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.55 U	0.55 U	0 U	0 U	0 U	0.56 U	0.55 U	0.55 U
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**9.3**	**8.6**	NA	NA	NA	**11.5**	**9.2**	**9.7**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
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					Location Name	GCSB-40	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-42	GCSB-42	GCSB-42
					Sample Name	GCSB - 40 (68-69)	GCSB-41 (18-20)	GCSB-41 (26-28)	GCSB-41 (58-60)	GCSB-41 (74-76)	GCSB-41 (80-82)	GCSB-42 (13-15)	GCSB-42 (24-26)	GCSB-42 (58-60)
					Start Depth	68	18	26	58	74	80	13	24	58
					End Depth	69	20	28	60	76	82	15	26	60
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	1/8/2004	2/17/2004	2/17/2004	2/17/2004	2/18/2004	2/19/2004	3/9/2004	3/9/2004	3/10/2004
					Parent Sample									
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO									
BTEX	mg/kg													
Benzene		71-43-2	0.06	44	89	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	0.11 U	0.011 U	0.012 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	0.11 U	0.011 U	0.012 U
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	**4.8**	0.011 U	0.012 U
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	**2.8**	0.011 U	0.012 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	ND	ND	**7.6**	ND	ND
Other VOCs	mg/kg													
Acetone		67-64-1	0.05	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	**0.007 J**	**0.005 J**	**0.005 J**	**0.004 J**	**0.005 J**	**0.005 J**	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	NA
TCLP VOCs	ug/L													
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-40	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-42	GCSB-42	GCSB-42
					Sample Name	GCSB - 40 (68-69)	GCSB-41 (18-20)	GCSB-41 (26-28)	GCSB-41 (58-60)	GCSB-41 (74-76)	GCSB-41 (80-82)	GCSB-42 (13-15)	GCSB-42 (24-26)	GCSB-42 (58-60)
					Start Depth	68	18	26	58	74	80	13	24	58
					End Depth	69	20	28	60	76	82	15	26	60
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	1/8/2004	2/17/2004	2/17/2004	2/17/2004	2/18/2004	2/19/2004	3/9/2004	3/9/2004	3/10/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg													
Acenaphthene		83-32-9	20	500	1000	0.37 U	**2.1**	0.36 U	0.38 U	0.37 U	0.39 U	**110**	**0.15 J**	0.39 U
Acenaphthylene		208-96-8	100	500	1000	0.37 U	**20 J**	0.36 U	0.38 U	0.37 U	0.39 U	**14**	0.72 U	0.39 U
Anthracene		120-12-7	100	500	1000	0.37 U	**87 D**	0.36 U	0.38 U	0.37 U	0.39 U	**47**	**0.17 J**	0.39 U
Benzo(a)anthracene		56-55-3	1	5.6	11	0.37 U	**78 D**	0.36 U	0.38 U	0.37 U	0.39 U	**31**	0.72 U	0.39 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.37 U	**26 J**	0.36 U	0.38 U	0.37 U	0.39 U	**9.1**	0.72 U	0.39 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.37 U	**49 D**	0.36 U	0.38 U	0.37 U	0.39 U	**16**	0.72 U	0.39 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.37 U	**34 J**	0.36 U	0.38 U	0.37 U	0.39 U	**11**	0.72 U	0.39 U
Benzo(a)pyrene		50-32-8	1	1	1.1	0.37 U	**59 D**	0.36 U	0.38 U	0.37 U	0.39 U	**23**	0.72 U	0.39 U
Chrysene		218-01-9	1	56	110	0.37 U	**77 D**	0.36 U	0.38 U	0.37 U	0.39 U	**29**	0.72 U	0.39 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.37 U	**5.7**	0.36 U	0.38 U	0.37 U	0.39 U	**3.4 J**	0.72 U	0.39 U
Fluoranthene		206-44-0	100	500	1000	0.37 U	**160 D**	0.36 U	0.38 U	0.37 U	0.39 U	**67**	**0.36 J**	0.39 U
Fluorene		86-73-7	30	500	1000	0.37 U	**36 J**	0.36 U	0.38 U	0.37 U	0.39 U	**61**	0.72 U	0.39 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.37 U	**26 J**	0.36 U	0.38 U	0.37 U	0.39 U	**8.6**	0.72 U	0.39 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	**0.5**	0.39 U	**150 D**	0.72 U	0.39 U
Naphthalene		91-20-3	12	500	1000	0.37 U	**0.26 J**	0.36 U	0.38 U	**2.6**	0.39 U	**290 D**	0.72 U	0.39 U
Phenanthrene		85-01-8	100	500	1000	0.37 U	**260 D**	0.36 U	0.38 U	0.37 U	0.39 U	**220 D**	**0.66 J**	0.39 U
Pyrene		129-00-0	100	500	1000	0.37 U	**180 D**	0.36 U	0.38 U	0.37 U	**0.083 J**	**83**	**0.45 J**	0.39 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	ND	**1100.06**	ND	ND	**3.1**	**0.083**	**1173.1**	**1.79**	ND
NYSDEC PAH17 Other SVOCs	mg/kg													
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	**0.098 J**	0.39 U	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	0.37 U	**2.9**	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-40	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-42	GCSB-42	GCSB-42
					Sample Name	GCSB - 40 (68-69)	GCSB-41 (18-20)	GCSB-41 (26-28)	GCSB-41 (58-60)	GCSB-41 (74-76)	GCSB-41 (80-82)	GCSB-42 (13-15)	GCSB-42 (24-26)	GCSB-42 (58-60)
					Start Depth	68	18	26	58	74	80	13	24	58
					End Depth	69	20	28	60	76	82	15	26	60
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	1/8/2004	2/17/2004	2/17/2004	2/17/2004	2/18/2004	2/19/2004	3/9/2004	3/9/2004	3/10/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4-Dichlorophenol		120-83-2	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	0.37 U	0.37 U	0.36 U	**0.081 J**	**0.082 J**	0.39 U	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	0.92 U	0.94 U	0.92 U	0.95 U	0.94 U	0.99 U	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	0.92 U	0.94 U	0.92 U	0.95 U	0.94 U	0.99 U	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	**0.12 J**	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	0.92 U	0.94 U	0.92 U	0.95 U	0.94 U	0.99 U	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	0.92 U	0.94 U	0.92 U	0.95 U	0.94 U	0.99 U	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	0.92 U	0.94 U	0.92 U	0.95 U	0.94 U	0.99 U	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	0.92 U	0.94 U	0.92 U	0.95 U	0.94 U	0.99 U	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	0.92 U	0.94 U	0.92 U	0.95 U	0.94 U	0.99 U	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	0.92 U	0.94 U	0.92 U	0.95 U	0.94 U	0.99 U	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	0.37 U	0.37 U	0.36 U	0.38 U	0.37 U	0.39 U	NA	NA	NA
TCLP SVOCs	ug/L													
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan

Glen Cove Former MGP Site

Glen Cove, Nassau County, New York

					Location Name	**GCSB-40**	**GCSB-41**	**GCSB-41**	**GCSB-41**	**GCSB-41**	**GCSB-41**	**GCSB-42**	**GCSB-42**	**GCSB-42**
					Sample Name	**GCSB - 40 (68-69)**	**GCSB-41 (18-20)**	**GCSB-41 (26-28)**	**GCSB-41 (58-60)**	**GCSB-41 (74-76)**	**GCSB-41 (80-82)**	**GCSB-42 (13-15)**	**GCSB-42 (24-26)**	**GCSB-42 (58-60)**
					Start Depth	**68**	**18**	**26**	**58**	**74**	**80**	**13**	**24**	**58**
					End Depth	**69**	**20**	**28**	**60**	**76**	**82**	**15**	**26**	**60**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**1/8/2004**	**2/17/2004**	**2/17/2004**	**2/17/2004**	**2/18/2004**	**2/19/2004**	**3/9/2004**	**3/9/2004**	**3/10/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg													
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg													
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L													
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan

Glen Cove Former MGP Site

Glen Cove, Nassau County, New York

					Location Name	GCSB-40	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-42	GCSB-42	GCSB-42
					Sample Name	GCSB - 40 (68-69)	GCSB-41 (18-20)	GCSB-41 (26-28)	GCSB-41 (58-60)	GCSB-41 (74-76)	GCSB-41 (80-82)	GCSB-42 (13-15)	GCSB-42 (24-26)	GCSB-42 (58-60)
					Start Depth	68	18	26	58	74	80	13	24	58
					End Depth	69	20	28	60	76	82	15	26	60
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	1/8/2004	2/17/2004	2/17/2004	2/17/2004	2/18/2004	2/19/2004	3/9/2004	3/9/2004	3/10/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Herbicides	mg/kg													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg													
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg													
Aluminum		7429-90-5	NE	NE	NE	**4600**	**2690**	**4310**	**1230**	**3050**	**239**	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	0.31 U	0.29 U	0.29 U	0.3 U	0.29 U	0.31 U	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**1.2**	**0.86 B**	**1.8**	**0.44 B**	**1.9**	**1.2 B**	**1.3**	**1.2**	0.25 U
Barium		7440-39-3	350	400	10000	**46.1**	**29.4**	**40.1**	**12.4 B**	**23.8**	**1.1 B**	**37**	**35.9**	**9.6 B**
Beryllium		7440-41-7	7.2	590	2700	**0.31 B**	**0.11 B**	**0.17 B**	**0.073 B**	**0.11 B**	0.024 U	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	**0.2 B**	0.023 U	0.022 U	0.023 U	0.023 U	0.024 U	**0.093 B**	**0.14 B**	**0.027 B**
Calcium		7440-70-2	NE	NE	NE	**1630 E**	**1070**	**1820**	**624**	**696**	**85.8 B**	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**17**	**6.9**	**10.5**	**2.8**	**6.9**	**3.6**	**11.3**	**9.5**	**4**
Cobalt		7440-48-4	NE	NE	NE	**6**	**2.7 B**	**4.9 B**	**1.6 B**	**2.3 B**	0.14 U	NA	NA	NA
Copper		7440-50-8	50	270	10000	**7**	**6.8**	**9.6**	**3.1**	**4.7**	**3.7**	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	**11000**	**6280**	**11500**	**3420**	**6860**	**978**	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**1.9 N**	**2.2 N***	**7.3 N***	**1.1 N***	**2.3 N***	**0.6 N***	**2.5**	**2.1**	**0.8**
Magnesium		7439-95-4	NE	NE	NE	**1720**	**1200**	**2310**	**381 B**	**830**	**15 B**	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	**287**	**94.4 N**	**218 N**	**138 N**	**114 N**	**5.3 N**	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.019 U	0.019 U	0.018 U	0.39 U	0.019 U	0.02 U	0.018 U	0.018 U	0.02 U
Nickel		7440-02-0	30	310	10000	**34.2**	**5.5**	**9.5**	**5.2**	**4.9**	0.92 U	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	**1500**	**685**	**1060**	**217 B**	**523 B**	**29.9 B**	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.22 U	0.23 U	0.22 U	0.23 U	0.23 U	**0.48 B**	0.2 U	**0.22 BN**	0.21 U
Silver		7440-22-4	2	1500	6800	0.045 U	0.045 U	0.044 U	0.046 U	0.045 U	0.048 U	0.055 U	0.055 U	0.059 U
Sodium		7440-23-5	NE	NE	NE	**147 B**	**62.5 B**	**93.6 B**	**32.4 B**	**32.1 B**	**15.9 B**	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	0.26 U	0.27 U	**0.49 B**	0.27 U	0.27 U	0.29 U	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	**13.9**	**8.7**	**13.7**	**4.4 B**	**11.5**	**5.6 B**	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	**21**	**12.4**	**20.1**	**5.3**	**8.9**	**0.97 B**	NA	NA	NA
TCLP Metals	ug/L													
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-40	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-41	GCSB-42	GCSB-42	GCSB-42
					Sample Name	GCSB - 40 (68-69)	GCSB-41 (18-20)	GCSB-41 (26-28)	GCSB-41 (58-60)	GCSB-41 (74-76)	GCSB-41 (80-82)	GCSB-42 (13-15)	GCSB-42 (24-26)	GCSB-42 (58-60)
					Start Depth	68	18	26	58	74	80	13	24	58
					End Depth	69	20	28	60	76	82	15	26	60
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	1/8/2004	2/17/2004	2/17/2004	2/17/2004	2/18/2004	2/19/2004	3/9/2004	3/9/2004	3/10/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg													
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.56 U	0.57 U	0.55 U	0.57 U	0.57 U	0.6 U	0.55 U	0.55 U	0.59 U
Other														
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**10.2**	**11.8**	**9.4**	**12.3**	**11.8**	**16.2**	**9.5**	**8.9**	**15.5**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-43**	**GCSB-43**	**GCSB-43**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**
					Sample Name	**GCSB-43 (17-19)**	**GCSB-43 (22-24)**	**GCSB-43 (50-52)**	**GCSB-44 (8-10)**	**GCSB-44 (15-17)**	**GCSB-44 (32-34)**	**GCSB-44 (38-40)**	**GCSB-44 (48-50)**	**GCSB-44 (48-50)**
					Start Depth	**17**	**22**	**50**	**8**	**15**	**32**	**38**	**48**	**48**
					End Depth	**19**	**24**	**52**	**10**	**17**	**34**	**40**	**50**	**50**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**1/13/2004**	**1/13/2004**	**1/14/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/22/2004**	**2/3/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
BTEX	mg/kg													
Benzene		71-43-2	0.06	44	89	0.012 U	0.011 U	0.011 U	**0.019**	0.083 U	0.011 U	0.011 U	0.011 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.012 U	0.011 U	0.011 U	**0.016**	**0.26**	0.011 U	0.011 U	0.011 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.012 U	0.011 U	0.011 U	**0.024**	**7.5 D**	0.011 U	0.011 U	0.011 U	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.012 U	0.011 U	0.011 U	**0.032**	**7.2 D**	0.011 U	0.011 U	0.011 U	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	**0.091**	**14.96**	ND	ND	ND	ND
Other VOCs	mg/kg													
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP VOCs	ug/L													
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove, Nassau County, New York

					Location Name	**GCSB-43**	**GCSB-43**	**GCSB-43**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**
					Sample Name	**GCSB-43 (17-19)**	**GCSB-43 (22-24)**	**GCSB-43 (50-52)**	**GCSB-44 (8-10)**	**GCSB-44 (15-17)**	**GCSB-44 (32-34)**	**GCSB-44 (38-40)**	**GCSB-44 (48-50)**	**GCSB-44 (48-50)**
					Start Depth	**17**	**22**	**50**	**8**	**15**	**32**	**38**	**48**	**48**
					End Depth	**19**	**24**	**52**	**10**	**17**	**34**	**40**	**50**	**50**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**1/13/2004**	**1/13/2004**	**1/14/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/22/2004**	**2/3/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg													
Acenaphthene		83-32-9	20	500	1000	0.39 U	0.37 U	0.37 U	**2000 J**	**520**	0.36 U	0.37 U	**0.083 J**	0.36 U
Acenaphthylene		208-96-8	100	500	1000	0.39 U	0.37 U	0.37 U	**7200**	**55 J**	0.36 U	0.37 U	0.37 U	0.36 U
Anthracene		120-12-7	100	500	1000	0.39 U	0.37 U	0.37 U	**11000**	**410**	**0.11 J**	**0.12 J**	**0.28 J**	0.36 U
Benzo(a)anthracene		56-55-3	1	5.6	11	**0.54**	0.37 U	0.37 U	**3600**	**190**	0.36 U	0.37 U	**0.12 J**	0.36 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.39 U	0.37 U	0.37 U	1800 U	**74 J**	0.36 U	0.37 U	0.37 U	0.36 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.39 U	0.37 U	0.37 U	**2400 J**	**130 J**	0.36 U	0.37 U	0.37 U	0.36 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**0.13 J**	0.37 U	0.37 U	**2100 J**	**120 J**	0.36 U	0.37 U	0.37 U	0.36 U
Benzo(a)pyrene		50-32-8	1	1	1.1	**0.24 J**	0.37 U	0.37 U	**3400 J**	**190**	0.36 U	0.37 U	**0.11 J**	0.36 U
Chrysene		218-01-9	1	56	110	**0.67**	0.37 U	0.37 U	**6000**	**230**	0.36 U	0.37 U	**0.17 J**	0.36 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.39 U	0.37 U	0.37 U	1800 U	140 U	0.36 U	0.37 U	0.37 U	0.36 U
Fluoranthene		206-44-0	100	500	1000	**0.39**	0.37 U	0.37 U	**11000**	**550**	**0.12 J**	**0.15 J**	**0.34 J**	0.36 U
Fluorene		86-73-7	30	500	1000	0.39 U	0.37 U	0.37 U	**2700**	**250**	0.36 U	0.37 U	0.37 U	0.36 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.39 U	0.37 U	0.37 U	**1500 J**	**87 J**	0.36 U	0.37 U	0.37 U	0.36 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.39 U	0.37 U	0.37 U	**8100**	**390**	0.36 U	0.37 U	0.37 U	**0.12 J**
Naphthalene		91-20-3	12	500	1000	0.39 U	0.37 U	0.37 U	**39000**	**1500**	0.36 U	0.37 U	0.37 U	**0.53**
Phenanthrene		85-01-8	100	500	1000	0.39 U	0.37 U	0.37 U	**24000**	**1100**	**0.21 J**	**0.24 J**	**0.59**	0.36 U
Pyrene		129-00-0	100	500	1000	**2.9**	0.37 U	0.37 U	**12000**	**640**	**0.14 J**	**0.17 J**	**0.41**	0.36 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**4.87**	ND	ND	**136000**	**6436**	**0.58**	**0.68**	**2.103**	**0.65**
NYSDEC PAH17 Other SVOCs	mg/kg													
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Interim Site Management Plan
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Glen Cove, Nassau County, New York

Location Name						GCSB-43	GCSB-43	GCSB-43	GCSB-44	GCSB-44	GCSB-44	GCSB-44	GCSB-44	GCSB-44
Sample Name						GCSB-43 (17-19)	GCSB-43 (22-24)	GCSB-43 (50-52)	GCSB-44 (8-10)	GCSB-44 (15-17)	GCSB-44 (32-34)	GCSB-44 (38-40)	GCSB-44 (48-50)	GCSB-44 (48-50)
Start Depth						17	22	50	8	15	32	38	48	48
End Depth						19	24	52	10	17	34	40	50	50
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						1/13/2004	1/13/2004	1/14/2004	1/21/2004	1/21/2004	1/21/2004	1/21/2004	1/22/2004	2/3/2004
Parent Sample														
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP SVOCs	ug/L													
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan

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					Location Name	**GCSB-43**	**GCSB-43**	**GCSB-43**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**
					Sample Name	**GCSB-43 (17-19)**	**GCSB-43 (22-24)**	**GCSB-43 (50-52)**	**GCSB-44 (8-10)**	**GCSB-44 (15-17)**	**GCSB-44 (32-34)**	**GCSB-44 (38-40)**	**GCSB-44 (48-50)**	**GCSB-44 (48-50)**
					Start Depth	**17**	**22**	**50**	**8**	**15**	**32**	**38**	**48**	**48**
					End Depth	**19**	**24**	**52**	**10**	**17**	**34**	**40**	**50**	**50**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**1/13/2004**	**1/13/2004**	**1/14/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/22/2004**	**2/3/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg													
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg													
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L													
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Location Name						**GCSB-43**	**GCSB-43**	**GCSB-43**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**
Sample Name						**GCSB-43 (17-19)**	**GCSB-43 (22-24)**	**GCSB-43 (50-52)**	**GCSB-44 (8-10)**	**GCSB-44 (15-17)**	**GCSB-44 (32-34)**	**GCSB-44 (38-40)**	**GCSB-44 (48-50)**	**GCSB-44 (48-50)**
Start Depth						**17**	**22**	**50**	**8**	**15**	**32**	**38**	**48**	**48**
End Depth						**19**	**24**	**52**	**10**	**17**	**34**	**40**	**50**	**50**
Depth Unit						**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
Sample Date						**1/13/2004**	**1/13/2004**	**1/14/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/22/2004**	**2/3/2004**
Parent Sample														
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Herbicides	**mg/kg**													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	**ug/L**													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	**mg/kg**													
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	**mg/kg**													
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**1.4 N**	**2 N**	**1.3 N**	**40.6**	**2.7**	**0.51 B**	**1.5**	**1.5**	**1.2**
Barium		7440-39-3	350	400	10000	**21.1 BE**	**54.5 E**	**13.3 BE**	**40.4**	**25.4 B**	**17.2 B**	**44.8**	**69.2**	**38.8 ***
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	**0.033 B**	0.022 U	0.023 U	**0.18 B**	**0.078 B**	**0.05 B**	**0.057 B**	**0.13 B**	0.022 U
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**13.7 N***	**14.7 N***	**8.3 N***	**8.7**	**20.2**	**4.6**	**10.6**	**11.4**	**9.5 ***
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**5.8 N***	**4.1 N***	**2.5 N***	**103**	**2.7**	**1.2**	**2.7**	**2.8**	**3.9 ***
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.02 U	**0.031 BN**	0.019 U	**0.24**	**0.056**	0.018 U	0.019 U	0.018 U	0.018 U
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	**0.3 BN**	**0.47 BN**	0.26 U	**1.3 N**	0.33 U	0.22 U	0.22 U	0.22 U	**0.29 BN**
Silver		7440-22-4	2	1500	6800	0.047 U	0.044 U	0.045 U	**1.4**	0.066 U	0.043 U	0.045 U	0.044 U	0.044 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals	**ug/L**													
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-43**	**GCSB-43**	**GCSB-43**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**	**GCSB-44**
					Sample Name	**GCSB-43 (17-19)**	**GCSB-43 (22-24)**	**GCSB-43 (50-52)**	**GCSB-44 (8-10)**	**GCSB-44 (15-17)**	**GCSB-44 (32-34)**	**GCSB-44 (38-40)**	**GCSB-44 (48-50)**	**GCSB-44 (48-50)**
					Start Depth	**17**	**22**	**50**	**8**	**15**	**32**	**38**	**48**	**48**
					End Depth	**19**	**24**	**52**	**10**	**17**	**34**	**40**	**50**	**50**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**1/13/2004**	**1/13/2004**	**1/14/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/21/2004**	**1/22/2004**	**2/3/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg													
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.59 U	0.55 U	0.57 U	0.67 U	0.83 U	0.54 U	0.56 U	0.55 U	0.55 U
Other														
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**14.9**	**9.8**	**11.6**	**25.5**	**39.6**	**8**	**10.4**	**9.7**	**9**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
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					Location Name	**GCSB-44**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-46**	**GCSB-46**	**GCSB-46**
					Sample Name	**GCSB-44 (58-60)**	**GCSB-45 (14-16)**	**GCSB-45 (20-22)**	**GCSB-45 (30-32)**	**GCSB-45 (32-34)**	**GCSB-45 (40-42)**	**GCSB-46 (44-46)**	**GCSB-46 (48-50)**	**GCSB-46 (58-60)**
					Start Depth	**58**	**14**	**20**	**30**	**32**	**40**	**44**	**48**	**58**
					End Depth	**60**	**16**	**22**	**32**	**34**	**42**	**46**	**50**	**60**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/4/2004**	**2/10/2004**	**2/10/2004**	**2/11/2004**	**2/11/2004**	**2/11/2004**	**2/12/2004**	**2/12/2004**	**2/13/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
BTEX	mg/kg													
Benzene		71-43-2	0.06	44	89	0.011 U	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.011 U	**0.54**	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	**1.2**	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	**1.74**	ND	ND	ND	ND	ND	ND	ND
Other VOCs	mg/kg													
Acetone		67-64-1	0.05	500	1000	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Bromodichloromethane		75-27-4	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Bromoform		75-25-2	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Bromomethane		74-83-9	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Carbon disulfide		75-15-0	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Carbon tetrachloride		56-23-5	0.76	22	44	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Chlorobenzene		108-90-7	1.1	500	1000	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Chloroethane		75-00-3	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Chloroform		67-66-3	0.37	350	700	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Chloromethane		74-87-3	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Dibromochloromethane		124-48-1	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
2-Hexanone		591-78-6	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Methylene chloride		75-09-2	0.05	500	1000	NA	**0.033 J**	**0.005 J**	**0.004 J**	**0.005 J**	**0.004 J**	**0.021 J**	**0.003 J**	**0.004 J**
Styrene		100-42-5	NE	NE	NE	NA	**0.15**	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
Vinyl chloride		75-01-4	0.02	13	27	NA	0.11 U	0.011 U	0.011 U	0.012 U	0.011 U	0.056 U	0.011 U	0.011 U
TCLP VOCs	ug/L													
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
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Glen Cove, Nassau County, New York

					Location Name	GCSB-44	GCSB-45	GCSB-45	GCSB-45	GCSB-45	GCSB-45	GCSB-46	GCSB-46	GCSB-46
					Sample Name	GCSB-44 (58-60)	GCSB-45 (14-16)	GCSB-45 (20-22)	GCSB-45 (30-32)	GCSB-45 (32-34)	GCSB-45 (40-42)	GCSB-46 (44-46)	GCSB-46 (48-50)	GCSB-46 (58-60)
					Start Depth	58	14	20	30	32	40	44	48	58
					End Depth	60	16	22	32	34	42	46	50	60
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/4/2004	2/10/2004	2/10/2004	2/11/2004	2/11/2004	2/11/2004	2/12/2004	2/12/2004	2/13/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg													
Acenaphthene		83-32-9	20	500	1000	0.36 U	**120 D**	0.37 U	0.37 U	0.4 U	0.36 U	**0.43**	0.37 U	0.37 U
Acenaphthylene		208-96-8	100	500	1000	0.36 U	**14 J**	0.37 U	**0.15 J**	0.4 U	0.36 U	**2.6**	0.37 U	0.37 U
Anthracene		120-12-7	100	500	1000	0.36 U	**79 D**	0.37 U	**0.56**	0.4 U	0.36 U	**2.6**	0.37 U	0.37 U
Benzo(a)anthracene		56-55-3	1	5.6	11	0.36 U	**36 J**	0.37 U	**1.4**	0.4 U	0.36 U	**2.3**	0.37 U	0.37 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.36 U	37 U	0.37 U	**0.54**	0.4 U	0.36 U	**0.88**	0.37 U	0.37 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.36 U	**5.6**	0.37 U	**0.83**	0.4 U	0.36 U	**1.3**	0.37 U	0.37 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.36 U	**13 J**	0.37 U	**0.61**	0.4 U	0.36 U	**1**	0.37 U	0.37 U
Benzo(a)pyrene		50-32-8	1	1	1.1	0.36 U	**29 J**	0.37 U	**1.2**	0.4 U	0.36 U	**1.9**	0.37 U	0.37 U
Chrysene		218-01-9	1	56	110	0.36 U	**33 J**	0.37 U	**1.5**	0.4 U	0.36 U	**2.1**	0.37 U	0.37 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.36 U	**4.2**	0.37 U	**0.15 J**	0.4 U	0.36 U	**0.23 J**	0.37 U	0.37 U
Fluoranthene		206-44-0	100	500	1000	0.36 U	**91 D**	**0.16 J**	**2**	0.4 U	0.36 U	**4.4**	0.37 U	0.37 U
Fluorene		86-73-7	30	500	1000	0.36 U	**64 D**	0.37 U	0.37 U	0.4 U	0.36 U	**2.6**	0.37 U	0.37 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.36 U	**11 J**	0.37 U	**0.5**	0.4 U	0.36 U	**0.82**	0.37 U	0.37 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.36 U	**180 D**	0.37 U	0.37 U	0.4 U	0.36 U	**5.2**	0.37 U	0.37 U
Naphthalene		91-20-3	12	500	1000	**0.095 J**	**350 D**	**0.25 J**	0.37 U	**0.24 J**	0.36 U	**2.5**	**0.13 J**	**0.086 J**
Phenanthrene		85-01-8	100	500	1000	0.36 U	**220 D**	**0.12 J**	**0.21 J**	0.4 U	0.36 U	**10 D**	0.37 U	0.37 U
Pyrene		129-00-0	100	500	1000	0.36 U	**110 D**	**0.21 J**	**2.7**	0.4 U	0.36 U	**5.6**	0.37 U	0.37 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**0.095**	**1359.8**	**0.74**	**12.35**	**0.24**	ND	**46.46**	**0.13**	**0.086**
NYSDEC PAH17 Other SVOCs	mg/kg													
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	0.37 U	**0.09 J**	0.37 U	0.4 U	0.36 U	**0.2 J**	0.37 U	0.37 U
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Carbazole		86-74-8	NE	NE	NE	NA	**1.7**	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
4-Chloroaniline		106-47-8	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
2-Chlorophenol		95-57-8	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Dibenzofuran		132-64-9	7	350	1000	NA	**5.5**	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-44**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-46**	**GCSB-46**	**GCSB-46**
					Sample Name	**GCSB-44 (58-60)**	**GCSB-45 (14-16)**	**GCSB-45 (20-22)**	**GCSB-45 (30-32)**	**GCSB-45 (32-34)**	**GCSB-45 (40-42)**	**GCSB-46 (44-46)**	**GCSB-46 (48-50)**	**GCSB-46 (58-60)**
					Start Depth	**58**	**14**	**20**	**30**	**32**	**40**	**44**	**48**	**58**
					End Depth	**60**	**16**	**22**	**32**	**34**	**42**	**46**	**50**	**60**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/4/2004**	**2/10/2004**	**2/10/2004**	**2/11/2004**	**2/11/2004**	**2/11/2004**	**2/12/2004**	**2/12/2004**	**2/13/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Diethyl phthalate		84-66-2	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	0.92 U	0.92 U	0.94 U	1 U	0.91 U	0.93 U	0.92 U	0.92 U
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	0.92 U	0.92 U	0.94 U	1 U	0.91 U	0.93 U	0.92 U	0.92 U
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Hexachlorobenzene		118-74-1	0.33	6	12	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Hexachloroethane		67-72-1	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Isophorone		78-59-1	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
2-Nitroaniline		88-74-4	NE	NE	NE	NA	0.92 U	0.92 U	0.94 U	1 U	0.91 U	0.93 U	0.92 U	0.92 U
3-Nitroaniline		99-09-2	NE	NE	NE	NA	0.92 U	0.92 U	0.94 U	1 U	0.91 U	0.93 U	0.92 U	0.92 U
4-Nitroaniline		100-01-6	NE	NE	NE	NA	0.92 U	0.92 U	0.94 U	1 U	0.91 U	0.93 U	0.92 U	0.92 U
Nitrobenzene		98-95-3	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
2-Nitrophenol		88-75-5	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
4-Nitrophenol		100-02-7	NE	NE	NE	NA	0.92 U	0.92 U	0.94 U	1 U	0.91 U	0.93 U	0.92 U	0.92 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	0.92 U	0.92 U	0.94 U	1 U	0.91 U	0.93 U	0.92 U	0.92 U
Phenol		108-95-2	0.33	500	1000	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	0.92 U	0.92 U	0.94 U	1 U	0.91 U	0.93 U	0.92 U	0.92 U
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	0.37 U	0.37 U	0.37 U	0.4 U	0.36 U	0.37 U	0.37 U	0.37 U
TCLP SVOCs	ug/L													
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove, Nassau County, New York

					Location Name	GCSB-44	GCSB-45	GCSB-45	GCSB-45	GCSB-45	GCSB-45	GCSB-46	GCSB-46	GCSB-46
					Sample Name	GCSB-44 (58-60)	GCSB-45 (14-16)	GCSB-45 (20-22)	GCSB-45 (30-32)	GCSB-45 (32-34)	GCSB-45 (40-42)	GCSB-46 (44-46)	GCSB-46 (48-50)	GCSB-46 (58-60)
					Start Depth	58	14	20	30	32	40	44	48	58
					End Depth	60	16	22	32	34	42	46	50	60
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/4/2004	2/10/2004	2/10/2004	2/11/2004	2/11/2004	2/11/2004	2/12/2004	2/12/2004	2/13/2004
					Parent Sample									
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO									
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg													
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg													
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L													
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCSB-44**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-45**	**GCSB-46**	**GCSB-46**	**GCSB-46**
					Sample Name	**GCSB-44 (58-60)**	**GCSB-45 (14-16)**	**GCSB-45 (20-22)**	**GCSB-45 (30-32)**	**GCSB-45 (32-34)**	**GCSB-45 (40-42)**	**GCSB-46 (44-46)**	**GCSB-46 (48-50)**	**GCSB-46 (58-60)**
					Start Depth	**58**	**14**	**20**	**30**	**32**	**40**	**44**	**48**	**58**
					End Depth	**60**	**16**	**22**	**32**	**34**	**42**	**46**	**50**	**60**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/4/2004**	**2/10/2004**	**2/10/2004**	**2/11/2004**	**2/11/2004**	**2/11/2004**	**2/12/2004**	**2/12/2004**	**2/13/2004**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Herbicides	mg/kg													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg													
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg													
Aluminum		7429-90-5	NE	NE	NE	NA	**3850 E**	**2360 E**	**2820 E**	**2070 E**	**3250 E**	**2100 E**	**5870 E**	**3290 E**
Antimony		7440-36-0	NE	NE	NE	NA	0.29 U	0.29 U	0.29 U	0.31 U	**0.29 BN**	0.29 U	0.29 U	**0.29 BN**
Arsenic		7440-38-2	13	16	16	**0.74 B**	**0.36 B**	**1.2**	**1.3**	**0.49 B**	**1 B**	**1.1 B**	**1.7**	**1 B**
Barium		7440-39-3	350	400	10000	**51.5 ***	**27.7 E**	**23.4 E**	**27.8 E**	**32.5 E**	**32.8 E**	**21 BE**	**81.3 E**	**38.3 E**
Beryllium		7440-41-7	7.2	590	2700	NA	**0.024 B**	**0.13 B**	**0.13 B**	**0.077 B**	**0.11 B**	**0.1 B**	**0.023 B**	**0.14 B**
Cadmium		7440-43-9	2.5	9.3	60	0.022 U	0.022 U	0.022 U	0.023 U	0.024 U	0.022 U	0.022 U	0.022 U	0.022 U
Calcium		7440-70-2	NE	NE	NE	NA	**482 B**	**820**	**1030**	**732**	**2270**	**849**	**3270**	**1240**
Chromium		7440-47-3	NE	NE	NE	**12.6 ***	**8.4**	**5.5**	**7.6**	**8.1**	**8.9**	**6.1**	**41**	**10.3**
Cobalt		7440-48-4	NE	NE	NE	NA	**2.1 B**	**2.8 B**	**2.9 B**	**2.4 B**	**4.1 B**	**2.2 B**	**6.5**	**4.2 B**
Copper		7440-50-8	50	270	10000	NA	**2.9**	**5.1**	**6.2**	**7.5**	**7.9**	**7.1**	**12.5**	**7.5**
Iron		7439-89-6	NE	NE	NE	NA	**3990**	**6090**	**6750**	**5140**	**7810**	**4910**	**11100**	**7700**
Lead		7439-92-1	63	1000	3900	**2.6 ***	**2.1**	**2**	**2.5**	**1.9**	**2.7**	**2.4**	**2.5**	**2.7**
Magnesium		7439-95-4	NE	NE	NE	NA	**1020**	**885**	**975**	**1060**	**1610**	**1030**	**4240**	**1420**
Manganese		7439-96-5	1600	10000	10000	NA	**41.2**	**265**	**302**	**141**	**108**	**134**	**150**	**178**
Mercury		7439-97-6	0.18	2.8	5.7	0.018 U	0.019 U	0.019 U	0.019 U	0.02 U	0.018 U	0.019 U	0.018 U	0.018 U
Nickel		7440-02-0	30	310	10000	NA	**3.7 B**	**5.2**	**6.9**	**5.3**	**7.5**	**8.4**	**14.2**	**12.7**
Potassium		7440-09-7	NE	NE	NE	NA	**312 B**	**586**	**648**	**544 B**	**952**	**460 B**	**1500**	**903**
Selenium		7782-49-2	3.9	1500	6800	**0.42 BN**	0.26 U	0.26 U	**0.32 B**	0.28 U	**0.32 B**	0.26 U	**0.38 B**	0.25 U
Silver		7440-22-4	2	1500	6800	0.043 U	0.044 U	0.045 U	**0.091 B**	0.048 U	0.044 U	0.045 U	0.044 U	0.044 U
Sodium		7440-23-5	NE	NE	NE	NA	**43.1 BE**	**36.6 BE**	**48.1 BE**	**45 BE**	**73.9 BE**	**50.8 BE**	**124 BE**	**57.9 BE**
Thallium		7440-28-0	NE	NE	NE	NA	0.27 U	0.27 U	**0.43 B**	0.29 U	0.26 U	0.27 U	0.27 U	0.27 U
Vanadium		7440-62-2	NE	NE	NE	NA	**6.4 E**	**7.3 E**	**9.2 E**	**6 BE**	**11.9 E**	**7.7 E**	**20 E**	**11.1 E**
Zinc		7440-66-6	109	10000	10000	NA	**8**	**8.7**	**10.9**	**9.2**	**13.3**	**7.9**	**19.2**	**15.4**
TCLP Metals	ug/L													
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-44	GCSB-45	GCSB-45	GCSB-45	GCSB-45	GCSB-45	GCSB-46	GCSB-46	GCSB-46
					Sample Name	GCSB-44 (58-60)	GCSB-45 (14-16)	GCSB-45 (20-22)	GCSB-45 (30-32)	GCSB-45 (32-34)	GCSB-45 (40-42)	GCSB-46 (44-46)	GCSB-46 (48-50)	GCSB-46 (58-60)
					Start Depth	58	14	20	30	32	40	44	48	58
					End Depth	60	16	22	32	34	42	46	50	60
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/4/2004	2/10/2004	2/10/2004	2/11/2004	2/11/2004	2/11/2004	2/12/2004	2/12/2004	2/13/2004
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg													
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.54 U	0.56 U	0.56 U	0.56 U	0.6 U	0.55 U	0.56 U	0.55 U	0.55 U
Other														
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**7.9**	**10.1**	**10.2**	**11.5**	**16.6**	**9.2**	**10.3**	**9.8**	**9.6**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-47	GCSB-47	GCSB-48	GCSB-48	GCSB-48	GCSB-49	GCSB-49	GCSB-49	GCSB-50
					Sample Name	**GCSB-47 (24-26)**	**GCSB-47 (58-60)**	**GCSB-48 (10-12)**	**GCSB-48 (22-24)**	**GCSB-48 (58-60)**	**GCSB-49 (13-15)**	**GCSB-49 (20-22)**	**GCSB-49 (54-56)**	**GCSB 50 (21.5-22.0)**
					Start Depth	**24**	**58**	**10**	**22**	**58**	**13**	**20**	**54**	**21.5**
					End Depth	**26**	**60**	**12**	**24**	**60**	**15**	**22**	**56**	**22**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/19/2004**	**2/23/2004**	**2/23/2004**	**2/23/2004**	**2/25/2004**	**3/3/2004**	**3/3/2004**	**3/4/2004**	**4/20/2005**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
BTEX	mg/kg													
Benzene		71-43-2	0.06	44	89	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	**0.018**
Total Xylene		1330-20-7	0.26	500	1000	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	**0.29**
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	**0.308**
Other VOCs	mg/kg													
Acetone		67-64-1	0.05	500	1000	0.012 U	0.011 U	**0.023**	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Bromodichloromethane		75-27-4	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Bromoform		75-25-2	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Bromomethane		74-83-9	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Carbon disulfide		75-15-0	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Carbon tetrachloride		56-23-5	0.76	22	44	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Chlorobenzene		108-90-7	1.1	500	1000	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Chloroethane		75-00-3	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Chloroform		67-66-3	0.37	350	700	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Chloromethane		74-87-3	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Dibromochloromethane		124-48-1	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
2-Hexanone		591-78-6	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	0.011 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Methylene chloride		75-09-2	0.05	500	1000	**0.009 J**	**0.005 J**	**0.006 J**	**0.006 J**	**0.006 J**	**0.096 B**	**0.006 J**	**0.013 B**	NA
Styrene		100-42-5	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	**0.023 J**	**0.01 J**	**0.006 J**	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
Vinyl chloride		75-01-4	0.02	13	27	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.056 U	0.011 U	0.011 U	NA
TCLP VOCs	ug/L													
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-47**	**GCSB-47**	**GCSB-48**	**GCSB-48**	**GCSB-48**	**GCSB-49**	**GCSB-49**	**GCSB-49**	**GCSB-50**
					Sample Name	**GCSB-47 (24-26)**	**GCSB-47 (58-60)**	**GCSB-48 (10-12)**	**GCSB-48 (22-24)**	**GCSB-48 (58-60)**	**GCSB-49 (13-15)**	**GCSB-49 (20-22)**	**GCSB-49 (54-56)**	**GCSB 50 (21.5-22.0)**
					Start Depth	**24**	**58**	**10**	**22**	**58**	**13**	**20**	**54**	**21.5**
					End Depth	**26**	**60**	**12**	**24**	**60**	**15**	**22**	**56**	**22**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/19/2004**	**2/23/2004**	**2/23/2004**	**2/23/2004**	**2/25/2004**	**3/3/2004**	**3/3/2004**	**3/4/2004**	**4/20/2005**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg													
Acenaphthene		83-32-9	20	500	1000	0.39 U	0.36 U	**0.22 J**	0.37 U	0.39 U	**28**	0.37 U	0.37 U	**230 D**
Acenaphthylene		208-96-8	100	500	1000	0.39 U	0.36 U	**2.2**	0.37 U	0.39 U	**4.6 J**	0.37 U	0.37 U	**20**
Anthracene		120-12-7	100	500	1000	0.39 U	0.36 U	**1**	0.37 U	0.39 U	**22**	0.37 U	0.37 U	**96**
Benzo(a)anthracene		56-55-3	1	5.6	11	0.39 U	0.36 U	**1.4**	0.37 U	0.39 U	**19**	0.37 U	0.37 U	**94**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.39 U	0.36 U	**3.1**	0.37 U	0.39 U	**13**	0.37 U	0.37 U	**59**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.39 U	0.36 U	**1.1**	0.37 U	0.39 U	**7 J**	0.37 U	0.37 U	**28**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.39 U	0.36 U	**2.3**	0.37 U	0.39 U	**5.3 J**	0.37 U	0.37 U	**23**
Benzo(a)pyrene		50-32-8	1	1	1.1	0.39 U	0.36 U	**2.6**	0.37 U	0.39 U	**16**	0.37 U	0.37 U	**84**
Chrysene		218-01-9	1	56	110	0.39 U	0.36 U	**1.6**	0.37 U	0.39 U	**18**	0.37 U	0.37 U	**73**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.39 U	0.36 U	**0.38**	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	**6.2 J**
Fluoranthene		206-44-0	100	500	1000	0.39 U	0.36 U	**2.4**	0.37 U	0.39 U	**40**	**0.088 J**	0.37 U	**210 D**
Fluorene		86-73-7	30	500	1000	0.39 U	0.36 U	**0.71**	0.37 U	0.39 U	**25**	0.37 U	0.37 U	**120**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.39 U	0.36 U	**1.8**	0.37 U	0.39 U	**4.3 J**	0.37 U	0.37 U	**24**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.39 U	0.36 U	**1.5**	0.37 U	0.39 U	**93**	0.37 U	0.37 U	**260 D**
Naphthalene		91-20-3	12	500	1000	0.39 U	0.36 U	**2**	0.37 U	0.39 U	**92**	0.37 U	**0.088 J**	**590 D**
Phenanthrene		85-01-8	100	500	1000	0.39 U	0.36 U	**3.4**	0.37 U	0.39 U	**81**	**0.077 J**	0.37 U	**480 D**
Pyrene		129-00-0	100	500	1000	0.39 U	0.36 U	**4.2**	0.37 U	0.39 U	**51**	**0.13 J**	0.37 U	**260 D**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	ND	ND	**31.91**	ND	ND	**519.2**	**0.295**	**0.088**	**2657.2**
NYSDEC PAH17 Other SVOCs	mg/kg													
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	0.39 U	**0.26 J**	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Carbazole		86-74-8	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
4-Chloroaniline		106-47-8	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
2-Chlorophenol		95-57-8	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Dibenzofuran		132-64-9	7	350	1000	0.39 U	0.36 U	**0.12 J**	0.37 U	0.39 U	**3.3 J**	0.37 U	0.37 U	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan

Glen Cove Former MGP Site

Glen Cove, Nassau County, New York

Location Name						GCSB-47	GCSB-47	GCSB-48	GCSB-48	GCSB-48	GCSB-49	GCSB-49	GCSB-49	GCSB-50
Sample Name						GCSB-47 (24-26)	GCSB-47 (58-60)	GCSB-48 (10-12)	GCSB-48 (22-24)	GCSB-48 (58-60)	GCSB-49 (13-15)	GCSB-49 (20-22)	GCSB-49 (54-56)	GCSB 50 (21.5-22.0)
Start Depth						24	58	10	22	58	13	20	54	21.5
End Depth						26	60	12	24	60	15	22	56	22
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						2/19/2004	2/23/2004	2/23/2004	2/23/2004	2/25/2004	3/3/2004	3/3/2004	3/4/2004	4/20/2005
Parent Sample														
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4-Dichlorophenol		120-83-2	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Diethyl phthalate		84-66-2	NE	NE	NE	0.39 U	**0.23 J**	**0.15 J**	0.37 U	**0.087 J**	7.4 U	0.37 U	**0.1 J**	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	0.97 U	0.9 U	0.94 U	0.93 U	0.98 U	19 U	0.93 U	0.94 U	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	0.97 U	0.9 U	0.94 U	0.93 U	0.98 U	19 U	0.93 U	0.94 U	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Hexachlorobenzene		118-74-1	0.33	6	12	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Hexachloroethane		67-72-1	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Isophorone		78-59-1	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
2-Nitroaniline		88-74-4	NE	NE	NE	0.97 U	0.9 U	0.94 U	0.93 U	0.98 U	19 U	0.93 U	0.94 U	NA
3-Nitroaniline		99-09-2	NE	NE	NE	0.97 U	0.9 U	0.94 U	0.93 U	0.98 U	19 U	0.93 U	0.94 U	NA
4-Nitroaniline		100-01-6	NE	NE	NE	0.97 U	0.9 U	0.94 U	0.93 U	0.98 U	19 U	0.93 U	0.94 U	NA
Nitrobenzene		98-95-3	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
2-Nitrophenol		88-75-5	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
4-Nitrophenol		100-02-7	NE	NE	NE	0.97 U	0.9 U	0.94 U	0.93 U	0.98 U	19 U	0.93 U	0.94 U	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	0.97 U	0.9 U	0.94 U	0.93 U	0.98 U	19 U	0.93 U	0.94 U	NA
Phenol		108-95-2	0.33	500	1000	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	0.97 U	0.9 U	0.94 U	0.93 U	0.98 U	19 U	0.93 U	0.94 U	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	0.39 U	0.36 U	0.38 U	0.37 U	0.39 U	7.4 U	0.37 U	0.37 U	NA
TCLP SVOCs	ug/L													
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-47**	**GCSB-47**	**GCSB-48**	**GCSB-48**	**GCSB-48**	**GCSB-49**	**GCSB-49**	**GCSB-49**	**GCSB-50**
					Sample Name	**GCSB-47 (24-26)**	**GCSB-47 (58-60)**	**GCSB-48 (10-12)**	**GCSB-48 (22-24)**	**GCSB-48 (58-60)**	**GCSB-49 (13-15)**	**GCSB-49 (20-22)**	**GCSB-49 (54-56)**	**GCSB 50 (21.5-22.0)**
					Start Depth	**24**	**58**	**10**	**22**	**58**	**13**	**20**	**54**	**21.5**
					End Depth	**26**	**60**	**12**	**24**	**60**	**15**	**22**	**56**	**22**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**2/19/2004**	**2/23/2004**	**2/23/2004**	**2/23/2004**	**2/25/2004**	**3/3/2004**	**3/3/2004**	**3/4/2004**	**4/20/2005**
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg													
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg													
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L													
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove, Nassau County, New York

					Location Name	GCSB-47	GCSB-47	GCSB-48	GCSB-48	GCSB-48	GCSB-49	GCSB-49	GCSB-49	GCSB-50
					Sample Name	GCSB-47 (24-26)	GCSB-47 (58-60)	GCSB-48 (10-12)	GCSB-48 (22-24)	GCSB-48 (58-60)	GCSB-49 (13-15)	GCSB-49 (20-22)	GCSB-49 (54-56)	GCSB 50 (21.5-22.0)
					Start Depth	24	58	10	22	58	13	20	54	21.5
					End Depth	26	60	12	24	60	15	22	56	22
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/19/2004	2/23/2004	2/23/2004	2/23/2004	2/25/2004	3/3/2004	3/3/2004	3/4/2004	4/20/2005
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Herbicides	mg/kg													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L													
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg													
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg													
Aluminum		7429-90-5	NE	NE	NE	**1750**	**3420**	**6010**	**1960**	**2100**	**6570 ***	**1160 ***	**2800 ***	NA
Antimony		7440-36-0	NE	NE	NE	0.3 U	0.3 U	0.32 U	0.31 U	0.33 U	0.31 U	0.31 U	0.32 U	NA
Arsenic		7440-38-2	13	16	16	**0.5 B**	**1.4**	**1.6**	**0.93 B**	**0.74 B**	**2.4**	**0.44 B**	**1.2**	**2**
Barium		7440-39-3	350	400	10000	**25.7**	**34.8**	**41.3**	**25.3**	**20.8 B**	**46.5**	**11.2 B**	**28.4**	**11.9 B**
Beryllium		7440-41-7	7.2	590	2700	**0.085 B**	**0.26 B**	**0.36 B**	**0.15 B**	**0.16 B**	**0.43 B**	**0.12 B**	**0.21 B**	NA
Cadmium		7440-43-9	2.5	9.3	60	0.023 U	**0.15 B**	**0.11 B**	**0.054 B**	**0.058 B**	**0.13 B**	0.034 U	**0.052 B**	**0.046 B**
Calcium		7440-70-2	NE	NE	NE	**1050**	**1500**	**1000**	**904**	**1390**	**999**	**458 B**	**1580**	NA
Chromium		7440-47-3	NE	NE	NE	**4.9**	**10.8**	**13.4**	**7.1**	**5.6**	**12.5**	**2.8**	**7.7**	**6 ***
Cobalt		7440-48-4	NE	NE	NE	**1.6 B**	**4.2 B**	**4.1 B**	**2.6 B**	**2.8 B**	**3.7 B**	**1.3 B**	**3.5 B**	NA
Copper		7440-50-8	50	270	10000	**4.7**	**7.2**	**7**	**4.9**	**5.4**	**9.8**	**2.8**	**5.8**	NA
Iron		7439-89-6	NE	NE	NE	**4580**	**8100**	**9050**	**4870**	**5480**	**12700**	**3090**	**6640**	NA
Lead		7439-92-1	63	1000	3900	**1.7 N***	**2**	**20.1**	**1.6**	**1.4**	**4.1**	**1.1**	**1.7**	**3.9**
Magnesium		7439-95-4	NE	NE	NE	**777**	**1710**	**1510**	**841**	**823**	**1800**	**493 B**	**1220**	NA
Manganese		7439-96-5	1600	10000	10000	**97.5 N**	**153**	**98.4**	**123**	**92.4**	**142 N***	**35.8 N***	**95.6 N***	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.02 U	0.018 U	**0.08**	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.018 U
Nickel		7440-02-0	30	310	10000	**3.4 B**	**8**	**7.3**	**4.5 B**	**5.4**	**8.6**	**2.8 B**	**6.9**	NA
Potassium		7440-09-7	NE	NE	NE	**456 B**	**1020**	**724**	**610**	**595**	**1300**	**368 B**	**932**	NA
Selenium		7782-49-2	3.9	1500	6800	0.23 U	0.22 U	0.23 U	0.22 U	0.24 U	0.22 U	0.22 U	0.23 U	0.59 U
Silver		7440-22-4	2	1500	6800	0.047 U	**0.084 B**	**0.082 B**	0.045 U	**0.057 B**	**0.23 B**	**0.12 B**	0.045 U	0.4 U
Sodium		7440-23-5	NE	NE	NE	**68.1 B**	**64.7 B**	**48.7 B**	**40.3 B**	**50.5 B**	**36.6 B**	**34.6 B**	**51.9 B**	NA
Thallium		7440-28-0	NE	NE	NE	0.28 U	**0.44 B**	0.26 U	0.26 U	0.27 U	**1.6**	**0.58 B**	**0.56 B**	NA
Vanadium		7440-62-2	NE	NE	NE	**5.9**	**11.9**	**14**	**7.1**	**7.4**	**15.2**	**3.7 B**	**9.3**	NA
Zinc		7440-66-6	109	10000	10000	**7.6**	**16.6**	**29.2**	**10.1**	**11.1**	**22.1**	**6.3**	**13.6**	NA
TCLP Metals	ug/L													
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GCSB-47	GCSB-47	GCSB-48	GCSB-48	GCSB-48	GCSB-49	GCSB-49	GCSB-49	GCSB-50
					Sample Name	GCSB-47 (24-26)	GCSB-47 (58-60)	GCSB-48 (10-12)	GCSB-48 (22-24)	GCSB-48 (58-60)	GCSB-49 (13-15)	GCSB-49 (20-22)	GCSB-49 (54-56)	GCSB 50 (21.5-22.0)
					Start Depth	24	58	10	22	58	13	20	54	21.5
					End Depth	26	60	12	24	60	15	22	56	22
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/19/2004	2/23/2004	2/23/2004	2/23/2004	2/25/2004	3/3/2004	3/3/2004	3/4/2004	4/20/2005
					Parent Sample									
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**									
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg													
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.59 U	0.54 U	0.57 U	0.56 U	0.59 U	0.56 U	0.56 U	0.56 U	0.55 U
Other														
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**14.6**	**8.1**	**12**	**11.1**	**14.9**	**10.5**	**10.7**	**11.4**	**9.5**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove, Nassau County, New York

Location Name						GCSB-50	GCSB-50	GCSB-50	GCSB-51	GCSB-51	GCSB-51	GCSB-51	GCSB-52
Sample Name						GCSB 50 (37.0-37.5)	GCSB 50	GCSB 50 (51-52)	GCSB 51 (9.5-10.5)	GCSB 51 (18.0-19.0)	GCSB 51 (33.5-34.5)	GCSB 51 (50-51.50)	GCSB 52 (10-10.5)
Start Depth						37	37	51	9.5	18	33.5	50	10
End Depth						37.5	37.5	52	10.5	19	34.5	51.5	10.5
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						4/20/2005	4/20/2005	4/20/2005	4/18/2005	4/18/2005	4/18/2005	4/18/2005	4/22/2005
Parent Sample							GCSB 50 (37.0-37.5)						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.012 U	**0.14**
Toluene		108-88-3	0.7	500	1000	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.012 U	**5.9 J**
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.012 U	**66 D**
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.011 U	0.011 U	**0.005 J**	0.011 U	0.011 U	0.012 U	**63 D**
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	**0.005**	ND	ND	ND	**135.04**
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.011 U	0.011 U	0.011 U	0.012 U	NA	NA	0.012 U	0.011 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	**0.002 J**	**0.002 J**	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	0.011 U	0.011 U	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						GCSB-50	GCSB-50	GCSB-50	GCSB-51	GCSB-51	GCSB-51	GCSB-51	GCSB-52
Sample Name						GCSB 50 (37.0-37.5)	GCSB 50	GCSB 50 (51-52)	GCSB 51 (9.5-10.5)	GCSB 51 (18.0-19.0)	GCSB 51 (33.5-34.5)	GCSB 51 (50-51.50)	GCSB 52 (10-10.5)
Start Depth						37	37	51	9.5	18	33.5	50	10
End Depth						37.5	37.5	52	10.5	19	34.5	51.5	10.5
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						4/20/2005	4/20/2005	4/20/2005	4/18/2005	4/18/2005	4/18/2005	4/18/2005	4/22/2005
Parent Sample							GCSB 50 (37.0-37.5)						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.36 U	0.36 U	0.38 U	**2.8**	0.36 U	0.36 U	0.39 U	**530 D**
Acenaphthylene		208-96-8	100	500	1000	0.36 U	0.36 U	0.38 U	0.39 U	0.36 U	0.36 U	0.39 U	**36**
Anthracene		120-12-7	100	500	1000	0.36 U	0.36 U	0.38 U	**1.3**	0.36 U	0.36 U	0.39 U	**1300 D**
Benzo(a)anthracene		56-55-3	1	5.6	11	0.36 U	0.36 U	0.38 U	**1.3**	0.36 U	0.36 U	0.39 U	**190 D**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.36 U	0.36 U	0.38 U	**0.73**	0.36 U	0.36 U	0.39 U	**110**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.36 U	0.36 U	0.38 U	**0.46**	0.36 U	0.36 U	0.39 U	**58**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**0.088 J**	0.36 U	0.38 U	**0.33 J**	0.36 U	0.36 U	0.39 U	**32**
Benzo(a)pyrene		50-32-8	1	1	1.1	0.36 U	0.36 U	0.38 U	**0.95**	0.36 U	0.36 U	0.39 U	**160 J**
Chrysene		218-01-9	1	56	110	0.36 U	0.36 U	0.38 U	**1.4**	0.36 U	0.36 U	0.39 U	**950 D**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.36 U	0.36 U	0.38 U	**0.098 J**	0.36 U	0.36 U	0.39 U	**11**
Fluoranthene		206-44-0	100	500	1000	0.36 U	0.36 U	0.38 U	**1.8**	0.36 U	0.36 U	0.39 U	**480 D**
Fluorene		86-73-7	30	500	1000	0.36 U	0.36 U	0.38 U	**0.96**	0.36 U	0.36 U	0.39 U	**250 D**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.36 U	0.36 U	0.38 U	**0.37 J**	0.36 U	0.36 U	0.39 U	**34**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.36 U	0.36 U	**0.13 J**	0.39 U	0.36 U	0.36 U	0.39 U	**440 D**
Naphthalene		91-20-3	12	500	1000	**0.11 J**	0.36 U	**0.42**	**0.34 J**	0.36 U	0.36 U	0.39 U	**1500 D**
Phenanthrene		85-01-8	100	500	1000	0.36 U	0.36 U	0.38 U	**4.7**	**0.075 J**	0.36 U	0.39 U	**1200 D**
Pyrene		129-00-0	100	500	1000	0.36 U	0.36 U	0.38 U	**2.5**	0.36 U	0.36 U	0.39 U	**580 D**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**0.198**	ND	**0.55**	**20.038**	**0.075**	ND	ND	**7861**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	0.36 U	**0.089 J**	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA

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Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-50	GCSB-50	GCSB-50	GCSB-51	GCSB-51	GCSB-51	GCSB-51	GCSB-52
					Sample Name	GCSB 50 (37.0-37.5)	GCSB 50	GCSB 50 (51-52)	GCSB 51 (9.5-10.5)	GCSB 51 (18.0-19.0)	GCSB 51 (33.5-34.5)	GCSB 51 (50-51.50)	GCSB 52 (10-10.5)
					Start Depth	37	37	51	9.5	18	33.5	50	10
					End Depth	37.5	37.5	52	10.5	19	34.5	51.5	10.5
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/20/2005	4/20/2005	4/20/2005	4/18/2005	4/18/2005	4/18/2005	4/18/2005	4/22/2005
					Parent Sample		GCSB 50 (37.0-37.5)						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	**3.7**	0.36 U	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	0.36 U	**0.11 J**	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	0.9 U	0.91 U	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	0.9 U	0.91 U	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	0.9 U	0.91 U	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	0.9 U	0.91 U	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	0.9 U	0.91 U	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	0.9 U	0.91 U	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	0.9 U	0.91 U	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	0.9 U	0.91 U	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-50**	**GCSB-50**	**GCSB-50**	**GCSB-51**	**GCSB-51**	**GCSB-51**	**GCSB-51**	**GCSB-52**
					Sample Name	**GCSB 50 (37.0-37.5)**	**GCSB 50**	**GCSB 50 (51-52)**	**GCSB 51 (9.5-10.5)**	**GCSB 51 (18.0-19.0)**	**GCSB 51 (33.5-34.5)**	**GCSB 51 (50-51.50)**	**GCSB 52 (10-10.5)**
					Start Depth	**37**	**37**	**51**	**9.5**	**18**	**33.5**	**50**	**10**
					End Depth	**37.5**	**37.5**	**52**	**10.5**	**19**	**34.5**	**51.5**	**10.5**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/20/2005**	**4/20/2005**	**4/20/2005**	**4/18/2005**	**4/18/2005**	**4/18/2005**	**4/18/2005**	**4/22/2005**
					Parent Sample		**GCSB 50 (37.0-37.5)**						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-50	GCSB-50	GCSB-50	GCSB-51	GCSB-51	GCSB-51	GCSB-51	GCSB-52
					Sample Name	GCSB 50 (37.0-37.5)	GCSB 50	GCSB 50 (51-52)	GCSB 51 (9.5-10.5)	GCSB 51 (18.0-19.0)	GCSB 51 (33.5-34.5)	GCSB 51 (50-51.50)	GCSB 52 (10-10.5)
					Start Depth	37	37	51	9.5	18	33.5	50	10
					End Depth	37.5	37.5	52	10.5	19	34.5	51.5	10.5
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/20/2005	4/20/2005	4/20/2005	4/18/2005	4/18/2005	4/18/2005	4/18/2005	4/22/2005
					Parent Sample		GCSB 50 (37.0-37.5)						
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	**2840**	**2470**	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	0.36 U	0.36 U	NA	NA
Arsenic		7440-38-2	13	16	16	**0.94 B**	**0.67 B**	0.64 U	**0.86 B**	**0.97 B**	**1.1 B**	**1.1 B**	**1.9**
Barium		7440-39-3	350	400	10000	**36.5**	**18.4 B**	**10.6 B**	**16.1 B**	**26.8**	**26.6**	**19.3 B**	**29.2**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	1.9 U	1.9 U	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	**0.33 B**	**0.18 B**	**0.12 B**	**0.21 B**	**0.22 B**	**0.27 B**	**0.28 B**	**0.4 B**
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	**1600**	**1070**	NA	NA
Chromium		7440-47-3	NE	NE	NE	**19.5 ***	**4.7 ***	**4.4 ***	**8.5 ***	**7.2 ***	**8.2 ***	**6.1 ***	**10.8 ***
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	**4 B**	**2.7 B**	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	**6.2**	**6.1**	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	**6080 ***	**7170 ***	NA	NA
Lead		7439-92-1	63	1000	3900	**2.9**	**1.1**	**1.1**	**2.3**	**1.8**	**2**	**1.2**	**26.7**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	**1240**	**1090**	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	**114 N**	**98.9 N**	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.018 U	0.018 U	0.019 U	**0.023 B**	0.018 U	0.018 U	0.02 U	**0.044**
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	**6.3**	**6.5**	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	**824**	**755**	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.59 U	0.58 U	0.61 U	0.63 U	0.58 U	0.59 U	**0.96**	**1.4**
Silver		7440-22-4	2	1500	6800	0.39 U	0.39 U	0.41 U	0.42 U	0.39 U	0.39 U	0.42 U	0.4 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	**67.8 B**	**60.6 B**	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	0.54 U	0.55 U	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	**9.3**	**9.9**	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	**21.4**	**18.9**	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-50**	**GCSB-50**	**GCSB-50**	**GCSB-51**	**GCSB-51**	**GCSB-51**	**GCSB-51**	**GCSB-52**
					Sample Name	**GCSB 50 (37.0-37.5)**	**GCSB 50**	**GCSB 50 (51-52)**	**GCSB 51 (9.5-10.5)**	**GCSB 51 (18.0-19.0)**	**GCSB 51 (33.5-34.5)**	**GCSB 51 (50-51.50)**	**GCSB 52 (10-10.5)**
					Start Depth	**37**	**37**	**51**	**9.5**	**18**	**33.5**	**50**	**10**
					End Depth	**37.5**	**37.5**	**52**	**10.5**	**19**	**34.5**	**51.5**	**10.5**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/20/2005**	**4/20/2005**	**4/20/2005**	**4/18/2005**	**4/18/2005**	**4/18/2005**	**4/18/2005**	**4/22/2005**
					Parent Sample		**GCSB 50 (37.0-37.5)**						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.55 U	0.54 U	0.57 U	0.58 U	0.54 U	0.55 U	0.59 U	0.57 U
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**8.9**	**8**	**12.3**	**14.5**	**8**	**8.8**	**14.9**	**11.6**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO	GCSB-52	GCSB-52	GCSB-52	GCSB-52	GCSB-53	GCSB-53	GCSB-53	GCSB-53
					Sample Name	GCSB 52 (11.0-11.5)	GCSB 52 (14.5-15.0)	GCSB 52 (34-34.5)	GCSB52 (48-50)	GCSB53 (14.0-14.5)	GCSB53 (34.0-35.0)	GCSB53BD	GCSB53 (51.0-52.0)
					Start Depth	11	14.5	34	48	14	34	34	51
					End Depth	11.5	15	34.5	50	14.5	35	35	52
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/22/2005	4/22/2005	4/22/2005	5/2/2005	4/12/2005	4/13/2005	4/13/2005	4/13/2005
					Parent Sample							GCSB53 (34.0-35.0)	
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	**0.12**	**0.16**	0.011 U	0.011 U	**0.002 J**	0.012 U	0.011 U	0.011 U
Toluene		108-88-3	0.7	500	1000	**0.65**	**0.21**	0.011 U	0.011 U	**0.004 J**	0.012 U	0.011 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	**29 D**	**8.4 D**	0.011 U	0.011 U	**0.003 J**	0.012 U	0.011 U	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	**27 D**	**9.6 D**	0.011 U	0.011 U	**0.012 J**	**0.004 J**	0.011 U	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	**56.77**	**18.37**	ND	ND	**0.021**	**0.004**	ND	ND
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.12 U	0.11 U	0.011 U	0.011 U	0.013 U	0.012 U	0.011 U	0.011 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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					Location Name	GCSB-52	GCSB-52	GCSB-52	GCSB-52	GCSB-53	GCSB-53	GCSB-53	GCSB-53
					Sample Name	GCSB 52 (11.0-11.5)	GCSB 52 (14.5-15.0)	GCSB 52 (34-34.5)	GCSB52 (48-50)	GCSB53 (14.0-14.5)	GCSB53 (34.0-35.0)	GCSB53BD	GCSB53 (51.0-52.0)
					Start Depth	11	14.5	34	48	14	34	34	51
					End Depth	11.5	15	34.5	50	14.5	35	35	52
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/22/2005	4/22/2005	4/22/2005	5/2/2005	4/12/2005	4/13/2005	4/13/2005	4/13/2005
					Parent Sample							GCSB53 (34.0-35.0)	
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	**360 D**	**480 D**	0.37 U	0.35 U	**41 D**	0.39 U	0.38 U	0.37 U
Acenaphthylene		208-96-8	100	500	1000	**21**	**54**	0.37 U	0.35 U	**5.9 D**	0.39 U	0.38 U	0.37 U
Anthracene		120-12-7	100	500	1000	**200 D**	**310 D**	**0.11 J**	**0.18 J**	**15 D**	0.39 U	0.38 U	0.37 U
Benzo(a)anthracene		56-55-3	1	5.6	11	**110**	**310 D**	0.37 U	**0.08 J**	**14 D**	0.39 U	0.38 U	0.37 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**72**	**190 D**	0.37 U	0.35 U	**7 D**	0.39 U	0.38 U	0.37 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**33**	**69**	0.37 U	0.35 U	**6.1**	0.39 U	0.38 U	0.37 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**26**	**50**	**0.21 J**	0.35 U	**7.5 D**	0.39 U	0.38 U	0.37 U
Benzo(a)pyrene		50-32-8	1	1	1.1	**100**	**260 D**	0.37 U	0.35 U	**13 D**	0.39 U	0.38 U	0.37 U
Chrysene		218-01-9	1	56	110	**81**	**210 D**	**0.083 J**	**0.14 J**	**15 D**	0.39 U	0.38 U	0.37 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	**8.1**	**15**	0.37 U	0.35 U	**2.5**	0.39 U	0.38 U	0.37 U
Fluoranthene		206-44-0	100	500	1000	**310 D**	**780 D**	**0.15 J**	**0.19 J**	**28 D**	0.39 U	0.38 U	0.37 U
Fluorene		86-73-7	30	500	1000	**150 D**	**410 D**	0.37 U	0.35 U	**23 D**	0.39 U	0.38 U	0.37 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**28**	**55**	0.37 U	0.35 U	**6.7 D**	0.39 U	0.38 U	0.37 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	**280 D**	**790 D**	0.37 U	0.35 U	**2.6**	0.39 U	0.38 U	0.37 U
Naphthalene		91-20-3	12	500	1000	**1100 D**	**2800 D**	**0.24 J**	0.35 U	**6.7 D**	0.39 U	0.38 U	0.37 U
Phenanthrene		85-01-8	100	500	1000	**730 D**	**1800 D**	**0.24 J**	**0.35**	**56 D**	**0.1 J**	**0.12 J**	0.37 U
Pyrene		129-00-0	100	500	1000	**360 D**	**970 D**	**0.18 J**	**0.24 J**	**40 D**	0.39 U	**0.091 J**	0.37 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**3969.1**	**9553**	**1.213**	**1.18**	**290**	**0.1**	**0.211**	ND
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-52	GCSB-52	GCSB-52	GCSB-52	GCSB-53	GCSB-53	GCSB-53	GCSB-53
					Sample Name	GCSB 52 (11.0-11.5)	GCSB 52 (14.5-15.0)	GCSB 52 (34-34.5)	GCSB52 (48-50)	GCSB53 (14.0-14.5)	GCSB53 (34.0-35.0)	GCSB53BD	GCSB53 (51.0-52.0)
					Start Depth	11	14.5	34	48	14	34	34	51
					End Depth	11.5	15	34.5	50	14.5	35	35	52
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/22/2005	4/22/2005	4/22/2005	5/2/2005	4/12/2005	4/13/2005	4/13/2005	4/13/2005
					Parent Sample							GCSB53 (34.0-35.0)	
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GCSB-52	GCSB-52	GCSB-52	GCSB-52	GCSB-53	GCSB-53	GCSB-53	GCSB-53
					Sample Name	GCSB 52 (11.0-11.5)	GCSB 52 (14.5-15.0)	GCSB 52 (34-34.5)	GCSB52 (48-50)	GCSB53 (14.0-14.5)	GCSB53 (34.0-35.0)	GCSB53BD	GCSB53 (51.0-52.0)
					Start Depth	11	14.5	34	48	14	34	34	51
					End Depth	11.5	15	34.5	50	14.5	35	35	52
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/22/2005	4/22/2005	4/22/2005	5/2/2005	4/12/2005	4/13/2005	4/13/2005	4/13/2005
					Parent Sample							GCSB53 (34.0-35.0)	
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove, Nassau County, New York

					Location Name	GCSB-52	GCSB-52	GCSB-52	GCSB-52	GCSB-53	GCSB-53	GCSB-53	GCSB-53
					Sample Name	GCSB 52 (11.0-11.5)	GCSB 52 (14.5-15.0)	GCSB 52 (34-34.5)	GCSB52 (48-50)	GCSB53 (14.0-14.5)	GCSB53 (34.0-35.0)	GCSB53BD	GCSB53 (51.0-52.0)
					Start Depth	11	14.5	34	48	14	34	34	51
					End Depth	11.5	15	34.5	50	14.5	35	35	52
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/22/2005	4/22/2005	4/22/2005	5/2/2005	4/12/2005	4/13/2005	4/13/2005	4/13/2005
					Parent Sample							GCSB53 (34.0-35.0)	
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**1.4**	**2.3**	**0.87 B**	**0.85 B**	**22.1**	**0.8 B**	**1.3**	**0.68 B**
Barium		7440-39-3	350	400	10000	**21.4 B**	**393**	**16.8 B**	**34.4**	**91.1 ***	**13.6 B***	**16.4 B***	**13.1 B***
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	**0.52 B**	**0.33 B**	**0.19 B**	**0.075 B**	0.088 U	0.077 U	0.045 U	0.074 U
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**88.3 ***	**7.9 ***	**4.2 ***	**8**	**19.1**	**4**	**5.5**	**3.7**
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**2**	**2.2**	**1.3**	**2.4 N**	**980**	**2.4**	**12.2**	**1.6**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.02 U	0.019 U	0.019 U	0.018 U	**0.14**	0.019 U	0.019 U	0.019 U
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.64 U	0.6 U	0.6 U	0.5 U	**4.4**	0.55 U	0.27 U	0.53 U
Silver		7440-22-4	2	1500	6800	0.42 U	0.4 U	0.4 U	0.14 U	**0.84 B**	**0.24 B**	**0.21 B**	**0.2 B**
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GCSB-52	GCSB-52	GCSB-52	GCSB-52	GCSB-53	GCSB-53	GCSB-53	GCSB-53
					Sample Name	**GCSB 52 (11.0-11.5)**	**GCSB 52 (14.5-15.0)**	**GCSB 52 (34-34.5)**	**GCSB52 (48-50)**	**GCSB53 (14.0-14.5)**	**GCSB53 (34.0-35.0)**	**GCSB53BD**	**GCSB53 (51.0-52.0)**
					Start Depth	**11**	**14.5**	**34**	**48**	**14**	**34**	**34**	**51**
					End Depth	**11.5**	**15**	**34.5**	**50**	**14.5**	**35**	**35**	**52**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/22/2005**	**4/22/2005**	**4/22/2005**	**5/2/2005**	**4/12/2005**	**4/13/2005**	**4/13/2005**	**4/13/2005**
					Parent Sample							**GCSB53 (34.0-35.0)**	
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.59 U	0.56 U	0.56 U	0.53 U	0.67 U	0.58 U	0.57 U	0.57 U
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**15.8**	**10.1**	**11.3**	NA	**25.3**	**14.4**	**12**	**11.7**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-53**	**GCSB-53**	**GCSB-53**	**GCSB-54**	**GCSB-54**	**GCSB-54**	**GCSB-54**	**GCSB-55**
					Sample Name	**GCSB 53 (61-62)**	**GCSB 53**	**GCSB 53 (62-64)**	**GCSB54 (9.0-10.0)**	**GCSB54 (12.5-13.0)**	**GCSB54 (31.5-32.0)**	**GCSB54 (51.0-52.0)**	**GCSB55 (7.50-8.0)**
					Start Depth	**61**	**61**	**62**	**9**	**12.5**	**31.5**	**51**	**7.5**
					End Depth	**62**	**62**	**64**	**10**	**13**	**32**	**52**	**8**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/24/2005**	**4/24/2005**	**4/24/2005**	**4/12/2005**	**4/12/2005**	**4/12/2005**	**4/12/2005**	**5/16/2005**
					Parent Sample		**GCSB 53 (61-62)**						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.011 U	0.011 U	0.011 U	0.013 U	0.012 U	0.012 U	0.011 U	0.012 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.011 U	0.011 U	0.013 U	0.012 U	0.012 U	0.011 U	0.012 U
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.011 U	0.011 U	**0.015**	0.012 U	0.012 U	0.011 U	0.012 U
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.011 U	0.011 U	**0.009 J**	0.012 U	0.012 U	0.011 U	0.012 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	**0.024**	ND	ND	ND	ND
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.011 U	0.011 U	0.011 U	0.013 U	0.012 U	0.012 U	0.011 U	0.012 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-53**	**GCSB-53**	**GCSB-53**	**GCSB-54**	**GCSB-54**	**GCSB-54**	**GCSB-54**	**GCSB-55**
					Sample Name	**GCSB 53 (61-62)**	**GCSB 53**	**GCSB 53 (62-64)**	**GCSB54 (9.0-10.0)**	**GCSB54 (12.5-13.0)**	**GCSB54 (31.5-32.0)**	**GCSB54 (51.0-52.0)**	**GCSB55 (7.50-8.0)**
					Start Depth	**61**	**61**	**62**	**9**	**12.5**	**31.5**	**51**	**7.5**
					End Depth	**62**	**62**	**64**	**10**	**13**	**32**	**52**	**8**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/24/2005**	**4/24/2005**	**4/24/2005**	**4/12/2005**	**4/12/2005**	**4/12/2005**	**4/12/2005**	**5/16/2005**
					Parent Sample		**GCSB 53 (61-62)**						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.36 U	0.37 U	0.37 U	**0.56**	**4.9**	0.38 U	0.36 U	**0.77**
Acenaphthylene		208-96-8	100	500	1000	0.36 U	0.37 U	0.37 U	**0.13 J**	**3.2**	0.38 U	0.36 U	**1.4**
Anthracene		120-12-7	100	500	1000	0.36 U	0.37 U	0.37 U	0.43 U	**17 D**	0.38 U	0.36 U	**2.1**
Benzo(a)anthracene		56-55-3	1	5.6	11	0.36 U	0.37 U	0.37 U	**0.17 J**	**12 D**	0.38 U	0.36 U	**2.9**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.36 U	0.37 U	0.37 U	**0.12 J**	**4.3 D**	0.38 U	0.36 U	**2.8**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.36 U	0.37 U	0.37 U	**0.27 J**	**4.7**	0.38 U	0.36 U	**1.3**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.36 U	0.37 U	0.37 U	**0.23 J**	**6.1**	0.38 U	0.36 U	**1.6**
Benzo(a)pyrene		50-32-8	1	1	1.1	0.36 U	0.37 U	0.37 U	**0.18 J**	**9.6 D**	0.38 U	0.36 U	**2.9**
Chrysene		218-01-9	1	56	110	0.36 U	0.37 U	0.37 U	**0.23 J**	**13 D**	0.38 U	0.36 U	**3.5**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.36 U	0.37 U	0.37 U	0.43 U	**1.9**	0.38 U	0.36 U	**0.49**
Fluoranthene		206-44-0	100	500	1000	0.36 U	**0.097 J**	0.37 U	**0.24 J**	**24 D**	0.38 U	0.36 U	**4.4**
Fluorene		86-73-7	30	500	1000	0.36 U	0.37 U	0.37 U	**0.14 J**	**5.9**	0.38 U	0.36 U	**0.51**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.36 U	0.37 U	0.37 U	**0.21 J**	**5.9**	0.38 U	0.36 U	**1.7**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.36 U	0.37 U	0.37 U	**0.09 J**	**0.14 J**	0.38 U	0.36 U	**0.22 J**
Naphthalene		91-20-3	12	500	1000	0.36 U	0.37 U	0.37 U	**0.45**	**0.36 J**	0.38 U	0.36 U	**1.1**
Phenanthrene		85-01-8	100	500	1000	0.36 U	0.37 U	0.37 U	**0.19 J**	**45 D**	0.38 U	0.36 U	**0.81**
Pyrene		129-00-0	100	500	1000	0.36 U	**0.08 J**	0.37 U	**0.34 J**	**32 D**	0.38 U	0.36 U	**6**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	ND	**0.177**	ND	**3.55**	**190**	ND	ND	**34.5**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove, Nassau County, New York

					Location Name	GCSB-53	GCSB-53	GCSB-53	GCSB-54	GCSB-54	GCSB-54	GCSB-54	GCSB-55
					Sample Name	GCSB 53 (61-62)	GCSB 53	GCSB 53 (62-64)	GCSB54 (9.0-10.0)	GCSB54 (12.5-13.0)	GCSB54 (31.5-32.0)	GCSB54 (51.0-52.0)	GCSB55 (7.50-8.0)
					Start Depth	61	61	62	9	12.5	31.5	51	7.5
					End Depth	62	62	64	10	13	32	52	8
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/24/2005	4/24/2005	4/24/2005	4/12/2005	4/12/2005	4/12/2005	4/12/2005	5/16/2005
					Parent Sample		GCSB 53 (61-62)						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
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Glen Cove, Nassau County, New York

					Location Name	GCSB-53	GCSB-53	GCSB-53	GCSB-54	GCSB-54	GCSB-54	GCSB-54	GCSB-55
					Sample Name	GCSB 53 (61-62)	GCSB 53	GCSB 53 (62-64)	GCSB54 (9.0-10.0)	GCSB54 (12.5-13.0)	GCSB54 (31.5-32.0)	GCSB54 (51.0-52.0)	GCSB55 (7.50-8.0)
					Start Depth	61	61	62	9	12.5	31.5	51	7.5
					End Depth	62	62	64	10	13	32	52	8
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/24/2005	4/24/2005	4/24/2005	4/12/2005	4/12/2005	4/12/2005	4/12/2005	5/16/2005
					Parent Sample		GCSB 53 (61-62)						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						**GCSB-53**	**GCSB-53**	**GCSB-53**	**GCSB-54**	**GCSB-54**	**GCSB-54**	**GCSB-54**	**GCSB-55**
Sample Name						**GCSB 53 (61-62)**	**GCSB 53**	**GCSB 53 (62-64)**	**GCSB54 (9.0-10.0)**	**GCSB54 (12.5-13.0)**	**GCSB54 (31.5-32.0)**	**GCSB54 (51.0-52.0)**	**GCSB55 (7.50-8.0)**
Start Depth						**61**	**61**	**62**	**9**	**12.5**	**31.5**	**51**	**7.5**
End Depth						**62**	**62**	**64**	**10**	**13**	**32**	**52**	**8**
Depth Unit						**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
Sample Date						**4/24/2005**	**4/24/2005**	**4/24/2005**	**4/12/2005**	**4/12/2005**	**4/12/2005**	**4/12/2005**	**5/16/2005**
Parent Sample							**GCSB 53 (61-62)**						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**1.2**	**1.4**	**0.66 B**	**2.8**	**1.4**	**0.77 B**	**1 B**	**2.6**
Barium		7440-39-3	350	400	10000	**31.7 E**	**29.8 E**	**12.1 BE**	**27.8 ***	**36.8 ***	**36.4 ***	**26 ***	**21.9 B**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	0.072 U	0.074 U	0.073 U	0.084 U	0.077 U	0.076 U	0.072 U	0.043 U
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**14.8 ***	**7.9 ***	**3.1 ***	**13.7**	**11.3**	**2.2**	**8.8**	**9.1**
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**2.9 ***	**2.8 ***	**1.2 ***	**9.2**	**2.5**	**1.3**	**2.7**	**31.8 N**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.018 U	0.019 U	0.019 U	**0.036 B**	0.02 U	0.019 U	0.018 U	**0.3 N**
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.52 U	0.53 U	0.52 U	**1.1**	**0.89**	0.54 U	**0.69**	0.63 U
Silver		7440-22-4	2	1500	6800	0.15 U	0.15 U	0.15 U	0.17 U	**0.21 B**	**0.2 B**	**0.18 B**	0.42 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-53**	**GCSB-53**	**GCSB-53**	**GCSB-54**	**GCSB-54**	**GCSB-54**	**GCSB-54**	**GCSB-55**
					Sample Name	**GCSB 53 (61-62)**	**GCSB 53**	**GCSB 53 (62-64)**	**GCSB54 (9.0-10.0)**	**GCSB54 (12.5-13.0)**	**GCSB54 (31.5-32.0)**	**GCSB54 (51.0-52.0)**	**GCSB55 (7.50-8.0)**
					Start Depth	**61**	**61**	**62**	**9**	**12.5**	**31.5**	**51**	**7.5**
					End Depth	**62**	**62**	**64**	**10**	**13**	**32**	**52**	**8**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/24/2005**	**4/24/2005**	**4/24/2005**	**4/12/2005**	**4/12/2005**	**4/12/2005**	**4/12/2005**	**5/16/2005**
					Parent Sample		**GCSB 53 (61-62)**						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.55 U	0.57 U	0.56 U	0.65 U	0.59 U	0.58 U	0.55 U	**0.64**
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**9.2**	**11.6**	**10.4**	**22.5**	**14.8**	**13.5**	**9.1**	**15.5**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-55	GCSB-55	GCSB-55	GCSB-55	GCSB-56	GCSB-56	GCSB-56	GCSB-56
					Sample Name	GCSB55 (18.0-19.0)	GCSB55 (34.0-35.0)	GCSB55BD	GCSB55 (51.0-52.0)	GCSB56 (11.0-11.5)	GCSB56 (17.0-18.0)	GCSB56(34-35)	GCSB56(49-50)
					Start Depth	18	34	34	51	11	17	34	49
					End Depth	19	35	35	52	11.5	18	35	50
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	5/16/2005	5/16/2005	5/16/2005	5/17/2005	5/17/2005	5/17/2005	5/18/2005	5/18/2005
					Parent Sample			GCSB55 (34.0-35.0)					
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.011 U	0.011 U	0.011 U	0.012 U	0.012 U	0.011 U	0.011 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.011 U	0.011 U	0.012 U	0.012 U	0.011 U	0.011 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.011 U	0.011 U	0.012 U	0.012 U	0.011 U	0.011 U	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.011 U	0.011 U	0.012 U	0.012 U	0.011 U	0.011 U	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.011 U	0.011 U	0.011 U	0.012 U	0.012 U	0.011 U	0.011 U	0.011 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	**0.005 J**	NA	**0.006 J**	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	0.012 U	NA	0.011 U	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-55	GCSB-55	GCSB-55	GCSB-55	GCSB-56	GCSB-56	GCSB-56	GCSB-56
					Sample Name	GCSB55 (18.0-19.0)	GCSB55 (34.0-35.0)	GCSB55BD	GCSB55 (51.0-52.0)	GCSB56 (11.0-11.5)	GCSB56 (17.0-18.0)	GCSB56(34-35)	GCSB56(49-50)
					Start Depth	18	34	34	51	11	17	34	49
					End Depth	19	35	35	52	11.5	18	35	50
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	5/16/2005	5/16/2005	5/16/2005	5/17/2005	5/17/2005	5/17/2005	5/18/2005	5/18/2005
					Parent Sample			GCSB55 (34.0-35.0)					
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Acenaphthylene		208-96-8	100	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Anthracene		120-12-7	100	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Benzo(a)anthracene		56-55-3	1	5.6	11	0.37 U	0.36 U	0.36 U	0.38 U	**0.11 J**	0.37 U	0.36 U	0.37 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Benzo(a)pyrene		50-32-8	1	1	1.1	0.37 U	0.36 U	0.36 U	0.38 U	**0.11 J**	0.37 U	0.36 U	0.37 U
Chrysene		218-01-9	1	56	110	0.37 U	0.36 U	0.36 U	0.38 U	**0.086 J**	0.37 U	0.36 U	0.37 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Fluoranthene		206-44-0	100	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Fluorene		86-73-7	30	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Naphthalene		91-20-3	12	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	**0.19 J**	0.37 U	0.36 U	0.37 U
Phenanthrene		85-01-8	100	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	0.39 U	0.37 U	0.36 U	0.37 U
Pyrene		129-00-0	100	500	1000	0.37 U	0.36 U	0.36 U	0.38 U	**0.11 J**	0.37 U	0.36 U	0.37 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	ND	ND	ND	ND	**0.606**	ND	ND	ND
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	**0.11 J**	NA	0.36 U	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-55**	**GCSB-55**	**GCSB-55**	**GCSB-55**	**GCSB-56**	**GCSB-56**	**GCSB-56**	**GCSB-56**
					Sample Name	**GCSB55 (18.0-19.0)**	**GCSB55 (34.0-35.0)**	**GCSB55BD**	**GCSB55 (51.0-52.0)**	**GCSB56 (11.0-11.5)**	**GCSB56 (17.0-18.0)**	**GCSB56(34-35)**	**GCSB56(49-50)**
					Start Depth	**18**	**34**	**34**	**51**	**11**	**17**	**34**	**49**
					End Depth	**19**	**35**	**35**	**52**	**11.5**	**18**	**35**	**50**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**5/16/2005**	**5/16/2005**	**5/16/2005**	**5/17/2005**	**5/17/2005**	**5/17/2005**	**5/18/2005**	**5/18/2005**
					Parent Sample			**GCSB55 (34.0-35.0)**					
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	**0.36 J**	NA	**0.18 J**	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	0.99 U	NA	0.91 U	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	0.99 U	NA	0.91 U	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	0.99 U	NA	0.91 U	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	0.99 U	NA	0.91 U	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	0.99 U	NA	0.91 U	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	0.99 U	NA	0.91 U	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	0.99 U	NA	0.91 U	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	0.99 U	NA	0.91 U	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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Glen Cove, Nassau County, New York

					Location Name	GCSB-55	GCSB-55	GCSB-55	GCSB-55	GCSB-56	GCSB-56	GCSB-56	GCSB-56
					Sample Name	GCSB55 (18.0-19.0)	GCSB55 (34.0-35.0)	GCSB55BD	GCSB55 (51.0-52.0)	GCSB56 (11.0-11.5)	GCSB56 (17.0-18.0)	GCSB56(34-35)	GCSB56(49-50)
					Start Depth	18	34	34	51	11	17	34	49
					End Depth	19	35	35	52	11.5	18	35	50
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	5/16/2005	5/16/2005	5/16/2005	5/17/2005	5/17/2005	5/17/2005	5/18/2005	5/18/2005
					Parent Sample			GCSB55 (34.0-35.0)					
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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Glen Cove, Nassau County, New York

					Location Name	GCSB-55	GCSB-55	GCSB-55	GCSB-55	GCSB-56	GCSB-56	GCSB-56	GCSB-56
					Sample Name	GCSB55 (18.0-19.0)	GCSB55 (34.0-35.0)	GCSB55BD	GCSB55 (51.0-52.0)	GCSB56 (11.0-11.5)	GCSB56 (17.0-18.0)	GCSB56(34-35)	GCSB56(49-50)
					Start Depth	18	34	34	51	11	17	34	49
					End Depth	19	35	35	52	11.5	18	35	50
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	5/16/2005	5/16/2005	5/16/2005	5/17/2005	5/17/2005	5/17/2005	5/18/2005	5/18/2005
					Parent Sample			GCSB55 (34.0-35.0)					
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	**2390**	NA	**3730**	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	0.39 U	NA	0.36 U	NA
Arsenic		7440-38-2	13	16	16	**1.3**	**1.1 B**	**1.2**	**1.3**	**2.3**	**1.4**	**1.6**	**1.7**
Barium		7440-39-3	350	400	10000	**45.2**	**21.3 B**	**32.2**	**29.3**	**13.4 B**	**30.4**	**35.1**	**32.2**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	2 U	NA	1.9 U	NA
Cadmium		7440-43-9	2.5	9.3	60	0.041 U	0.04 U	0.04 U	0.042 U	0.043 U	0.041 U	0.04 U	0.041 U
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	**443 B**	NA	**1490**	NA
Chromium		7440-47-3	NE	NE	NE	**6**	**5.6**	**9**	**8.3**	**4.2**	**11.9**	**8.6**	**9.3**
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	**3.3 B**	NA	**4.6 B**	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	**7**	NA	**7.6**	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	**6210**	NA	**8410**	NA
Lead		7439-92-1	63	1000	3900	**1.5 N**	**1.7 N**	**1.9 N**	**2.6 N**	**6.3 N**	**2 N**	**2 N**	**2.3 N**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	**470 B**	NA	**1620**	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	**160 N**	NA	**173 N**	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.019 U	0.018 U	0.018 U	0.019 U	0.02 U	0.019 U	0.018 U	0.019 U
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	**3.7 B**	NA	**8.5**	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	**283 B**	NA	**1030**	NA
Selenium		7782-49-2	3.9	1500	6800	0.6 U	0.59 U	0.59 U	0.62 U	0.64 U	0.6 U	0.59 U	0.6 U
Silver		7440-22-4	2	1500	6800	0.4 U	0.39 U	0.39 U	0.41 U	0.42 U	0.4 U	0.39 U	0.4 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	**140 B**	NA	**62.9 B**	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	0.59 U	NA	0.55 U	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	**6.5**	NA	**11.9**	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	**12.4 ***	NA	**21.9 ***	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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Location Name						**GCSB-55**	**GCSB-55**	**GCSB-55**	**GCSB-55**	**GCSB-56**	**GCSB-56**	**GCSB-56**	**GCSB-56**
Sample Name						**GCSB55 (18.0-19.0)**	**GCSB55 (34.0-35.0)**	**GCSB55BD**	**GCSB55 (51.0-52.0)**	**GCSB56 (11.0-11.5)**	**GCSB56 (17.0-18.0)**	**GCSB56(34-35)**	**GCSB56(49-50)**
Start Depth						**18**	**34**	**34**	**51**	**11**	**17**	**34**	**49**
End Depth						**19**	**35**	**35**	**52**	**11.5**	**18**	**35**	**50**
Depth Unit						**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
Sample Date						**5/16/2005**	**5/16/2005**	**5/16/2005**	**5/17/2005**	**5/17/2005**	**5/17/2005**	**5/18/2005**	**5/18/2005**
Parent Sample								**GCSB55 (34.0-35.0)**					
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.56 U	0.55 U	0.55 U	0.58 U	0.59 U	0.56 U	0.55 U	0.56 U
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**10.1**	**9.3**	**9**	**13.4**	**15.8**	**10.7**	**8.6**	**10.3**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-57	GCSB-57	GCSB-57	GCSB-57	GCSB-58	GCSB-58	GCSB-58	GCSB-59
					Sample Name	GCBSB57 (17-18)	GCBSB57 (33-33.5)	GCBSB57 (35-36)	GCBSB57 (50-52)	GCSB58 (18.0-19.0)	GCSB58 (33.0-34.0)	GCSB58 (49-50)	GCSB59 (19-20)
					Start Depth	17	33	35	50	18	33	49	19
					End Depth	18	33.5	36	52	19	34	50	20
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/26/2005	7/26/2005	7/26/2005	7/26/2005	7/28/2005	7/28/2005	7/28/2005	7/27/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-57**	**GCSB-57**	**GCSB-57**	**GCSB-57**	**GCSB-58**	**GCSB-58**	**GCSB-58**	**GCSB-59**
					Sample Name	**GCSBB57 (17-18)**	**GCSBB57 (33-33.5)**	**GCSBB57 (35-36)**	**GCSBB57 (50-52)**	**GCSB58 (18.0-19.0)**	**GCSB58 (33.0-34.0)**	**GCSB58 (49-50)**	**GCSB59 (19-20)**
					Start Depth	**17**	**33**	**35**	**50**	**18**	**33**	**49**	**19**
					End Depth	**18**	**33.5**	**36**	**52**	**19**	**34**	**50**	**20**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**7/26/2005**	**7/26/2005**	**7/26/2005**	**7/26/2005**	**7/28/2005**	**7/28/2005**	**7/28/2005**	**7/27/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Acenaphthylene		208-96-8	100	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Anthracene		120-12-7	100	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Benzo(a)anthracene		56-55-3	1	5.6	11	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Benzo(a)pyrene		50-32-8	1	1	1.1	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Chrysene		218-01-9	1	56	110	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Fluoranthene		206-44-0	100	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Fluorene		86-73-7	30	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.39 U	0.37 U	0.38 U	0.37 U	**0.084 J**	0.36 U	**0.27 J**	0.37 U
Naphthalene		91-20-3	12	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	**0.5**	0.37 U
Phenanthrene		85-01-8	100	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	**0.15 J**	0.37 U
Pyrene		129-00-0	100	500	1000	0.39 U	0.37 U	0.38 U	0.37 U	0.38 U	0.36 U	0.38 U	0.37 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	ND	ND	ND	ND	**0.084**	ND	**0.92**	ND
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-57**	**GCSB-57**	**GCSB-57**	**GCSB-57**	**GCSB-58**	**GCSB-58**	**GCSB-58**	**GCSB-59**
					Sample Name	**GCBSB57 (17-18)**	**GCBSB57 (33-33.5)**	**GCBSB57 (35-36)**	**GCBSB57 (50-52)**	**GCSB58 (18.0-19.0)**	**GCSB58 (33.0-34.0)**	**GCSB58 (49-50)**	**GCSB59 (19-20)**
					Start Depth	**17**	**33**	**35**	**50**	**18**	**33**	**49**	**19**
					End Depth	**18**	**33.5**	**36**	**52**	**19**	**34**	**50**	**20**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**7/26/2005**	**7/26/2005**	**7/26/2005**	**7/26/2005**	**7/28/2005**	**7/28/2005**	**7/28/2005**	**7/27/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-57	GCSB-57	GCSB-57	GCSB-57	GCSB-58	GCSB-58	GCSB-58	GCSB-59
					Sample Name	GCBSB57 (17-18)	GCBSB57 (33-33.5)	GCBSB57 (35-36)	GCBSB57 (50-52)	GCSB58 (18.0-19.0)	GCSB58 (33.0-34.0)	GCSB58 (49-50)	GCSB59 (19-20)
					Start Depth	17	33	35	50	18	33	49	19
					End Depth	18	33.5	36	52	19	34	50	20
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/26/2005	7/26/2005	7/26/2005	7/26/2005	7/28/2005	7/28/2005	7/28/2005	7/27/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-57**	**GCSB-57**	**GCSB-57**	**GCSB-57**	**GCSB-58**	**GCSB-58**	**GCSB-58**	**GCSB-59**
					Sample Name	**GCBSB57 (17-18)**	**GCBSB57 (33-33.5)**	**GCBSB57 (35-36)**	**GCBSB57 (50-52)**	**GCSB58 (18.0-19.0)**	**GCSB58 (33.0-34.0)**	**GCSB58 (49-50)**	**GCSB59 (19-20)**
					Start Depth	**17**	**33**	**35**	**50**	**18**	**33**	**49**	**19**
					End Depth	**18**	**33.5**	**36**	**52**	**19**	**34**	**50**	**20**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**7/26/2005**	**7/26/2005**	**7/26/2005**	**7/26/2005**	**7/28/2005**	**7/28/2005**	**7/28/2005**	**7/27/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	0.66 U	**0.71 B**	0.65 U	0.64 U	**0.79 B**	0.62 U	0.65 U	**1 B**
Barium		7440-39-3	350	400	10000	**23.2 B**	**28.9**	**12.2 B**	**17.5 B**	**29.2**	**10.2 B**	**6.3 B**	**38.6**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	0.043 U	0.041 U	0.042 U	0.041 U	0.042 U	0.04 U	0.042 U	0.04 U
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**4.3 N**	**15.2 N**	**3.3 N**	**17.7 N**	**7.4 N**	**2.5 N**	**4.6 N**	**9.6 N**
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**1.4**	**3.8**	**0.85**	**1.1**	**1.7**	**0.56**	**0.58**	**2**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	**0.025 B**	**0.02 B**	0.019 U	0.019 U	**0.02 B**	**0.019 B**	0.019 U	0.018 U
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.63 U	0.6 U	0.62 U	0.61 U	0.62 U	0.59 U	0.62 U	0.59 U
Silver		7440-22-4	2	1500	6800	0.42 U	0.4 U	0.41 U	0.41 U	0.41 U	0.39 U	0.41 U	0.4 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-57	GCSB-57	GCSB-57	GCSB-57	GCSB-58	GCSB-58	GCSB-58	GCSB-59
					Sample Name	GCBSB57 (17-18)	GCBSB57 (33-33.5)	GCBSB57 (35-36)	GCBSB57 (50-52)	GCSB58 (18.0-19.0)	GCSB58 (33.0-34.0)	GCSB58 (49-50)	GCSB59 (19-20)
					Start Depth	17	33	35	50	18	33	49	19
					End Depth	18	33.5	36	52	19	34	50	20
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/26/2005	7/26/2005	7/26/2005	7/26/2005	7/28/2005	7/28/2005	7/28/2005	7/27/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.59 U	0.56 U	0.58 U	0.57 U	0.58 U	**0.66 E**	0.58 U	0.55 U
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**15.2**	**11.1**	**13.2**	**11.9**	**13.1**	**9.3**	**13.4**	**9.6**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
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Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						GCSB-59	GCSB-59	GCSB-59	GCSB-59	GCSB-60	GCSB-60	GCSB-60	GCSB-60
Sample Name						GCSB59 (24-24.5)	GCSB59 (33-34)	GCSB59 (51.0-52.0)	GCSB59BD	GCSB60 (34-35)	GCSB60 (38-40)	GCSB60 (50-51.50)	GCSB60BD
Start Depth						24	33	51	51	34	38	50	50
End Depth						24.5	34	52	52	35	40	51.5	51.5
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						7/27/2005	7/27/2005	7/27/2005	7/27/2005	9/7/2005	9/7/2005	9/7/2005	9/7/2005
Parent Sample									GCSB59 (51.0-52.0)				GCSB60 (50-51.50)
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Toluene		108-88-3	0.7	500	1000	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.011 U	0.012 U	0.011 U	**0.016**	0.011 U	0.011 U	0.011 U
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.011 U	0.012 U	0.011 U	**0.011**	0.011 U	0.011 U	0.011 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	**0.027**	ND	ND	ND
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSB-59**	**GCSB-59**	**GCSB-59**	**GCSB-59**	**GCSB-60**	**GCSB-60**	**GCSB-60**	**GCSB-60**
					Sample Name	**GCSB59 (24-24.5)**	**GCSB59 (33-34)**	**GCSB59 (51.0-52.0)**	**GCSB59BD**	**GCSB60 (34-35)**	**GCSB60 (38-40)**	**GCSB60 (50-51.50)**	**GCSB60BD**
					Start Depth	**24**	**33**	**51**	**51**	**34**	**38**	**50**	**50**
					End Depth	**24.5**	**34**	**52**	**52**	**35**	**40**	**51.5**	**51.5**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**7/27/2005**	**7/27/2005**	**7/27/2005**	**7/27/2005**	**9/7/2005**	**9/7/2005**	**9/7/2005**	**9/7/2005**
					Parent Sample				**GCSB59 (51.0-52.0)**				**GCSB60 (50-51.50)**
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.36 U	0.37 U	0.38 U	0.38 U	**100 D**	0.36 U	0.37 U	0.36 U
Acenaphthylene		208-96-8	100	500	1000	0.36 U	0.37 U	0.38 U	0.38 U	**16 J**	0.36 U	0.37 U	0.36 U
Anthracene		120-12-7	100	500	1000	0.36 U	0.37 U	0.38 U	0.38 U	**130 D**	0.36 U	0.37 U	0.36 U
Benzo(a)anthracene		56-55-3	1	5.6	11	0.36 U	0.37 U	0.38 U	0.38 U	**53 D**	0.36 U	0.37 U	0.36 U
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.36 U	0.37 U	0.38 U	0.38 U	**25 J**	0.36 U	0.37 U	0.36 U
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.36 U	0.37 U	0.38 U	0.38 U	**4.9**	0.36 U	0.37 U	0.36 U
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.36 U	0.37 U	0.38 U	0.38 U	**18 J**	0.36 U	0.37 U	0.36 U
Benzo(a)pyrene		50-32-8	1	1	1.1	0.36 U	0.37 U	0.38 U	0.38 U	**41 D**	0.36 U	0.37 U	0.36 U
Chrysene		218-01-9	1	56	110	0.36 U	0.37 U	0.38 U	0.38 U	**44 D**	0.36 U	0.37 U	0.36 U
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.36 U	0.37 U	0.38 U	0.38 U	**2.9**	0.36 U	0.37 U	0.36 U
Fluoranthene		206-44-0	100	500	1000	0.36 U	0.37 U	0.38 U	0.38 U	**120 D**	0.36 U	0.37 U	0.36 U
Fluorene		86-73-7	30	500	1000	0.36 U	0.37 U	0.38 U	0.38 U	**66 D**	0.36 U	0.37 U	0.36 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.36 U	0.37 U	0.38 U	0.38 U	**14 J**	0.36 U	0.37 U	0.36 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	**0.26 J**	0.37 U	0.38 U	0.38 U	**0.69**	**0.19 J**	0.37 U	0.36 U
Naphthalene		91-20-3	12	500	1000	**0.74**	0.37 U	0.38 U	0.38 U	**0.64**	0.36 U	0.37 U	**0.11 J**
Phenanthrene		85-01-8	100	500	1000	0.36 U	0.37 U	0.38 U	0.38 U	**300 D**	**0.13 J**	0.37 U	0.36 U
Pyrene		129-00-0	100	500	1000	0.36 U	0.37 U	0.38 U	0.38 U	**160 D**	0.36 U	0.37 U	0.36 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**1**	ND	ND	ND	**1096.13**	**0.32**	ND	**0.11**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-59	GCSB-59	GCSB-59	GCSB-59	GCSB-60	GCSB-60	GCSB-60	GCSB-60
					Sample Name	GCSB59 (24-24.5)	GCSB59 (33-34)	GCSB59 (51.0-52.0)	GCSB59BD	GCSB60 (34-35)	GCSB60 (38-40)	GCSB60 (50-51.50)	GCSB60BD
					Start Depth	24	33	51	51	34	38	50	50
					End Depth	24.5	34	52	52	35	40	51.5	51.5
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/27/2005	7/27/2005	7/27/2005	7/27/2005	9/7/2005	9/7/2005	9/7/2005	9/7/2005
					Parent Sample				GCSB59 (51.0-52.0)				GCSB60 (50-51.50)
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove, Nassau County, New York

					Location Name	GCSB-59	GCSB-59	GCSB-59	GCSB-59	GCSB-60	GCSB-60	GCSB-60	GCSB-60
					Sample Name	GCSB59 (24-24.5)	GCSB59 (33-34)	GCSB59 (51.0-52.0)	GCSB59BD	GCSB60 (34-35)	GCSB60 (38-40)	GCSB60 (50-51.50)	GCSB60BD
					Start Depth	24	33	51	51	34	38	50	50
					End Depth	24.5	34	52	52	35	40	51.5	51.5
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/27/2005	7/27/2005	7/27/2005	7/27/2005	9/7/2005	9/7/2005	9/7/2005	9/7/2005
					Parent Sample				GCSB59 (51.0-52.0)				GCSB60 (50-51.50)
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4		NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8		NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14		NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23		NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000		NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47		NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94		NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120		NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180		NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8		NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920		NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920		NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920		NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410		NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29		NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE		NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCSB-59**	**GCSB-59**	**GCSB-59**	**GCSB-59**	**GCSB-60**	**GCSB-60**	**GCSB-60**	**GCSB-60**
					Sample Name	**GCSB59 (24-24.5)**	**GCSB59 (33-34)**	**GCSB59 (51.0-52.0)**	**GCSB59BD**	**GCSB60 (34-35)**	**GCSB60 (38-40)**	**GCSB60 (50-51.50)**	**GCSB60BD**
					Start Depth	**24**	**33**	**51**	**51**	**34**	**38**	**50**	**50**
					End Depth	**24.5**	**34**	**52**	**52**	**35**	**40**	**51.5**	**51.5**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**7/27/2005**	**7/27/2005**	**7/27/2005**	**7/27/2005**	**9/7/2005**	**9/7/2005**	**9/7/2005**	**9/7/2005**
					Parent Sample				**GCSB59 (51.0-52.0)**				**GCSB60 (50-51.50)**
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**0.75 B**	**2**	0.65 U	0.65 U	**3**	**1.3**	**1.1 B**	0.61 U
Barium		7440-39-3	350	400	10000	**28.1**	**38.5**	**11.4 B**	**15 B**	**33.4**	**34.1**	**22.8**	**13.4 B**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	0.04 U	0.041 U	0.042 U	0.042 U	**0.13 B**	**0.19 B**	**0.12 B**	0.04 U
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**14.6 N**	**37.7 N**	**4 N**	**4.2 N**	**15**	**8.9**	**7.3**	**3.7**
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**1**	**1.6**	**0.93**	**1.1**	**2** *	**2.3** *	**1.4** *	**0.49** *
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.018 U	**0.023 B**	**0.02 B**	**0.023 B**	**0.03 B**	0.018 U	**0.029 B**	0.018 U
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.59 U	0.6 U	0.62 U	0.62 U	0.6 U	0.59 U	0.61 U	0.58 U
Silver		7440-22-4	2	1500	6800	0.39 U	0.4 U	0.41 U	0.41 U	0.4 U	0.39 U	0.41 U	0.39 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GCSB-59	GCSB-59	GCSB-59	GCSB-59	GCSB-60	GCSB-60	GCSB-60	GCSB-60
					Sample Name	GCSB59 (24-24.5)	GCSB59 (33-34)	GCSB59 (51.0-52.0)	GCSB59BD	GCSB60 (34-35)	GCSB60 (38-40)	GCSB60 (50-51.50)	GCSB60BD
					Start Depth	24	33	51	51	34	38	50	50
					End Depth	24.5	34	52	52	35	40	51.5	51.5
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	7/27/2005	7/27/2005	7/27/2005	7/27/2005	9/7/2005	9/7/2005	9/7/2005	9/7/2005
					Parent Sample				GCSB59 (51.0-52.0)				GCSB60 (50-51.50)
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.55 U	0.56 U	0.58 U	0.57 U	0.56 U	0.55 U	0.57 U	0.54 U
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**8.5**	**11.3**	**13.5**	**12.9**	**10.5**	**8.4**	**11.9**	**7.9**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-60	GCSED-01	GCSED-02	GCSED-03	GCSED-04	GCSED-04	GCSED-05	GCSED-06
					Sample Name	GCSB60 (62-64)	GCSED-01	GCSED-02	GCSED-03	GCSED04	GCSED-04	GCSED05	GCSED06
					Start Depth	62	1	1	1	1	1	1	1
					End Depth	64							
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	9/7/2005	3/16/2004	3/16/2004	3/16/2004	10/20/2005	3/16/2004	10/20/2005	10/20/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.011 U	0.013 U	0.012 U	0.014 U	NA	0.012 U	NA	NA
Toluene		108-88-3	0.7	500	1000	0.011 U	0.013 U	0.012 U	0.014 U	NA	0.012 U	NA	NA
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.013 U	0.012 U	0.014 U	NA	0.012 U	NA	NA
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.013 U	0.012 U	0.014 U	NA	0.012 U	NA	NA
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	ND	ND	NA	ND	NA	NA
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.011 U	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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Glen Cove, Nassau County, New York

Location Name						GCSB-60	GCSED-01	GCSED-02	GCSED-03	GCSED-04	GCSED-04	GCSED-05	GCSED-06
Sample Name						GCSB60 (62-64)	GCSED-01	GCSED-02	GCSED-03	GCSED04	GCSED-04	GCSED05	GCSED06
Start Depth						62	1	1	1	1	1	1	1
End Depth						64							
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						9/7/2005	3/16/2004	3/16/2004	3/16/2004	10/20/2005	3/16/2004	10/20/2005	10/20/2005
Parent Sample													
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.35 U	0.43 U	**0.31 J**	0.45 U	0.39 U	0.4 U	0.38 U	**0.13 J**
Acenaphthylene		208-96-8	100	500	1000	0.35 U	0.43 U	**1.3**	**0.31 J**	0.39 U	**0.091 J**	0.38 U	0.37 U
Anthracene		120-12-7	100	500	1000	0.35 U	**0.14 J**	**3.6**	**3.3**	0.39 U	**0.26 J**	0.38 U	**0.38**
Benzo(a)anthracene		56-55-3	1	5.6	11	0.35 U	**0.63**	**6**	**0.32 J**	0.39 U	**1.2**	**0.2 J**	**0.67**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	0.35 U	**1**	**4**	**0.26 J**	0.39 U	**2.3**	**0.24 J**	**0.75**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	0.35 U	**0.37 J**	**2.1**	0.45 U	0.39 U	**0.73**	**0.11 J**	**0.28 J**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.35 U	**0.27 J**	**0.9**	0.45 U	0.39 U	**0.35 J**	**0.13 J**	**0.33 J**
Benzo(a)pyrene		50-32-8	1	1	1.1	0.35 U	**0.62**	**2.9**	**0.22 J**	0.39 U	**1.1**	**0.17 J**	**0.56**
Chrysene		218-01-9	1	56	110	0.35 U	**0.74**	**5.4**	**0.29 J**	0.39 U	**1.2**	**0.19 J**	**0.65**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.35 U	0.43 U	**0.33 J**	0.45 U	0.39 U	**0.13 J**	0.38 U	**0.09 J**
Fluoranthene		206-44-0	100	500	1000	0.35 U	**1.6**	**11 D**	**4.4**	**0.14 J**	**1.9**	**0.45**	**1.4**
Fluorene		86-73-7	30	500	1000	0.35 U	0.43 U	**0.6**	0.45 U	0.39 U	0.4 U	0.38 U	**0.18 J**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	0.35 U	**0.27 J**	**0.9**	0.45 U	0.39 U	**0.39 J**	**0.11 J**	**0.29 J**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.35 U	0.43 U	**0.49**	**0.099 J**	0.39 U	0.4 U	0.38 U	0.37 U
Naphthalene		91-20-3	12	500	1000	0.35 U	0.43 U	**1.4**	**0.37 J**	**0.099 J**	0.4 U	0.38 U	0.37 U
Phenanthrene		85-01-8	100	500	1000	0.35 U	**0.87**	**12 D**	**1.1**	0.39 U	**1**	**0.26 J**	**1.4**
Pyrene		129-00-0	100	500	1000	0.35 U	**1.2**	**19 D**	**5.3**	**0.12 J**	**2.3**	**0.35 J**	**1.2**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	ND	**7.71**	**72.23**	**15.969**	**0.359**	**12.951**	**2.21**	**8.31**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

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Glen Cove, Nassau County, New York

					Location Name	GCSB-60	GCSED-01	GCSED-02	GCSED-03	GCSED-04	GCSED-04	GCSED-05	GCSED-06
					Sample Name	GCSB60 (62-64)	GCSED-01	GCSED-02	GCSED-03	GCSED04	GCSED-04	GCSED05	GCSED06
					Start Depth	62	1	1	1	1	1	1	1
					End Depth	64							
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	9/7/2005	3/16/2004	3/16/2004	3/16/2004	10/20/2005	3/16/2004	10/20/2005	10/20/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCSB-60**	**GCSED-01**	**GCSED-02**	**GCSED-03**	**GCSED-04**	**GCSED-04**	**GCSED-05**	**GCSED-06**
					Sample Name	**GCSB60 (62-64)**	**GCSED-01**	**GCSED-02**	**GCSED-03**	**GCSED04**	**GCSED-04**	**GCSED05**	**GCSED06**
					Start Depth	**62**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
					End Depth	**64**							
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**9/7/2005**	**3/16/2004**	**3/16/2004**	**3/16/2004**	**10/20/2005**	**3/16/2004**	**10/20/2005**	**10/20/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSB-60	GCSED-01	GCSED-02	GCSED-03	GCSED-04	GCSED-04	GCSED-05	GCSED-06
					Sample Name	GCSB60 (62-64)	GCSED-01	GCSED-02	GCSED-03	GCSED04	GCSED-04	GCSED05	GCSED06
					Start Depth	62	1	1	1	1	1	1	1
					End Depth	64							
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	9/7/2005	3/16/2004	3/16/2004	3/16/2004	10/20/2005	3/16/2004	10/20/2005	10/20/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**1.1**	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	350	400	10000	**17.7 B**	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	**0.078 B**	NA	NA	NA	NA	NA	NA	NA
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**5.5**	NA	NA	NA	NA	NA	NA	NA
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**0.87 ***	NA	NA	NA	NA	NA	NA	NA
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	**0.034 B**	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.57 U	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	2	1500	6800	0.38 U	NA	NA	NA	NA	NA	NA	NA
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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Glen Cove, Nassau County, New York

					Location Name	**GCSB-60**	**GCSED-01**	**GCSED-02**	**GCSED-03**	**GCSED-04**	**GCSED-04**	**GCSED-05**	**GCSED-06**
					Sample Name	**GCSB60 (62-64)**	**GCSED-01**	**GCSED-02**	**GCSED-03**	**GCSED04**	**GCSED-04**	**GCSED05**	**GCSED06**
					Start Depth	**62**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
					End Depth	**64**							
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**9/7/2005**	**3/16/2004**	**3/16/2004**	**3/16/2004**	**10/20/2005**	**3/16/2004**	**10/20/2005**	**10/20/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.53 U	0.65 U	0.58 U	0.68 U	NA	0.61 U	NA	NA
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**5.9**	**23.2**	**13.4**	**26.4**	**15.4**	**17.7**	**13.1**	**10.6**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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					Location Name	GCSED-06	GCSS-21	GCSS-19	GCSS-20	GCSS-21	GCSS-22	GCSS-23	GCSS-25
					Sample Name	GCSED07	GCSS-28	GCSS-19	GCSS-20	GCSS-21	GCSS-22	GCSS-23	GCSS-25
					Start Depth	1	0	0	0	0	0	0	0
					End Depth		0.17	0.17	0.17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	10/20/2005	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004
					Parent Sample	GCSED06	GCSS-21						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	NA	0.013 U	0.013 U	0.011 U	0.013 U	0.011 U	0.011 U	0.01 U
Toluene		108-88-3	0.7	500	1000	NA	0.013 U	0.013 U	0.011 U	0.013 U	0.011 U	0.011 U	0.01 U
Ethylbenzene		100-41-4	1	390	780	NA	0.013 U	0.013 U	0.011 U	0.013 U	0.011 U	0.011 U	0.01 U
Total Xylene		1330-20-7	0.26	500	1000	NA	0.013 U	0.013 U	0.011 U	0.013 U	0.011 U	0.011 U	0.01 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	NA	ND	ND	ND	ND	ND	ND	ND
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	0.011 U	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	0.011 U	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	0.011 U	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	0.011 U	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	0.011 U	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	0.011 U	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	0.011 U	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	0.011 U	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	**0.008 J**	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	**0.003 J**	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	0.011 U	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	0.011 U	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	0.011 U	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	0.011 U	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSED-06**	**GCSS-21**	**GCSS-19**	**GCSS-20**	**GCSS-21**	**GCSS-22**	**GCSS-23**	**GCSS-25**
					Sample Name	**GCSED07**	**GCSS-28**	**GCSS-19**	**GCSS-20**	**GCSS-21**	**GCSS-22**	**GCSS-23**	**GCSS-25**
					Start Depth	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth		**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**10/20/2005**	**3/15/2004**	**3/15/2004**	**3/15/2004**	**3/15/2004**	**3/15/2004**	**3/15/2004**	**3/15/2004**
					Parent Sample	**GCSED06**	**GCSS-21**						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.37 U	**0.14 J**	**0.13 J**	0.37 U	0.44 U	0.35 U	**0.11 J**	0.34 U
Acenaphthylene		208-96-8	100	500	1000	0.37 U	**4.3**	**4.1**	0.37 U	0.44 U	**0.56**	**5.1 D**	**1.4**
Anthracene		120-12-7	100	500	1000	0.37 U	**1.2**	**1.1**	0.37 U	0.44 U	**0.16 J**	**1.8**	**0.86**
Benzo(a)anthracene		56-55-3	1	5.6	11	**0.22 J**	**4.6**	**4.3**	**0.22 J**	**0.2 J**	**0.55**	**9.3 D**	**2.4**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**0.32 J**	**5.4 D**	**3.9 D**	**0.28 J**	**0.29 J**	**0.91**	**8.9 D**	**2**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**0.14 J**	**4.4**	**3.1**	**0.23 J**	**0.24 J**	**1.2**	**5.2**	**2.1**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**0.15 J**	**2.7**	**3.2**	**0.18 J**	**0.19 J**	**1.1**	**4.3**	**2.3**
Benzo(a)pyrene		50-32-8	1	1	1.1	**0.22 J**	**6.1**	**5.5**	**0.23 J**	**0.22 J**	**0.84**	**6.6 D**	**2.5**
Chrysene		218-01-9	1	56	110	**0.25 J**	**5.8**	**5.3**	**0.29 J**	**0.28 J**	**0.78**	**12 D**	**3.6**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.37 U	0.44 U	0.44 U	0.37 U	0.44 U	0.35 U	0.38 U	0.34 U
Fluoranthene		206-44-0	100	500	1000	**0.53**	**3.9**	**3.4**	**0.42**	**0.43 J**	**0.39**	**9.5 D**	**2**
Fluorene		86-73-7	30	500	1000	0.37 U	**0.18 J**	**0.16 J**	0.37 U	0.44 U	0.35 U	**0.83**	**0.16 J**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**0.14 J**	**2.7**	**3.1**	**0.19 J**	**0.18 J**	**1.1**	**4.1**	**1.9**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.37 U	**1.6**	**1.5**	0.37 U	0.44 U	**0.086 J**	**0.45**	0.34 U
Naphthalene		91-20-3	12	500	1000	0.37 U	**3.7**	**3.5**	0.37 U	0.44 U	**0.098 J**	**0.79**	**0.12 J**
Phenanthrene		85-01-8	100	500	1000	**0.19 J**	**1.5**	**1.4**	**0.18 J**	**0.15 J**	**0.1 J**	**2.2**	**0.19 J**
Pyrene		129-00-0	100	500	1000	**0.36 J**	**6.1**	**5.9**	**0.38**	**0.4 J**	**1.5**	**15 D**	**3.7**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**2.52**	**54.32**	**49.59**	**2.6**	**2.58**	**9.374**	**86.18**	**25.23**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	0.35 U	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	0.35 U	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	0.35 U	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	0.35 U	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA

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Glen Cove, Nassau County, New York

					Location Name	GCSED-06	GCSS-21	GCSS-19	GCSS-20	GCSS-21	GCSS-22	GCSS-23	GCSS-25
					Sample Name	GCSED07	GCSS-28	GCSS-19	GCSS-20	GCSS-21	GCSS-22	GCSS-23	GCSS-25
					Start Depth	1	0	0	0	0	0	0	0
					End Depth		0.17	0.17	0.17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	10/20/2005	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004
					Parent Sample	GCSED06	GCSS-21						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	0.88 U	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	0.88 U	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	0.35 U	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	0.35 U	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	0.35 U	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	0.88 U	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	0.88 U	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	0.88 U	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	0.88 U	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	0.88 U	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	0.35 U	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	0.88 U	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	0.35 U	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSED-06	GCSS-21	GCSS-19	GCSS-20	GCSS-21	GCSS-22	GCSS-23	GCSS-25
					Sample Name	GCSED07	GCSS-28	GCSS-19	GCSS-20	GCSS-21	GCSS-22	GCSS-23	GCSS-25
					Start Depth	1	0	0	0	0	0	0	0
					End Depth		0.17	0.17	0.17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	10/20/2005	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004
					Parent Sample	GCSED06	GCSS-21						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	0.071 U	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	0.035 U	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	0.035 U	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	0.035 U	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	0.035 U	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	0.035 U	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	0.035 U	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

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					Location Name	GCSED-06	GCSS-21	GCSS-19	GCSS-20	GCSS-21	GCSS-22	GCSS-23	GCSS-25
					Sample Name	GCSED07	GCSS-28	GCSS-19	GCSS-20	GCSS-21	GCSS-22	GCSS-23	GCSS-25
					Start Depth	1	0	0	0	0	0	0	0
					End Depth		0.17	0.17	0.17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	10/20/2005	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004	3/15/2004
					Parent Sample	GCSED06	GCSS-21						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	**4630**	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	**0.5 BN**	NA	NA
Arsenic		7440-38-2	13	16	16	NA	**5.3**	**5.3**	**3.5**	**4**	**2.8**	**6.6**	**4.2**
Barium		7440-39-3	350	400	10000	NA	**38.4**	**49**	**22.3 B**	**25.7 B**	**31.9**	**50.7**	**29.3**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	**0.29 B**	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	NA	**0.41 B**	**0.58 B**	**0.27 B**	**0.44 B**	**0.67**	**0.95**	**0.25 B**
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	**2980**	NA	NA
Chromium		7440-47-3	NE	NE	NE	NA	**17.4**	**16.3**	**6.8**	**6.9**	**8.7**	**12.4**	**8.4**
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	**3.6 B**	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	**14.6**	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	**8410**	NA	NA
Lead		7439-92-1	63	1000	3900	NA	**97.7**	**92.6**	**40.4**	**38.2**	**18.1**	**147**	**23**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	**1570**	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	**136**	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	NA	**0.55**	**0.48**	**0.065**	**0.063**	**0.046**	**0.28**	**0.034 B**
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	**8.7**	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	**548**	NA	NA
Selenium		7782-49-2	3.9	1500	6800	NA	**0.89 N**	**0.98 N**	**0.42 BN**	**0.63 BN**	**0.44 BN**	**0.6 N**	0.19 U
Silver		7440-22-4	2	1500	6800	NA	**0.19 B**	**0.2 B**	**0.1 B**	**0.28 B**	**0.17 B**	**0.27 B**	**0.11 B**
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	**26.3 B**	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	**1 B**	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	**12.7**	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	**63.9**	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
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Location Name						**GCSED-06**	**GCSS-21**	**GCSS-19**	**GCSS-20**	**GCSS-21**	**GCSS-22**	**GCSS-23**	**GCSS-25**
Sample Name						**GCSED07**	**GCSS-28**	**GCSS-19**	**GCSS-20**	**GCSS-21**	**GCSS-22**	**GCSS-23**	**GCSS-25**
Start Depth						**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
End Depth							**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**
Depth Unit						**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
Sample Date						**10/20/2005**	**3/15/2004**	**3/15/2004**	**3/15/2004**	**3/15/2004**	**3/15/2004**	**3/15/2004**	**3/15/2004**
Parent Sample						**GCSED06**	**GCSS-21**						
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	NA	**0.82**	**0.86**	0.56 U	**0.7**	0.53 U	**1.2**	0.52 U
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**11**	**25**	**24.3**	**10.5**	**25.7**	**5.2**	**12.9**	**3.4**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
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					Location Name	GCSS-26	GCSS-27	GCSS-30	GCSS-31	GCSS-32	GCSS-33	GCSS-34	GCSS-35
					Sample Name	GCSS-26	GCSS-27	GCSS 30	GCSS 31	GCSS 32	GCSS 33	GCSS 34	GCSS 35
					Start Depth	0	0	0	0	0	0	0	0
					End Depth	0.17	0.17	0.21	0.21	0.21	0.21	0.21	0.21
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	3/15/2004	3/15/2004	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.011 U	0.012 U	NA	NA	NA	NA	NA	NA
Toluene		108-88-3	0.7	500	1000	0.011 U	0.012 U	NA	NA	NA	NA	NA	NA
Ethylbenzene		100-41-4	1	390	780	0.011 U	0.012 U	NA	NA	NA	NA	NA	NA
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	0.012 U	NA	NA	NA	NA	NA	NA
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	ND	NA	NA	NA	NA	NA	NA
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSS-26	GCSS-27	GCSS-30	GCSS-31	GCSS-32	GCSS-33	GCSS-34	GCSS-35
					Sample Name	GCSS-26	GCSS-27	GCSS 30	GCSS 31	GCSS 32	GCSS 33	GCSS 34	GCSS 35
					Start Depth	0	0	0	0	0	0	0	0
					End Depth	0.17	0.17	0.21	0.21	0.21	0.21	0.21	0.21
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	3/15/2004	3/15/2004	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.35 U	7.9 U	0.59 U	**0.12 J**	0.55 U	0.35 U	**0.11 J**	**0.091 J**
Acenaphthylene		208-96-8	100	500	1000	**0.45**	**15**	**0.33 J**	**9.5 D**	**1.1**	**1.5**	**7.7 D**	**2.2**
Anthracene		120-12-7	100	500	1000	**0.13 J**	**4.4 J**	**0.34 J**	**2**	**0.45 J**	**0.45**	**2.4**	**0.93**
Benzo(a)anthracene		56-55-3	1	5.6	11	**0.83**	**32**	**1.7**	**30 D**	**3.8**	**4**	**28 D**	**8.5 D**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**0.81**	**25**	**2.4**	**39 D**	**6**	**8.9 D**	**36 D**	**12 D**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**1.1**	**27**	**1.2**	**12 D**	**2.5**	**4**	**15 D**	**4.5**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**0.63**	**29**	**0.49 J**	**11 D**	**1.3**	**2.1**	**10 D**	**2.5**
Benzo(a)pyrene		50-32-8	1	1	1.1	**0.85**	**21**	**1.5**	**19 D**	**2.7**	**3.2**	**18 D**	**5.1**
Chrysene		218-01-9	1	56	110	**1**	**38**	**2**	**31 D**	**4.4**	**5.1**	**30 D**	**10 D**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.35 U	7.9 U	**0.19 J**	**2.7**	**0.46 J**	**0.7**	**2.8**	**0.88**
Fluoranthene		206-44-0	100	500	1000	**0.87**	**36**	**3.1**	**34 D**	**4.9**	**4.2**	**36 D**	**13 D**
Fluorene		86-73-7	30	500	1000	0.35 U	7.9 U	0.59 U	**0.37**	**0.14 J**	**0.093 J**	**0.55**	**0.22 J**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**0.56**	**23**	**0.61**	**13 D**	**1.5**	**2.3**	**11 D**	**2.9**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.35 U	7.9 U	0.59 U	**0.62**	**0.17 J**	**0.19 J**	**0.76**	**0.28 J**
Naphthalene		91-20-3	12	500	1000	0.35 U	**2.1 J**	**0.12 J**	**1**	**0.32 J**	**0.37**	**1.4**	**0.5**
Phenanthrene		85-01-8	100	500	1000	**0.13 J**	**8.8**	**1.7**	**4.4**	**1.5**	**1.1**	**10 D**	**3.2**
Pyrene		129-00-0	100	500	1000	**1.4**	**58**	**4**	**51 D**	**10 D**	**11 D**	**56 D**	**17 D**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**8.76**	**319.3**	**19.68**	**260.71**	**41.24**	**49.203**	**265.72**	**83.801**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCSS-26**	**GCSS-27**	**GCSS-30**	**GCSS-31**	**GCSS-32**	**GCSS-33**	**GCSS-34**	**GCSS-35**
					Sample Name	**GCSS-26**	**GCSS-27**	**GCSS 30**	**GCSS 31**	**GCSS 32**	**GCSS 33**	**GCSS 34**	**GCSS 35**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.17**	**0.17**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**3/15/2004**	**3/15/2004**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GCSS-26	GCSS-27	GCSS-30	GCSS-31	GCSS-32	GCSS-33	GCSS-34	GCSS-35
					Sample Name	GCSS-26	GCSS-27	GCSS 30	GCSS 31	GCSS 32	GCSS 33	GCSS 34	GCSS 35
					Start Depth	0	0	0	0	0	0	0	0
					End Depth	0.17	0.17	0.21	0.21	0.21	0.21	0.21	0.21
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	3/15/2004	3/15/2004	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	0.071 U	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	0.035 U	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	0.035 U	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	0.035 U	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	0.035 U	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	0.035 U	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	**0.021 J**	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCSS-26**	**GCSS-27**	**GCSS-30**	**GCSS-31**	**GCSS-32**	**GCSS-33**	**GCSS-34**	**GCSS-35**
					Sample Name	**GCSS-26**	**GCSS-27**	**GCSS 30**	**GCSS 31**	**GCSS 32**	**GCSS 33**	**GCSS 34**	**GCSS 35**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.17**	**0.17**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**3/15/2004**	**3/15/2004**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**3.5**	**13.3**	**4.3**	**4.1**	**4.3**	**2.9**	**3.5**	**5.8**
Barium		7440-39-3	350	400	10000	**18.9 B**	**53.3**	**117 E**	**22.9 E**	**221 E**	**34.1 E**	**29.6 E**	**68.7 E**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	**0.4 B**	**0.58 B**	**1.1**	0.073 U	**1.9**	**0.26 B**	**0.23 B**	**0.59 B**
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**7.1**	**11.1**	**17 ***	**7 ***	**26.9 ***	**9.5 ***	**7.8 ***	**16.4 ***
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**34.2**	**90.4**	**278 *E**	**45.9 *E**	**330 *E**	**63.6 *E**	**58.1 *E**	**201 *E**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.018 U	**0.28**	**9.2**	**0.09**	**0.89**	**0.073**	**0.58**	**0.3**
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	**0.31 BN**	**0.98 N**	**1.4**	**0.63**	**1.4**	0.49 U	0.53 U	**0.88**
Silver		7440-22-4	2	1500	6800	**0.14 B**	**0.3 B**	**0.31 B**	0.15 U	**0.24 B**	**0.26 B**	**0.21 B**	**0.2 B**
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						**GCSS-26**	**GCSS-27**	**GCSS-30**	**GCSS-31**	**GCSS-32**	**GCSS-33**	**GCSS-34**	**GCSS-35**
Sample Name						**GCSS-26**	**GCSS-27**	**GCSS 30**	**GCSS 31**	**GCSS 32**	**GCSS 33**	**GCSS 34**	**GCSS 35**
Start Depth						**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
End Depth						**0.17**	**0.17**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**
Depth Unit						**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
Sample Date						**3/15/2004**	**3/15/2004**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**
Parent Sample													
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	0.53 U	**2.9**	NA	NA	NA	NA	NA	NA
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**5**	**16.9**	**43.8**	**9.8**	**40.3**	**5**	**12.1**	**20.7**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
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Glen Cove, Nassau County, New York

					Location Name	GCSS-36	GCSS-37	GCSS-38	GCSS-39	GCSS-40	GCSS-41	GCSS-42	GCSS-43
					Sample Name	GCSS 36	GCSS 37	GCSS 38	GCSS 39	GCSS 40	GCSS 41	GCSS 42	GCSS 43
					Start Depth	0	0	0	0	0	0	0	0
					End Depth	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	NA	NA	NA	NA	NA	NA	NA	0.01 U
Toluene		108-88-3	0.7	500	1000	NA	NA	NA	NA	NA	NA	NA	0.01 U
Ethylbenzene		100-41-4	1	390	780	NA	NA	NA	NA	NA	NA	NA	0.01 U
Total Xylene		1330-20-7	0.26	500	1000	NA	NA	NA	NA	NA	NA	NA	0.01 U
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	ND
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	0.01 U
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	0.01 U
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	0.01 U
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	0.01 U
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	0.01 U
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	0.01 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	0.01 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	0.01 U
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	**0.009 J**
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	0.01 U
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	0.01 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.01 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	0.01 U
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	0.01 U
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCSS-36**	**GCSS-37**	**GCSS-38**	**GCSS-39**	**GCSS-40**	**GCSS-41**	**GCSS-42**	**GCSS-43**
					Sample Name	**GCSS 36**	**GCSS 37**	**GCSS 38**	**GCSS 39**	**GCSS 40**	**GCSS 41**	**GCSS 42**	**GCSS 43**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	**0.14 J**	**0.084 J**	0.41 U	0.34 U	**0.12 J**	0.35 U	0.33 U	0.34 U
Acenaphthylene		208-96-8	100	500	1000	**1.2**	**5.3**	**0.16 J**	**0.33 J**	**0.48**	**3**	**0.26 J**	**0.22 J**
Anthracene		120-12-7	100	500	1000	**0.64**	**1.7**	**0.21 J**	**0.16 J**	**0.19 J**	**1.2**	**0.074 J**	0.34 U
Benzo(a)anthracene		56-55-3	1	5.6	11	**4.7**	**29 D**	**0.9**	**0.99**	**1.1**	**9.3 D**	**0.64**	**0.28 J**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**6 D**	**37 D**	**1.4**	**1.6**	**1.9**	**13 D**	**1.1**	**0.7**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**3.7**	**24 D**	**0.7**	**0.88**	**1.2**	**7.1 D**	**0.37**	**0.3 J**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**1.9**	**13 D**	**0.31 J**	**0.44**	**0.6**	**3.3**	**0.4**	**0.38**
Benzo(a)pyrene		50-32-8	1	1	1.1	**3.3**	**19 D**	**0.82**	**0.89**	**1.1**	**11 D**	**0.77**	**0.45**
Chrysene		218-01-9	1	56	110	**5.1**	**30 D**	**1.1**	**1.2**	**1.4**	**10 D**	**0.7**	**0.5**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	**0.69**	**2.7**	**0.11 J**	**0.16 J**	**0.21 J**	**1.1**	**0.14 J**	**0.084 J**
Fluoranthene		206-44-0	100	500	1000	**5.7**	**30 D**	**1.7**	**1.3**	**1.4**	**13 D**	**0.78**	**0.7**
Fluorene		86-73-7	30	500	1000	**0.19 J**	**0.31 J**	0.41 U	0.34 U	**0.11 J**	**0.31 J**	0.33 U	0.34 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**2.2**	**14 D**	**0.35 J**	**0.5**	**0.69**	**3.6**	**0.43**	**0.34**
2-Methylnaphthalene		91-57-6	NE	NE	NE	**0.19 J**	**0.62**	0.41 U	0.34 U	**0.11 J**	**0.32 J**	0.33 U	0.34 U
Naphthalene		91-20-3	12	500	1000	**0.33 J**	**1.2**	0.41 U	**0.077 J**	**0.2 J**	**0.71**	0.33 U	**0.11 J**
Phenanthrene		85-01-8	100	500	1000	**2.3**	**2.8**	**0.58**	**0.41**	**0.42**	**3.2**	**0.15 J**	**0.19 J**
Pyrene		129-00-0	100	500	1000	**8.8 D**	**49 D**	**1.7**	**1.8**	**1.9**	**19 D**	**0.95**	**0.65**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**47.08**	**259.714**	**10.04**	**10.737**	**13.13**	**99.14**	**6.764**	**4.904**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**0.22 J**
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	0.34 U
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	0.34 U
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	0.34 U
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	0.34 U
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan

Glen Cove Former MGP Site

Glen Cove, Nassau County, New York

					Location Name	GCSS-36	GCSS-37	GCSS-38	GCSS-39	GCSS-40	GCSS-41	GCSS-42	GCSS-43
					Sample Name	GCSS 36	GCSS 37	GCSS 38	GCSS 39	GCSS 40	GCSS 41	GCSS 42	GCSS 43
					Start Depth	0	0	0	0	0	0	0	0
					End Depth	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.87 U
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.87 U
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	0.34 U
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	0.34 U
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	0.34 U
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.87 U
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.87 U
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.87 U
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.87 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	0.87 U
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	0.34 U
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.87 U
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.34 U
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCSS-36**	**GCSS-37**	**GCSS-38**	**GCSS-39**	**GCSS-40**	**GCSS-41**	**GCSS-42**	**GCSS-43**
					Sample Name	**GCSS 36**	**GCSS 37**	**GCSS 38**	**GCSS 39**	**GCSS 40**	**GCSS 41**	**GCSS 42**	**GCSS 43**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCSS-36**	**GCSS-37**	**GCSS-38**	**GCSS-39**	**GCSS-40**	**GCSS-41**	**GCSS-42**	**GCSS-43**
					Sample Name	**GCSS 36**	**GCSS 37**	**GCSS 38**	**GCSS 39**	**GCSS 40**	**GCSS 41**	**GCSS 42**	**GCSS 43**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**	**0.21**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromium (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**3370 *E**
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**1.4 BN**
Arsenic		7440-38-2	13	16	16	**6.1**	**8.2**	**6.6**	**3.9**	**1.9**	**2.5**	**1.2**	**1.7**
Barium		7440-39-3	350	400	10000	**59.5 E**	**90.8 E**	**61.8 E**	**28.3 E**	**30.4 E**	**24.9 E**	**22.1 E**	**29.3 E**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	**0.16 B**
Cadmium		7440-43-9	2.5	9.3	60	**0.79**	**1.2**	**0.75**	**0.098 B**	**0.35 B**	**0.17 B**	0.066 U	**0.35 B**
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**2340 *E**
Chromium		7440-47-3	NE	NE	NE	**14.5 ***	**20.4 ***	**13.8 ***	**8.6 ***	**9.3 ***	**8.8 ***	**8.2 ***	**8.4 ***
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**4.4 B**
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	**20.3 *E**
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**8760 *E**
Lead		7439-92-1	63	1000	3900	**145 *E**	**217 *E**	**119 *E**	**38.3 *E**	**27.9 *E**	**27.9 *E**	**15.2 *E**	**45.9 *E**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**1950 *E**
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	**171 N*E**
Mercury		7439-97-6	0.18	2.8	5.7	**0.15**	**0.47**	**0.25**	**0.074**	**0.055**	**0.091**	**0.044**	**0.039**
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	**9**
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**378 B**
Selenium		7782-49-2	3.9	1500	6800	**0.81**	**1**	**0.8**	**0.5 B**	0.48 U	0.49 U	0.48 U	0.49 U
Silver		7440-22-4	2	1500	6800	**0.19 B**	**0.44 B**	**0.26 B**	0.14 U	0.14 U	0.14 U	0.14 U	**0.26 B**
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**29.7 B**
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	0.42 U
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	**12.9 E**
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	**65.1 ***
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GCSS-36	GCSS-37	GCSS-38	GCSS-39	GCSS-40	GCSS-41	GCSS-42	GCSS-43
					Sample Name	GCSS 36	GCSS 37	GCSS 38	GCSS 39	GCSS 40	GCSS 41	GCSS 42	GCSS 43
					Start Depth	0	0	0	0	0	0	0	0
					End Depth	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005	4/15/2005
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	NA	NA	NA	NA	NA	NA	NA	0.52 U
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**12.9**	**20.2**	**19.4**	**2.6**	**1.4**	**4.9**	**1.4**	**4.1**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

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Location Name						GCSS-44	GCSS-46	GCSS-47	GCSS-48	GEO-01	GEO-05	GEO-07	GEO-09
Sample Name						GCSS 44	GCSS 46	GCSS 47	GCSS 48	GEO-01 (13-18)	GEO-05 (13-17)	GEO-07 (13-17)	GEO-09 (15-20)
Start Depth						0	0	0	0	13	13	13	15
End Depth						0.21	0.21	0.21	0.21	18	17	17	20
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						4/15/2005	4/15/2005	4/15/2005	4/15/2005	2/4/2010	2/4/2010	2/2/2010	2/1/2010
Parent Sample													
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	NA	NA	NA	0.015 U	**0.36**	0.011 U	0.012 U	0.011 U
Toluene		108-88-3	0.7	500	1000	NA	NA	NA	0.015 U	**0.67**	0.011 U	0.012 U	**0.016**
Ethylbenzene		100-41-4	1	390	780	NA	NA	NA	0.015 U	**5.8 D**	0.011 U	0.012 U	**0.081**
Total Xylene		1330-20-7	0.26	500	1000	NA	NA	NA	0.015 U	**4.8**	0.011 U	0.012 U	**0.17**
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	NA	NA	NA	ND	**11.63**	ND	ND	**0.267**
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	0.015 U	0.11 U	**0.017**	0.012 U	0.011 U
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	0.11 U	0.011 U	0.012 U	0.011 U
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	**0.005 J**	0.11 U	0.011 U	0.012 U	0.011 U
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	0.015 U	0.11 U	0.011 U	0.012 U	0.011 U
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCSS-44	GCSS-46	GCSS-47	GCSS-48	GEO-01	GEO-05	GEO-07	GEO-09
					Sample Name	GCSS 44	GCSS 46	GCSS 47	GCSS 48	GEO-01 (13-18)	GEO-05 (13-17)	GEO-07 (13-17)	GEO-09 (15-20)
					Start Depth	0	0	0	0	13	13	13	15
					End Depth	0.21	0.21	0.21	0.21	18	17	17	20
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/15/2005	4/15/2005	4/15/2005	4/15/2005	2/4/2010	2/4/2010	2/2/2010	2/1/2010
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000	0.36 U	0.35 U	**0.1 J**	**0.12 J**	**1.3**	0.37 U	**1.7**	**99 D**
Acenaphthylene		208-96-8	100	500	1000	0.36 U	**0.53**	**0.18 J**	**0.11 J**	0.37 U	0.37 U	**2**	**20 JD**
Anthracene		120-12-7	100	500	1000	0.36 U	**0.17 J**	**0.086 J**	**0.52**	**1.6**	0.37 U	**9.1 D**	**100 D**
Benzo(a)anthracene		56-55-3	1	5.6	11	**0.28 J**	**1.3**	**0.58**	**4.4**	**2.1**	0.37 U	**7.2 D**	**54 D**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**0.36**	**3.1**	**1**	**13 D**	**0.97**	0.37 U	**5**	**30 JD**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**0.2 J**	**1**	**0.47**	**5**	**1.1**	0.37 U	**1.5**	**10 JD**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**0.16 J**	**0.72**	**0.28 J**	**2.5**	**0.83**	0.37 U	**1.3**	**10 JD**
Benzo(a)pyrene		50-32-8	1	1	1.1	**0.21 J**	**1.2**	**0.61**	**5.9**	**1.5**	0.37 U	**5.4**	**42 D**
Chrysene		218-01-9	1	56	110	**0.35 J**	**1.7**	**0.66**	**6**	**2.1**	0.37 U	**6**	**63 D**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.36 U	**0.23 J**	**0.084 J**	**0.73**	0.37 U	0.37 U	**0.43**	**2.1**
Fluoranthene		206-44-0	100	500	1000	**0.4**	**1.4**	**0.8**	**12 D**	**4.3**	0.37 U	**13 D**	**110 D**
Fluorene		86-73-7	30	500	1000	0.36 U	0.35 U	0.34 U	**0.14 J**	**1.3**	0.37 U	**8.1 D**	**81 D**
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**0.17 J**	**0.81**	**0.3 J**	**2.8**	**0.73**	0.37 U	**1.3**	**10 JD**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.36 U	**0.073 J**	0.34 U	0.5 U	0.37 U	0.37 U	**1.2**	**38 D**
Naphthalene		91-20-3	12	500	1000	0.36 U	**0.11 J**	**0.11 J**	0.5 U	**0.94**	0.37 U	**2.8**	**64 D**
Phenanthrene		85-01-8	100	500	1000	**0.089 J**	**0.27 J**	**0.26 J**	**3.7**	**4.7**	0.37 U	**29 D**	**290 D**
Pyrene		129-00-0	100	500	1000	**0.52**	**2.5**	**1.4**	**14 D**	**5.4**	0.37 U	**17 D**	**150 D**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**2.739**	**15.113**	**6.92**	**70.92**	**28.87**	ND	**112.03**	**1173.1**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	**1.4**	0.37 U	0.37 U	0.38 U	0.37 U
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	**0.11 J**	0.37 U	0.37 U	0.38 U	0.37 U
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	**0.7**	0.37 U	0.37 U	0.38 U	**0.57**
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	**9 JD**
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U

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					Sample Name	GCSS 44	GCSS 46	GCSS 47	GCSS 48	GEO-01 (13-18)	GEO-05 (13-17)	GEO-07 (13-17)	GEO-09 (15-20)
					Start Depth	0	0	0	0	13	13	13	15
					End Depth	0.21	0.21	0.21	0.21	18	17	17	20
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/15/2005	4/15/2005	4/15/2005	4/15/2005	2/4/2010	2/4/2010	2/2/2010	2/1/2010
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	1.3 U	0.93 U	0.93 U	0.96 U	0.94 U
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	1.3 U	0.93 U	0.93 U	0.96 U	0.94 U
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	1.3 U	0.93 U	0.93 U	0.96 U	0.94 U
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	1.3 U	0.93 U	0.93 U	0.96 U	0.94 U
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	1.3 U	0.93 U	0.93 U	0.96 U	0.94 U
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	1.3 U	0.93 U	0.93 U	0.96 U	0.94 U
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	1.3 U	0.93 U	0.93 U	0.96 U	0.94 U
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	1.3 U	0.93 U	0.93 U	0.96 U	0.94 U
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	0.5 U	0.37 U	0.37 U	0.38 U	0.37 U
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	20 U	20 U	20 U	20 U
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	25 U	25 U	25 U	25 U
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	25 U	25 U	25 U	25 U

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					Sample Name	GCSS 44	GCSS 46	GCSS 47	GCSS 48	GEO-01 (13-18)	GEO-05 (13-17)	GEO-07 (13-17)	GEO-09 (15-20)
					Start Depth	0	0	0	0	13	13	13	15
					End Depth	0.21	0.21	0.21	0.21	18	17	17	20
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	4/15/2005	4/15/2005	4/15/2005	4/15/2005	2/4/2010	2/4/2010	2/2/2010	2/1/2010
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	10 U	10 U	10 U	10 U
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	0.075 U	0.075 U	0.077 U	0.076 U
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	0.037 U	0.037 U	0.038 U	0.037 U
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	0.037 U	0.037 U	0.038 U	0.037 U
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	0.037 U	0.037 U	0.038 U	0.037 U
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	0.037 U	0.037 U	0.038 U	0.037 U
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	0.037 U	0.037 U	0.038 U	0.037 U
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	0.037 U	0.037 U	0.038 U	0.037 U
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	4 U	4 U	4 U	4 U
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	0.4 U	0.4 U	0.4 U	0.4 U
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	2 U	2 U	2 U	2 U
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	20 U	20 U	20 U	20 U

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

						GCSS-44	GCSS-46	GCSS-47	GCSS-48	GEO-01	GEO-05	GEO-07	GEO-09
					Location Name	**GCSS-44**	**GCSS-46**	**GCSS-47**	**GCSS-48**	**GEO-01**	**GEO-05**	**GEO-07**	**GEO-09**
					Sample Name	**GCSS 44**	**GCSS 46**	**GCSS 47**	**GCSS 48**	**GEO-01 (13-18)**	**GEO-05 (13-17)**	**GEO-07 (13-17)**	**GEO-09 (15-20)**
					Start Depth	**0**	**0**	**0**	**0**	**13**	**13**	**13**	**15**
					End Depth	**0.21**	**0.21**	**0.21**	**0.21**	**18**	**17**	**17**	**20**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**4/15/2005**	**4/15/2005**	**4/15/2005**	**4/15/2005**	**2/4/2010**	**2/4/2010**	**2/2/2010**	**2/1/2010**
					Parent Sample								
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	**mg/kg**												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	**ug/L**												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	2.5 U	2.5 U	2.5 U	2.5 U
Metals	**mg/kg**												
Hexavalent Chromium (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	**mg/kg**												
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	**6190 *E**	**2620**	**2520**	**4700**	**2560**
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	**7.5 BN**	6 U	6 U	6.92 U	6.8 U
Arsenic		7440-38-2	13	16	16	**2.2**	0.32 U	**2.5**	**6.3**	**2.89**	1 U	**1.55**	**2.11**
Barium		7440-39-3	350	400	10000	**26.8 E**	0.1 U	**20.8 E**	**67.3 E**	20 U	20 U	**56.2**	22.7 U
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	**0.24 B**	0.5 U	0.5 U	0.577 U	0.57 U
Cadmium		7440-43-9	2.5	9.3	60	**0.16 B**	0.07 U	**0.82**	**0.74 B**	0.5 U	0.5 U	0.577 U	0.57 U
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	**14300 *E**	**555**	**438**	**796**	**626**
Chromium		7440-47-3	NE	NE	NE	**6.4 ***	0.25 U	**8.5 ***	**20.6 ***	**9.91**	**6.83**	**13.2**	**10.2**
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	**6.9 B**	5 U	5 U	5.77 U	5.66 U
Copper		7440-50-8	50	270	10000	NA	NA	NA	**57.1 *E**	**4.26**	**3.95**	**6.26**	**6.38**
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	**13100 *E**	**5380**	**3930**	**7340**	**7670**
Lead		7439-92-1	63	1000	3900	**21.7 *E**	**0.31 B*E**	**61.9 *E**	**114 *E**	**2.65**	**2.06**	**7.58**	**4.02**
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	**6050 *E**	**808**	**782**	**1190**	**724**
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	**300 N*E**	**40.6**	**47.1**	**61.7**	**57.8**
Mercury		7439-97-6	0.18	2.8	5.7	**0.023 B**	**0.052**	**0.029 B**	**0.15**	0.2 U	0.2 U	0.23 U	0.23 U
Nickel		7440-02-0	30	310	10000	NA	NA	NA	**17.7**	**4.76**	**4.97**	**6.3**	**6.98**
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	**734 B**	**433**	**380**	**576**	**504**
Selenium		7782-49-2	3.9	1500	6800	0.51 U	0.5 U	0.49 U	**1**	0.5 U	0.5 U	0.577 U	0.57 U
Silver		7440-22-4	2	1500	6800	0.15 U	0.14 U	0.14 U	0.2 U	1 U	1 U	1.15 U	1.13 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	**108 B**	**28.3**	**32.5**	**39.2**	**33.8**
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	0.61 U	1 U	1 U	1.15 U	1.13 U
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	**34.2 E**	**8.37**	**6.68**	**14.1**	**9.09**
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	**392 ***	**20.8**	**16.1**	**18.9**	**14.1**
TCLP Metals	**ug/L**												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	20 U	20 U	20 U	20 U
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	**520**	**258**	**416**	**290**
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	5 U	5 U	5 U	5 U
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	**18**	10 U	10 U	10 U
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	**51**	**91**	**30**	**100**
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	20 U	20 U	20 U	20 U

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Location Name						GCSS-44	GCSS-46	GCSS-47	GCSS-48	GEO-01	GEO-05	GEO-07	GEO-09
Sample Name						GCSS 44	GCSS 46	GCSS 47	GCSS 48	GEO-01 (13-18)	GEO-05 (13-17)	GEO-07 (13-17)	GEO-09 (15-20)
Start Depth						0	0	0	0	13	13	13	15
End Depth						0.21	0.21	0.21	0.21	18	17	17	20
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						4/15/2005	4/15/2005	4/15/2005	4/15/2005	2/4/2010	2/4/2010	2/2/2010	2/1/2010
Parent Sample													
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	40 U	40 U	40 U	40 U
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	20 U	20 U	20 U	20 U
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	**0.585**	**0.238**	**0.191**	**0.443**
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	**310**	**112**	**167**	**143**
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	100 U	100 U	100 U	100 U
Total Cyanide		57-12-5	27	27	10000	NA	NA	NA	0.76 U	NA	NA	NA	NA
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	**5.8**	**6.4**	**6.8**	**6.7**
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	**60 >**	**60 >**	**60 >**	**60 >**
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**8.8**	**5.8**	**3.4**	**33.9**	**10.4**	**11.1**	**13.3**	**11.7**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	100 U	100 U	100 U	100 U
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

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Interim Site Management Plan
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Location Name						GEO-02	GEO-06	GEO-03	GEO-04	GCBSS-01	GCBSS-01	GCBSS-05	GCBSS-06
Sample Name						GEO-02 (13-17)	GEO-06 (10-11+15-19)	GEO-03 (15-20)	GEO-04 (12-17)	GCBSS01	GCBSS21	GCBSS5	GCBSS6
Start Depth						13	10	15	12	0	0	0	0
End Depth						17	19	20	17	0.17	0.17	0.17	0.17
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						2/3/2010	2/2/2010	2/3/2010	2/2/2010	5/27/2005	5/27/2005	5/27/2005	5/27/2005
Parent Sample											GCBSS01		
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO								
BTEX	mg/kg												
Benzene		71-43-2	0.06	44	89	0.011 U	**0.69**	0.056 U	0.011 U	NA	NA	NA	NA
Toluene		108-88-3	0.7	500	1000	0.011 U	**3.6 D**	**0.19**	0.011 U	NA	NA	NA	NA
Ethylbenzene		100-41-4	1	390	780	0.011 U	**13 D**	**5.7 D**	0.011 U	NA	NA	NA	NA
Total Xylene		1330-20-7	0.26	500	1000	0.011 U	**27 D**	**10 D**	0.011 U	NA	NA	NA	NA
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	ND	**44.29**	**15.89**	ND	NA	NA	NA	NA
Other VOCs	mg/kg												
Acetone		67-64-1	0.05	500	1000	**0.016**	0.058 U	0.056 U	**0.012**	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	0.011 U	**0.34**	**0.073**	0.011 U	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	0.011 U	0.058 U	0.056 U	0.011 U	NA	NA	NA	NA
TCLP VOCs	ug/L												
Benzene		71-43-2	NA	NA	NA	10 U	**15**	10 U	10 U	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	GEO-02	GEO-06	GEO-03	GEO-04	GCBSS-01	GCBSS-01	GCBSS-05	GCBSS-06
					Sample Name	GEO-02 (13-17)	GEO-06 (10-11+15-19)	GEO-03 (15-20)	GEO-04 (12-17)	GCBSS01	GCBSS21	GCBSS5	GCBSS6
					Start Depth	13	10	15	12	0	0	0	0
					End Depth	17	19	20	17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/3/2010	2/2/2010	2/3/2010	2/2/2010	5/27/2005	5/27/2005	5/27/2005	5/27/2005
					Parent Sample						GCBSS01		
Analyte	Units	CAS No.	Unrestricted SCO	Commercial SCO	Industrial SCO								
1,2-Dichloroethane		107-06-2	NA	NA	NA		10 U	10 U	10 U	10 U	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA		10 U	10 U	10 U	10 U	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA		10 U	10 U	10 U	10 U	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA		10 U	10 U	10 U	10 U	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA		10 U	10 U	10 U	10 U	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA		10 U	10 U	10 U	10 U	NA	NA	NA	NA
NYSDEC PAH17	mg/kg												
Acenaphthene		83-32-9	20	500	1000		**3.1**	**250 D**	**260 D**	**3.4**	0.38 U	0.38 U	0.37 U	0.45 U
Acenaphthylene		208-96-8	100	500	1000		**0.76**	**150 D**	**30 JD**	**1.5**	0.38 U	0.38 U	0.37 U	**0.097 J**
Anthracene		120-12-7	100	500	1000		**4.1**	**420 D**	**120 D**	**6.8 D**	0.38 U	0.38 U	0.37 U	**0.17 J**
Benzo(a)anthracene		56-55-3	1	5.6	11		**3.1**	**110 D**	**120 D**	**4.4**	**0.29 J**	**0.35 J**	**0.16 J**	**0.7**
Benzo(b)fluoranthene		205-99-2	1	5.6	11		**2.4**	**60 JD**	**87 D**	**3**	**0.34 J**	**0.39**	**0.26 J**	**0.76**
Benzo(k)fluoranthene		207-08-9	0.8	56	110		**0.81**	**30 JD**	**30 JD**	**1.1**	**0.34 J**	**0.33 J**	**0.22 J**	**0.82**
Benzo(g,h,i)perylene		191-24-2	100	500	1000		**0.49**	**20 JD**	**50 JD**	**1.2**	0.38 U	0.38 U	0.37 U	0.45 U
Benzo(a)pyrene		50-32-8	1	1	1.1		**2.6**	**80 JD**	**110 D**	**3.5**	**0.15 J**	**0.21 J**	**0.13 J**	**0.43 J**
Chrysene		218-01-9	1	56	110		**2.5**	**110 D**	**70 JD**	**4.6**	**0.36 J**	**0.41**	**0.23 J**	**0.83**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1		0.37 U	**4.3**	**5.1**	**0.37**	0.38 U	**0.087 J**	0.37 U	**0.1 J**
Fluoranthene		206-44-0	100	500	1000		**6 D**	**230 D**	**290 D**	**9.7 D**	**0.66**	**0.73**	**0.32 J**	**1.6**
Fluorene		86-73-7	30	500	1000		**4.1**	**230 D**	**150 D**	**5.5**	0.38 U	0.38 U	0.37 U	0.45 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11		**0.51**	**20 JD**	**40 JD**	**1.1**	**0.092 J**	**0.18 J**	0.37 U	**0.2 J**
2-Methylnaphthalene		91-57-6	NE	NE	NE		**0.7**	**430 D**	**230 D**	**1.4**	0.38 U	0.38 U	0.37 U	0.45 U
Naphthalene		91-20-3	12	500	1000		**1.8**	**560 D**	**630 D**	**2.6**	0.38 U	0.38 U	0.37 U	0.45 U
Phenanthrene		85-01-8	100	500	1000		**14 D**	**730 D**	**720 D**	**31 D**	**0.28 J**	**0.28 J**	**0.14 J**	**0.82**
Pyrene		129-00-0	100	500	1000		**7.8 D**	**330 D**	**390 D**	**14 D**	**0.38**	**0.46**	**0.22 J**	**1**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000		**54.77**	**3764.3**	**3332.1**	**95.17**	**2.892**	**3.427**	**1.68**	**7.527**
NYSDEC PAH17 Other SVOCs	mg/kg												
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE		0.37 U	**0.5**	0.37 U	0.37 U	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE		0.37 U	77 DU	**2.2**	0.37 U	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000		0.37 U	**20 JD**	**20 JD**	0.37 U	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE		0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GEO-02	GEO-06	GEO-03	GEO-04	GCBSS-01	GCBSS-01	GCBSS-05	GCBSS-06
					Sample Name	GEO-02 (13-17)	GEO-06 (10-11+15-19)	GEO-03 (15-20)	GEO-04 (12-17)	GCBSS01	GCBSS21	GCBSS5	GCBSS6
					Start Depth	13	10	15	12	0	0	0	0
					End Depth	17	19	20	17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/3/2010	2/2/2010	2/3/2010	2/2/2010	5/27/2005	5/27/2005	5/27/2005	5/27/2005
					Parent Sample						GCBSS01		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4-Dichlorophenol		120-83-2	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	0.92 U	0.97 U	0.94 U	0.93 U	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	0.92 U	0.97 U	0.94 U	0.93 U	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	0.92 U	0.97 U	0.94 U	0.93 U	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	0.92 U	0.97 U	0.94 U	0.93 U	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	0.92 U	0.97 U	0.94 U	0.93 U	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	0.92 U	0.97 U	0.94 U	0.93 U	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	0.92 U	0.97 U	0.94 U	0.93 U	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	0.92 U	0.97 U	0.94 U	0.93 U	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	0.37 U	0.39 U	0.37 U	0.37 U	NA	NA	NA	NA
TCLP SVOCs	ug/L												
Cresols		1319-77-3	NA	NA	NA	20 U	20 U	20 U	20 U	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	25 U	25 U	**29**	25 U	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	25 U	25 U	25 U	25 U	NA	NA	NA	NA

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Interim Site Management Plan
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Glen Cove, Nassau County, New York

					Location Name	GEO-02	GEO-06	GEO-03	GEO-04	GCBSS-01	GCBSS-01	GCBSS-05	GCBSS-06
					Sample Name	GEO-02 (13-17)	GEO-06 (10-11+15-19)	GEO-03 (15-20)	GEO-04 (12-17)	GCBSS01	GCBSS21	GCBSS5	GCBSS6
					Start Depth	13	10	15	12	0	0	0	0
					End Depth	17	19	20	17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/3/2010	2/2/2010	2/3/2010	2/2/2010	5/27/2005	5/27/2005	5/27/2005	5/27/2005
					Parent Sample						GCBSS01		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	10 U	10 U	10 U	10 U	NA	NA	NA	NA
PCB Aroclors	mg/kg												
Aroclor 1221		11104-28-2	NE	NE	NE	0.075 U	0.078 U	0.076 U	0.075 U	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	0.037 U	0.039 U	0.037 U	0.037 U	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	0.037 U	0.039 U	0.037 U	0.037 U	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	0.037 U	0.039 U	0.037 U	0.037 U	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	0.037 U	0.039 U	0.037 U	0.037 U	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	0.037 U	0.039 U	0.037 U	0.037 U	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	0.037 U	0.039 U	0.037 U	0.037 U	NA	NA	NA	NA
Pesticides	mg/kg												
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L												
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	4 U	4 U	4 U	4 U	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	0.4 U	0.4 U	0.4 U	0.4 U	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	2 U	2 U	2 U	2 U	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	20 U	20 U	20 U	20 U	NA	NA	NA	NA

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					Location Name	GEO-02	GEO-06	GEO-03	GEO-04	GCBSS-01	GCBSS-01	GCBSS-05	GCBSS-06
					Sample Name	GEO-02 (13-17)	GEO-06 (10-11+15-19)	GEO-03 (15-20)	GEO-04 (12-17)	GCBSS01	GCBSS21	GCBSS5	GCBSS6
					Start Depth	13	10	15	12	0	0	0	0
					End Depth	17	19	20	17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/3/2010	2/2/2010	2/3/2010	2/2/2010	5/27/2005	5/27/2005	5/27/2005	5/27/2005
					Parent Sample						GCBSS01		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Herbicides	mg/kg												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L												
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	5 U	5 U	5 U	5 U	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	2.5 U	2.5 U	2.5 U	2.5 U	NA	NA	NA	NA
Metals	mg/kg												
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg												
Aluminum		7429-90-5	NE	NE	NE	**2630**	**3750**	**2850**	**5120**	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	6.68 U	7 U	6.76 U	6.7 U	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**1.39**	**2.55**	1.13 U	**1.57**	**2.1**	**2.3**	**3.1**	**2.8**
Barium		7440-39-3	350	400	10000	22.3 U	**30.1**	**28.1**	**32.6**	**26**	**33**	**46.6**	**61**
Beryllium		7440-41-7	7.2	590	2700	0.557 U	0.583 U	0.564 U	0.559 U	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	0.557 U	0.583 U	0.564 U	0.559 U	**0.34 B**	**0.31 B**	**0.14 B**	**0.33 B**
Calcium		7440-70-2	NE	NE	NE	**531**	**708**	**837**	**1000**	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**12.4**	**9.01**	**7.26**	**13.1**	**6.8 ***	**8.4 ***	**12.6 ***	**9.4 ***
Cobalt		7440-48-4	NE	NE	NE	5.57 U	5.83 U	5.64 U	**5.81**	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	**13.2**	**10.6**	**6.8**	**9.24**	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	**8030**	**6720**	**5250**	**9310**	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**7.87**	**36.7**	**2.69**	**4.06**	**71.4 ***	**87.1 ***	**108 ***	**118 ***
Magnesium		7439-95-4	NE	NE	NE	**858**	**1140**	**1000**	**1730**	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	**51.4**	**75**	**64.5**	**123**	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	0.22 U	0.23 U	0.22 U	0.22 U	**0.11**	**0.12**	**0.26**	**0.19**
Nickel		7440-02-0	30	310	10000	**5.89**	**6.54**	**6.08**	**8.43**	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	**603**	**675**	**733**	**1100**	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.557 U	0.583 U	0.564 U	0.559 U	0.54 U	0.28 U	0.52 U	0.64 U
Silver		7440-22-4	2	1500	6800	1.11 U	1.17 U	1.13 U	1.12 U	0.16 U	0.046 U	0.15 U	0.19 U
Sodium		7440-23-5	NE	NE	NE	**30.2**	**38.6**	**38.1**	**45.8**	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	1.11 U	1.17 U	1.13 U	1.12 U	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	**8.86**	**10.4**	**9.27**	**16**	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	**20.1**	**44.2**	**17.5**	**24.7**	NA	NA	NA	NA
TCLP Metals	ug/L												
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	20 U	20 U	**52**	20 U	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	**396**	**690**	**514**	**527**	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	5 U	5 U	5 U	5 U	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	10 U	10 U	**18**	10 U	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	**31**	**32**	**89**	**30**	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	20 U	**91**	20 U	20 U	NA	NA	NA	NA

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					Location Name	GEO-02	GEO-06	GEO-03	GEO-04	GCBSS-01	GCBSS-01	GCBSS-05	GCBSS-06
					Sample Name	GEO-02 (13-17)	GEO-06 (10-11+15-19)	GEO-03 (15-20)	GEO-04 (12-17)	GCBSS01	GCBSS21	GCBSS5	GCBSS6
					Start Depth	13	10	15	12	0	0	0	0
					End Depth	17	19	20	17	0.17	0.17	0.17	0.17
					Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft
					Sample Date	2/3/2010	2/2/2010	2/3/2010	2/2/2010	5/27/2005	5/27/2005	5/27/2005	5/27/2005
					Parent Sample						GCBSS01		
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**								
Mercury		7439-97-6	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	40 U	40 U	40 U	40 U	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	20 U	20 U	20 U	20 U	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	**0.26**	**0.224**	**0.48**	**0.325**	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	**145**	**329**	**150**	**243**	NA	NA	NA	NA
Cyanides	mg/kg												
Cyanide Reactivity		REAC-CN	NE	NE	NE	100 U	100 U	100 U	100 U	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	NA	NA	NA	NA	NA	NA	NA	NA
Other													
Corrosivity	s.u.	CORROS	NE	NE	NE	**7.7**	**6.3**	**7.2**	**6.7**	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	**60 >**	**60 >**	**60 >**	**60 >**	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**10.2**	**14.3**	**11.3**	**10.5**	**13.3**	**13.7**	**10.4**	**27.1**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	100 U	100 U	100 U	100 U	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	0.1 U	**0.13**	0.1 U	0.1 U	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Location Name						GCBSS-07	GCBSS-08	GCBSS-09	GCBSS-10	GCBSS-11	GCBSS-12	GCBSS-13	GCBSS-14	GCBSS-15	GCBSS-16	GCBSS-17
Sample Name						GCBSS07	GCBSS08	GCBSS9	GCBSS10	GCBSS11	GCBSS12	GCBSS13	GCBSS14	GCBSS15	GCBSS16	GCBSS17
Start Depth						0	0	0	0	0	0	0	0	0	0	0
End Depth						0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005
Parent Sample																
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**											
BTEX	mg/kg															
Benzene		71-43-2	0.06	44	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene		108-88-3	0.7	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene		100-41-4	1	390	780	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene		1330-20-7	0.26	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other VOCs	mg/kg															
Acetone		67-64-1	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP VOCs	ug/L															
Benzene		71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Interim Site Management Plan
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Glen Cove, Nassau County, New York

					Location Name	**GCBSS-07**	**GCBSS-08**	**GCBSS-09**	**GCBSS-10**	**GCBSS-11**	**GCBSS-12**	**GCBSS-13**	**GCBSS-14**	**GCBSS-15**	**GCBSS-16**	**GCBSS-17**
					Sample Name	**GCBSS07**	**GCBSS08**	**GCBSS9**	**GCBSS10**	**GCBSS11**	**GCBSS12**	**GCBSS13**	**GCBSS14**	**GCBSS15**	**GCBSS16**	**GCBSS17**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**
					Parent Sample											
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**											
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg															
Acenaphthene		83-32-9	20	500	1000	0.73 U	0.49 U	0.4 U	0.54 U	0.39 U	0.41 U	0.5 U	0.43 U	0.46 U	0.55 U	0.42 U
Acenaphthylene		208-96-8	100	500	1000	0.73 U	0.49 U	0.4 U	0.54 U	0.39 U	**0.2 J**	0.5 U	**0.13 J**	**0.13 J**	0.55 U	0.42 U
Anthracene		120-12-7	100	500	1000	**0.2 J**	0.49 U	0.4 U	0.54 U	0.39 U	**0.2 J**	0.5 U	**0.12 J**	**0.14 J**	**0.19 J**	0.42 U
Benzo(a)anthracene		56-55-3	1	5.6	11	**1**	**0.39 J**	**0.15 J**	**0.44 J**	0.39 U	**1.1**	**0.39 J**	**0.35 J**	**0.68**	**0.64**	**0.17 J**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**1.8**	**0.58**	**0.28 J**	**0.42 J**	0.39 U	**1.3**	**0.6**	**0.71**	**0.68**	**1.4**	**0.16 J**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**1.4**	**0.46 J**	**0.2 J**	**0.54**	0.39 U	**1.1**	**0.47 J**	**0.58**	**0.79**	**0.94**	**0.18 J**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	0.73 U	0.49 U	0.4 U	0.54 U	0.39 U	0.41 U	0.5 U	0.43 U	0.46 U	0.55 U	0.42 U
Benzo(a)pyrene		50-32-8	1	1	1.1	**0.75**	**0.27 J**	**0.12 J**	**0.31 J**	0.39 U	**0.73**	**0.28 J**	**0.25 J**	**0.4 J**	**0.48 J**	**0.094 J**
Chrysene		218-01-9	1	56	110	**1.6**	**0.55**	**0.23 J**	**0.52 J**	0.39 U	**1.4**	**0.53**	**0.52**	**0.84**	**1.1**	**0.18 J**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	**0.21 J**	0.49 U	0.4 U	**0.11 J**	0.39 U	**0.2 J**	0.5 U	0.43 U	**0.18 J**	0.55 U	0.42 U
Fluoranthene		206-44-0	100	500	1000	**2.9**	**0.87**	**0.33 J**	**0.92**	0.39 U	**2.2**	**0.88**	**0.72**	**1.4**	**1.8**	**0.35 J**
Fluorene		86-73-7	30	500	1000	0.73 U	0.49 U	0.4 U	0.54 U	0.39 U	0.41 U	0.5 U	0.43 U	0.46 U	0.55 U	0.42 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**0.47 J**	**0.15 J**	0.4 U	**0.22 J**	0.39 U	**0.46**	**0.11 J**	**0.14 J**	**0.37 J**	**0.22 J**	0.42 U
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.73 U	0.49 U	0.4 U	0.54 U	0.39 U	0.41 U	0.5 U	0.43 U	0.46 U	0.55 U	0.42 U
Naphthalene		91-20-3	12	500	1000	0.73 U	0.49 U	0.4 U	0.54 U	0.39 U	**0.15 J**	0.5 U	0.43 U	**0.12 J**	0.55 U	0.42 U
Phenanthrene		85-01-8	100	500	1000	**1.4**	**0.42 J**	**0.14 J**	**0.4 J**	0.39 U	**1.1**	**0.39 J**	**0.27 J**	**0.7**	**0.96**	**0.14 J**
Pyrene		129-00-0	100	500	1000	**1.6**	**0.55**	**0.2 J**	**0.68**	0.39 U	**1.6**	**0.52**	**0.43**	**1**	**0.97**	**0.23 J**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**13.33**	**4.24**	**1.65**	**4.56**	ND	**11.74**	**4.17**	**4.22**	**7.43**	**8.7**	**1.504**
NYSDEC PAH17 Other SVOCs	mg/kg															
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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					Location Name	**GCBSS-07**	**GCBSS-08**	**GCBSS-09**	**GCBSS-10**	**GCBSS-11**	**GCBSS-12**	**GCBSS-13**	**GCBSS-14**	**GCBSS-15**	**GCBSS-16**	**GCBSS-17**
					Sample Name	**GCBSS07**	**GCBSS08**	**GCBSS9**	**GCBSS10**	**GCBSS11**	**GCBSS12**	**GCBSS13**	**GCBSS14**	**GCBSS15**	**GCBSS16**	**GCBSS17**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**
					Parent Sample											
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**											
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP SVOCs	ug/L															
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan

Glen Cove Former MGP Site

Glen Cove, Nassau County, New York

Location Name						GCBSS-07	GCBSS-08	GCBSS-09	GCBSS-10	GCBSS-11	GCBSS-12	GCBSS-13	GCBSS-14	GCBSS-15	GCBSS-16	GCBSS-17
Sample Name						GCBSS07	GCBSS08	GCBSS9	GCBSS10	GCBSS11	GCBSS12	GCBSS13	GCBSS14	GCBSS15	GCBSS16	GCBSS17
Start Depth						0	0	0	0	0	0	0	0	0	0	0
End Depth						0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Depth Unit						ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
Sample Date						5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005	5/27/2005
Parent Sample																
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**											
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg															
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides	mg/kg															
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Pesticides	ug/L															
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCBSS-07**	**GCBSS-08**	**GCBSS-09**	**GCBSS-10**	**GCBSS-11**	**GCBSS-12**	**GCBSS-13**	**GCBSS-14**	**GCBSS-15**	**GCBSS-16**	**GCBSS-17**
					Sample Name	**GCBSS07**	**GCBSS08**	**GCBSS9**	**GCBSS10**	**GCBSS11**	**GCBSS12**	**GCBSS13**	**GCBSS14**	**GCBSS15**	**GCBSS16**	**GCBSS17**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**
					Parent Sample											
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**											
Herbicides	mg/kg															
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Herbicides	ug/L															
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals	mg/kg															
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals	mg/kg															
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**4.7**	**3.4**	**1.4**	**2.5**	0.35 U	**3.1**	**2.1**	**7.8**	**3.4**	**6.9**	**3.3**
Barium		7440-39-3	350	400	10000	**96.5**	**66.7**	**25.7**	**41**	**21.4 B**	**48.3**	**47.7**	**40**	**60**	**49.9**	**56.9**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	**1.3**	**0.95**	**0.15 B**	**0.16 B**	**0.36 B**	**0.38 B**	**0.29 B**	**0.12 B**	**0.82**	**0.6 B**	0.083 U
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**38.7 ***	**21.4 ***	**8.6 ***	**13.5 ***	**0.85 B***	**26.5 ***	**13.7 ***	**19.1 ***	**19.5 ***	**26.5 ***	**19.4 ***
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**181 ***	**224 ***	**42.2 ***	**32.1 ***	**3.9 ***	**104 ***	**117 ***	**101 ***	**242 ***	**110 ***	**18.3 ***
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	**0.21**	**0.16**	**0.055**	**0.076**	**0.02 B**	**0.11**	**0.09**	**0.18**	**0.18**	**0.15**	**0.098**
Nickel		7440-02-0	30	310	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	1 U	0.7 U	0.57 U	**0.78 BN**	0.55 U	0.59 U	0.71 U	**0.63 BN**	**1.1 N**	0.78 U	0.59 U
Silver		7440-22-4	2	1500	6800	**0.58 B**	0.2 U	0.16 U	0.22 U	0.16 U	**0.53 B**	0.21 U	0.18 U	**0.27 B**	0.22 U	0.17 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals	ug/L															
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCBSS-07**	**GCBSS-08**	**GCBSS-09**	**GCBSS-10**	**GCBSS-11**	**GCBSS-12**	**GCBSS-13**	**GCBSS-14**	**GCBSS-15**	**GCBSS-16**	**GCBSS-17**
					Sample Name	**GCBSS07**	**GCBSS08**	**GCBSS9**	**GCBSS10**	**GCBSS11**	**GCBSS12**	**GCBSS13**	**GCBSS14**	**GCBSS15**	**GCBSS16**	**GCBSS17**
					Start Depth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
					End Depth	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**	**0.17**
					Depth Unit	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**	**ft**
					Sample Date	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**	**5/27/2005**
					Parent Sample											
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**											
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg															
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other																
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**54.5**	**33.3**	**17**	**38.5**	**14.5**	**19.9**	**34.3**	**22.8**	**27.5**	**39.6**	**21.1**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCBSS-18	GCBSS-19	GCBSS-20
					Sample Name	GCBSS18	GCBSS19	GCBSS20
					Start Depth	0	0	0
					End Depth	0.17	0.17	0.17
					Depth Unit	ft	ft	ft
					Sample Date	8/25/2005	5/27/2005	5/27/2005
					Parent Sample			
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**			
BTEX	mg/kg							
Benzene		71-43-2	0.06	44	89	NA	NA	NA
Toluene		108-88-3	0.7	500	1000	NA	NA	NA
Ethylbenzene		100-41-4	1	390	780	NA	NA	NA
Total Xylene		1330-20-7	0.26	500	1000	NA	NA	NA
Total BTEX (ND=0)		TBTEX_ND0	NE	NE	NE	NA	NA	NA
Other VOCs	mg/kg							
Acetone		67-64-1	0.05	500	1000	NA	NA	NA
Bromodichloromethane		75-27-4	NE	NE	NE	NA	NA	NA
Bromoform		75-25-2	NE	NE	NE	NA	NA	NA
Bromomethane		74-83-9	NE	NE	NE	NA	NA	NA
Carbon disulfide		75-15-0	NE	NE	NE	NA	NA	NA
Carbon tetrachloride		56-23-5	0.76	22	44	NA	NA	NA
Chlorobenzene		108-90-7	1.1	500	1000	NA	NA	NA
Chloroethane		75-00-3	NE	NE	NE	NA	NA	NA
Chloroform		67-66-3	0.37	350	700	NA	NA	NA
Chloromethane		74-87-3	NE	NE	NE	NA	NA	NA
Dibromochloromethane		124-48-1	NE	NE	NE	NA	NA	NA
1,1-Dichloroethane		75-34-3	0.27	240	480	NA	NA	NA
1,2-Dichloroethane		107-06-2	0.02	30	60	NA	NA	NA
1,1-Dichloroethene		75-35-4	0.33	500	1000	NA	NA	NA
Total 1,2-Dichloroethene		540-59-0	NE	NE	NE	NA	NA	NA
1,2-Dichloropropane		78-87-5	NE	NE	NE	NA	NA	NA
cis-1,3-Dichloropropene		10061-01-5	NE	NE	NE	NA	NA	NA
trans-1,3-Dichloropropene		10061-02-6	NE	NE	NE	NA	NA	NA
2-Hexanone		591-78-6	NE	NE	NE	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	0.12	500	1000	NA	NA	NA
Methyl tert-butyl ether (MTBE)		1634-04-4	0.93	500	1000	NA	NA	NA
4-Methyl-2-pentanone (MIBK)		108-10-1	NE	NE	NE	NA	NA	NA
Methylene chloride		75-09-2	0.05	500	1000	NA	NA	NA
Styrene		100-42-5	NE	NE	NE	NA	NA	NA
1,1,2,2-Tetrachloroethane		79-34-5	NE	NE	NE	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	1.3	150	300	NA	NA	NA
1,1,1-Trichloroethane (TCA)		71-55-6	0.68	500	1000	NA	NA	NA
1,1,2-Trichloroethane		79-00-5	NE	NE	NE	NA	NA	NA
Trichloroethene (TCE)		79-01-6	0.47	200	400	NA	NA	NA
Vinyl chloride		75-01-4	0.02	13	27	NA	NA	NA
TCLP VOCs	ug/L							
Benzene		71-43-2	NA	NA	NA	NA	NA	NA
Carbon tetrachloride		56-23-5	NA	NA	NA	NA	NA	NA
Chlorobenzene		108-90-7	NA	NA	NA	NA	NA	NA
Chloroform		67-66-3	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCBSS-18**	**GCBSS-19**	**GCBSS-20**
					Sample Name	**GCBSS18**	**GCBSS19**	**GCBSS20**
					Start Depth	**0**	**0**	**0**
					End Depth	**0.17**	**0.17**	**0.17**
					Depth Unit	**ft**	**ft**	**ft**
					Sample Date	**8/25/2005**	**5/27/2005**	**5/27/2005**
					Parent Sample			
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**			
1,2-Dichloroethane		107-06-2	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene		75-35-4	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)		78-93-3	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)		127-18-4	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)		79-01-6	NA	NA	NA	NA	NA	NA
Vinyl chloride		75-01-4	NA	NA	NA	NA	NA	NA
NYSDEC PAH17	mg/kg							
Acenaphthene		83-32-9	20	500	1000	0.33 U	0.35 U	0.44 U
Acenaphthylene		208-96-8	100	500	1000	0.33 U	0.35 U	0.44 U
Anthracene		120-12-7	100	500	1000	0.33 U	**0.11 J**	**0.1 J**
Benzo(a)anthracene		56-55-3	1	5.6	11	**0.23 J**	**0.5**	**0.67**
Benzo(b)fluoranthene		205-99-2	1	5.6	11	**0.32 J**	**0.53**	**0.86**
Benzo(k)fluoranthene		207-08-9	0.8	56	110	**0.16 J**	**0.42**	**0.74**
Benzo(g,h,i)perylene		191-24-2	100	500	1000	**0.16 J**	0.35 U	0.44 U
Benzo(a)pyrene		50-32-8	1	1	1.1	**0.25 J**	**0.29 J**	**0.5**
Chrysene		218-01-9	1	56	110	**0.3 J**	**0.53**	**0.86**
Dibenz(a,h)anthracene		53-70-3	0.33	0.56	1.1	0.33 U	**0.076 J**	**0.19 J**
Fluoranthene		206-44-0	100	500	1000	**0.47**	**0.93**	**1.4**
Fluorene		86-73-7	30	500	1000	0.33 U	0.35 U	0.44 U
Indeno(1,2,3-cd)pyrene		193-39-5	0.5	5.6	11	**0.16 J**	**0.13 J**	**0.42 J**
2-Methylnaphthalene		91-57-6	NE	NE	NE	0.33 U	0.35 U	0.44 U
Naphthalene		91-20-3	12	500	1000	0.33 U	0.35 U	0.44 U
Phenanthrene		85-01-8	100	500	1000	**0.22 J**	**0.46**	**0.62**
Pyrene		129-00-0	100	500	1000	**0.42**	**0.64**	**0.99**
Total PAH (17) (ND=0)		TPAH17_ND0	NE	500	1000	**2.69**	**4.616**	**7.35**
NYSDEC PAH17 Other SVOCs	mg/kg							
Bis(2-chloroethoxy)methane		111-91-1	NE	NE	NE	NA	NA	NA
Bis(2-chloroethyl)ether		111-44-4	NE	NE	NE	NA	NA	NA
Bis(chloroisopropyl)ether		108-60-1	NE	NE	NE	NA	NA	NA
Bis(2-ethylhexyl)phthalate		117-81-7	NE	NE	NE	NA	NA	NA
4-Bromophenyl phenyl ether		101-55-3	NE	NE	NE	NA	NA	NA
Butyl benzyl phthalate		85-68-7	NE	NE	NE	NA	NA	NA
Carbazole		86-74-8	NE	NE	NE	NA	NA	NA
4-Chloro-3-methylphenol		59-50-7	NE	NE	NE	NA	NA	NA
4-Chloroaniline		106-47-8	NE	NE	NE	NA	NA	NA
2-Chloronaphthalene		91-58-7	NE	NE	NE	NA	NA	NA
2-Chlorophenol		95-57-8	NE	NE	NE	NA	NA	NA
4-Chlorophenyl phenyl ether		7005-72-3	NE	NE	NE	NA	NA	NA
Dibenzofuran		132-64-9	7	350	1000	NA	NA	NA
1,2-Dichlorobenzene		95-50-1	1.1	500	1000	NA	NA	NA
1,3-Dichlorobenzene		541-73-1	2.4	280	560	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	1.8	130	250	NA	NA	NA
3,3-Dichlorobenzidine		91-94-1	NE	NE	NE	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCBSS-18	GCBSS-19	GCBSS-20
					Sample Name	GCBSS18	GCBSS19	GCBSS20
					Start Depth	0	0	0
					End Depth	0.17	0.17	0.17
					Depth Unit	ft	ft	ft
					Sample Date	8/25/2005	5/27/2005	5/27/2005
					Parent Sample			
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**			
2,4-Dichlorophenol		120-83-2	NE	NE	NE	NA	NA	NA
Diethyl phthalate		84-66-2	NE	NE	NE	NA	NA	NA
Dimethyl phthalate		131-11-3	NE	NE	NE	NA	NA	NA
2,4-Dimethylphenol		105-67-9	NE	NE	NE	NA	NA	NA
Di-n-butyl phthalate		84-74-2	NE	NE	NE	NA	NA	NA
4,6-Dinitro-2-methylphenol		534-52-1	NE	NE	NE	NA	NA	NA
2,4-Dinitrophenol		51-28-5	NE	NE	NE	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NE	NE	NE	NA	NA	NA
2,6-Dinitrotoluene		606-20-2	NE	NE	NE	NA	NA	NA
Di-n-octyl phthalate		117-84-0	NE	NE	NE	NA	NA	NA
Hexachlorobenzene		118-74-1	0.33	6	12	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NE	NE	NE	NA	NA	NA
Hexachlorocyclopentadiene		77-47-4	NE	NE	NE	NA	NA	NA
Hexachloroethane		67-72-1	NE	NE	NE	NA	NA	NA
Isophorone		78-59-1	NE	NE	NE	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	0.33	500	1000	NA	NA	NA
4-Methylphenol (p-Cresol)		106-44-5	0.33	500	1000	NA	NA	NA
2-Nitroaniline		88-74-4	NE	NE	NE	NA	NA	NA
3-Nitroaniline		99-09-2	NE	NE	NE	NA	NA	NA
4-Nitroaniline		100-01-6	NE	NE	NE	NA	NA	NA
Nitrobenzene		98-95-3	NE	NE	NE	NA	NA	NA
2-Nitrophenol		88-75-5	NE	NE	NE	NA	NA	NA
4-Nitrophenol		100-02-7	NE	NE	NE	NA	NA	NA
N-Nitrosodiphenylamine (NDFA)		86-30-6	NE	NE	NE	NA	NA	NA
N-Nitrosodi-n-propylamine (NDPA)		621-64-7	NE	NE	NE	NA	NA	NA
Pentachlorophenol		87-86-5	0.8	6.7	55	NA	NA	NA
Phenol		108-95-2	0.33	500	1000	NA	NA	NA
1,2,4-Trichlorobenzene		120-82-1	NE	NE	NE	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NE	NE	NE	NA	NA	NA
2,4,6-Trichlorophenol		88-06-2	NE	NE	NE	NA	NA	NA
TCLP SVOCs	ug/L							
Cresols		1319-77-3	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		106-46-7	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		121-14-2	NA	NA	NA	NA	NA	NA
Hexachlorobenzene		118-74-1	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene (C-46)		87-68-3	NA	NA	NA	NA	NA	NA
Hexachloroethane		67-72-1	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)		95-48-7	NA	NA	NA	NA	NA	NA
3,4-Methylphenol (m,p-Cresol)		108394/106445	NA	NA	NA	NA	NA	NA
Nitrobenzene		98-95-3	NA	NA	NA	NA	NA	NA
Pentachlorophenol		87-86-5	NA	NA	NA	NA	NA	NA
Pyridine		110-86-1	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		95-95-4	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCBSS-18	GCBSS-19	GCBSS-20
					Sample Name	GCBSS18	GCBSS19	GCBSS20
					Start Depth	0	0	0
					End Depth	0.17	0.17	0.17
					Depth Unit	ft	ft	ft
					Sample Date	8/25/2005	5/27/2005	5/27/2005
					Parent Sample			
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**			
2,4,6-Trichlorophenol		88-06-2	NA	NA	NA	NA	NA	NA
PCB Aroclors	mg/kg							
Aroclor 1221		11104-28-2	NE	NE	NE	NA	NA	NA
Aroclor 1232		11141-16-5	NE	NE	NE	NA	NA	NA
Aroclor 1242		53469-21-9	NE	NE	NE	NA	NA	NA
Aroclor 1016		12674-11-2	NE	NE	NE	NA	NA	NA
Aroclor 1248		12672-29-6	NE	NE	NE	NA	NA	NA
Aroclor 1254		11097-69-1	NE	NE	NE	NA	NA	NA
Aroclor 1260		11096-82-5	NE	NE	NE	NA	NA	NA
Pesticides	mg/kg							
Aldrin		309-00-2	0.005	0.68	1.4	NA	NA	NA
alpha-BHC (Hexachlorocyclohexane)		319-84-6	0.02	3.4	6.8	NA	NA	NA
beta-BHC (beta-Hexachlorocyclohexane)		319-85-7	0.036	3	14	NA	NA	NA
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	0.1	9.2	23	NA	NA	NA
delta-BHC (delta-Hexachlorocyclohexane)		319-86-8	0.04	500	1000	NA	NA	NA
alpha-chlordane		5103-71-9	0.094	24	47	NA	NA	NA
gamma-Chlordane		5103-74-2	NE	NE	NE	NA	NA	NA
4,4'-DDT (p,p'-DDT)		50-29-3	0.0033	47	94	NA	NA	NA
4,4'-DDE (p,p'-DDE)		72-55-9	0.0033	62	120	NA	NA	NA
4,4-DDD (p,p-DDD)		72-54-8	0.0033	92	180	NA	NA	NA
Dieldrin		60-57-1	0.005	1.4	2.8	NA	NA	NA
alpha-Endosulfan (I)		959-98-8	2.4	200	920	NA	NA	NA
beta-Endosulfan (II)		33213-65-9	2.4	200	920	NA	NA	NA
Endosulfan sulfate		1031-07-8	2.4	200	920	NA	NA	NA
Endrin		72-20-8	0.014	89	410	NA	NA	NA
Endrin aldehyde		7421-93-4	NE	NE	NE	NA	NA	NA
Endrin ketone		53494-70-5	NE	NE	NE	NA	NA	NA
Heptachlor		76-44-8	0.042	15	29	NA	NA	NA
Heptachlor epoxide		1024-57-3	NE	NE	NE	NA	NA	NA
Methoxychlor		72-43-5	NE	NE	NE	NA	NA	NA
Toxaphene		8001-35-2	NE	NE	NE	NA	NA	NA
TCLP Pesticides	ug/L							
gamma-BHC (gamma-Hexachlorocyclohexane) (Lindane)		58-89-9	NA	NA	NA	NA	NA	NA
Chlordane (Alpha & Gamma)		57-74-9	NA	NA	NA	NA	NA	NA
alpha-Chlordane		5103-71-9	NA	NA	NA	NA	NA	NA
gamma-Chlordane		5103-74-2	NA	NA	NA	NA	NA	NA
Endrin		72-20-8	NA	NA	NA	NA	NA	NA
Heptachlor		76-44-8	NA	NA	NA	NA	NA	NA
Heptachlor epoxide		1024-57-3	NA	NA	NA	NA	NA	NA
Methoxychlor		72-43-5	NA	NA	NA	NA	NA	NA
Toxaphene		8001-35-2	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	GCBSS-18	GCBSS-19	GCBSS-20
					Sample Name	GCBSS18	GCBSS19	GCBSS20
					Start Depth	0	0	0
					End Depth	0.17	0.17	0.17
					Depth Unit	ft	ft	ft
					Sample Date	8/25/2005	5/27/2005	5/27/2005
					Parent Sample			
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**			
Herbicides	mg/kg							
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NE	NE	NE	NA	NA	NA
Dicamba		1918-00-9	NE	NE	NE	NA	NA	NA
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)		93-76-5	NE	NE	NE	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	3.8	500	1000	NA	NA	NA
TCLP Herbicides	ug/L							
2,4-D (2,4-Dichlorophenoxyacetic acid)		94-75-7	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)		93-72-1	NA	NA	NA	NA	NA	NA
Metals	mg/kg							
Hexavalent Chromuim (Cr VI)		18540-29-9	1	400	800	NA	NA	NA
Total Metals	mg/kg							
Aluminum		7429-90-5	NE	NE	NE	NA	NA	NA
Antimony		7440-36-0	NE	NE	NE	NA	NA	NA
Arsenic		7440-38-2	13	16	16	**7.6**	**5.2**	**9.8**
Barium		7440-39-3	350	400	10000	**233**	**30.9**	**103**
Beryllium		7440-41-7	7.2	590	2700	NA	NA	NA
Cadmium		7440-43-9	2.5	9.3	60	**0.48 B**	**0.32 B**	**0.88**
Calcium		7440-70-2	NE	NE	NE	NA	NA	NA
Chromium		7440-47-3	NE	NE	NE	**13.9 *E**	**8.2 ***	**14.2 ***
Cobalt		7440-48-4	NE	NE	NE	NA	NA	NA
Copper		7440-50-8	50	270	10000	NA	NA	NA
Iron		7439-89-6	NE	NE	NE	NA	NA	NA
Lead		7439-92-1	63	1000	3900	**84 ***	**86.2 ***	**214 ***
Magnesium		7439-95-4	NE	NE	NE	NA	NA	NA
Manganese		7439-96-5	1600	10000	10000	NA	NA	NA
Mercury		7439-97-6	0.18	2.8	5.7	**0.082**	**0.071**	**0.33**
Nickel		7440-02-0	30	310	10000	NA	NA	NA
Potassium		7440-09-7	NE	NE	NE	NA	NA	NA
Selenium		7782-49-2	3.9	1500	6800	0.54 U	0.5 U	0.63 U
Silver		7440-22-4	2	1500	6800	0.36 U	0.15 U	0.18 U
Sodium		7440-23-5	NE	NE	NE	NA	NA	NA
Thallium		7440-28-0	NE	NE	NE	NA	NA	NA
Vanadium		7440-62-2	NE	NE	NE	NA	NA	NA
Zinc		7440-66-6	109	10000	10000	NA	NA	NA
TCLP Metals	ug/L							
Antimony		7440-36-0	NA	NA	NA	NA	NA	NA
Arsenic		7440-38-2	NA	NA	NA	NA	NA	NA
Barium		7440-39-3	NA	NA	NA	NA	NA	NA
Beryllium		7440-41-7	NA	NA	NA	NA	NA	NA
Cadmium		7440-43-9	NA	NA	NA	NA	NA	NA
Chromium		7440-47-3	NA	NA	NA	NA	NA	NA
Copper		7440-50-8	NA	NA	NA	NA	NA	NA
Lead		7439-92-1	NA	NA	NA	NA	NA	NA

Table 1. Summary of Remaining Soil Impacts

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

					Location Name	**GCBSS-18**	**GCBSS-19**	**GCBSS-20**
					Sample Name	**GCBSS18**	**GCBSS19**	**GCBSS20**
					Start Depth	**0**	**0**	**0**
					End Depth	**0.17**	**0.17**	**0.17**
					Depth Unit	**ft**	**ft**	**ft**
					Sample Date	**8/25/2005**	**5/27/2005**	**5/27/2005**
					Parent Sample			
Analyte	**Units**	**CAS No.**	**Unrestricted SCO**	**Commercial SCO**	**Industrial SCO**			
Mercury		7439-97-6	NA	NA	NA	NA	NA	NA
Nickel		7440-02-0	NA	NA	NA	NA	NA	NA
Selenium		7782-49-2	NA	NA	NA	NA	NA	NA
Silver		7440-22-4	NA	NA	NA	NA	NA	NA
Thallium		7440-28-0	NA	NA	NA	NA	NA	NA
Zinc		7440-66-6	NA	NA	NA	NA	NA	NA
Cyanides	mg/kg							
Cyanide Reactivity		REAC-CN	NE	NE	NE	NA	NA	NA
Total Cyanide		57-12-5	27	27	10000	NA	NA	NA
Other								
Corrosivity	s.u.	CORROS	NE	NE	NE	NA	NA	NA
Flash Point	deg c	FP	NE	NE	NE	NA	NA	NA
Gasoline Range Organics	mg/kg	GRO	NE	NE	NE	NA	NA	NA
Ignitibility	deg c	IGNIT	NE	NE	NE	NA	NA	NA
Percent Moisture	%	MOIST	NE	NE	NE	**0.2**	**7**	**25.6**
Sulfide Reactivity	mg/kg	REAC-HS	NE	NE	NE	NA	NA	NA
Sulfur	%	7704-34-9	NE	NE	NE	NA	NA	NA
Sulfur	mg/kg	7704-34-9	NE	NE	NE	NA	NA	NA
Total Organic Halides	mg/kg	TOX	NE	NE	NE	NA	NA	NA
Total NJ-EPH	mg/kg	TNJ-EPH	NE	NE	NE	NA	NA	NA
Total Petroleum Hydrocarbons	mg/kg	TPH	NE	NE	NE	NA	NA	NA

Table 2. Matrix of Responsibility by National Grid, Property Owner, and Governing Agency

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

	Responsible Party			Action		
Trigger	**National Grid**	**Property Owner (Long Island Power Authority)**	**NYSDEC**	**National Grid□**	**Property Owner (Long Island Power Authority)**	**NYSDEC**
Access Agreement (AA)	✓	✓		AA will be executed between the Property Owner and National Grid for periodic monitoring and inspections.	AA will be executed between the Property Owner and National Grid for periodic monitoring and inspections.	
Annual Inspection and Certification	✓	✓	✓	Annual inspection and certification will be conducted by a Qualified Environmental Professional on behalf of National Grid to confirm that all Institutional and Engineering Controls are in place and effective. National Grid will submit the annual certification to NYSDEC.	Property Owner to allow access to National Grid for annual inspection and certification.	Acknowledge receipt of Annual Certification.
Periodic Groundwater Monitoring	✓	✓		National Grid will complete periodic groundwater monitoring. Data from these monitoring activities will be provided to the NYSDEC in the Periodic Review Reports.	Property Owner to allow access to National Grid for periodic groundwater monitoring.	
Periodic Review Reports	✓		✓	Periodic Review report will be generated by National Grid. National Grid will submit report to NYSDEC.		Review and comment
Emergency Response	✓	✓	✓	National Grid will review emergency activities, conduct maintenance or repair (if necessary) inspect the Site within 5 days of the emergency, and submit update to NYSDEC with Annual Certification. If emergency response is on-going National Grid will provide written update to NYSDEC in 45 days.	Property Owner has to provide details of emergency work on the Site to National Grid within 48 hours of emergency.	Acknowledge receipt of information on emergency response.
Deed Restriction (DR)	✓	✓	✓	National Grid will prepare DR and coordinate approval from Property Owner and the NYSDEC.	DR will be executed between Property Owner and the NYSDEC.	DR will be executed between Property Owner and the NYSDEC.
Future Property Development	✓	✓	✓	National Grid to notify NYSDEC within 60 days and confer to decide if oversight is required. If new building, decision on indoor air sampling and a soil vapor intrusion assessment. Following development, National Grid to update SMP and submit to NYSDEC with Annual Certification.	Property Owner has to provide at a minimum 60 days notice to National Grid and NYSDEC if property use change is of their doing.	Review and comment.
Ground Intrusive Work	✓	✓	✓	National Grid will notify NYSDEC of proposed intrusive work within 30 days of start of work. National Grid to review and decide if oversight is required. All ground intrusive activities must follow SMP and EWP procedures.	Property Owner has to provide a minimum 45-business days notice to National Grid. All ground intrusive activities must follow SMP and EWP procedures.	Review and comment.

Table 2. Matrix of Responsibility by National Grid, Property Owner, and Governing Agency
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

	Responsible Party			Action		
Trigger	**National Grid**	**Property Owner (Long Island Power Authority)**	**NYSDEC**	**National Grid**	**Property Owner (Long Island Power Authority)**	**NYSDEC**
Groundwater Use		✓			Groundwater use at the site is restricted, and any use is prohibited without prior approval from NYSDEC, NYSDOH, and Nassau County DOH.	
HASP Development	✓	✓	✓	National Grid develops HASP for any intrusive work (inclusive of property owner's subcontractor work).	Property Owner's subcontractors must develop a HASP for any intrusive work and coordinate with National Grid.	Review and comment on National Grid HASP.
Interviews	✓	✓		National Grid to discuss annually with Property Owner and included in Annual Certification.	Discuss annually during inspections with National Grid any completed activity and upcoming activities on the property.	
Property Ownership/Lease Status Change	✓	✓	✓	Review and comment.	Property Owner has to provide at a minimum 60 days notice to National Grid and NYSDEC of proposed change. Property Owner to provide contact information for new owner within 15 days of the transfer of all or part of the site.	Review and comment.
Property Use Change	✓	✓	✓	National Grid to notify NYSDEC within 45 days and review and confer with NYSDEC if SMP revision and/or additional ECs/ICs are required. Following use change, National Grid to update SMP and submit to NYSDEC with Annual Certification.	Property Owner has to provide at a minimum 60 days notice to National Grid and NYSDEC if property use change is of their doing.	Review and comment.
SMP Implementation		✓	✓		The NYSDEC recommends the Property Owner to implement the ISMP for any ground intrusive work that will disturb the cover system.	Review and amend, as necessary.

Table 3. Emergency Contact Numbers
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Emergency Service	**Contact Number**
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

Note:

Contact numbers subject to change and should be updated as necessary.

Table 4. Notification Contact Information
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Contact Name	Contact Number
National Grid Site Investigation and Remediation	
Theodore Leissing	516-545-2563 (office) 917-734-3244 (cell)
Sarah Aldridge	516-545-2568 (office) 860-334-0554 (cell)
Melissa Reindl	516-545-3551 (office) 860-779-8035 (cell)
NYSDEC Site Manager	
R. Scott Deyette	518-402-9662
NYSDOH Site Manager	
Ian Ushe	(518) 402-7880 800 458-1158, ext. 27890

Note:

Contact numbers subject to change and should be updated as necessary.

Table 5. Monitoring/Inspection Schedule
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Monitoring Program	Frequency	Matrix	Analysis	Notes
Phase I	Semi-Annual	Groundwater	VOCs SVOCs	Groundwater will be sampled on a semi-annual basis following completion of Phase I (Excavation).
	Semi-Annual	DNAPL	NA	
Phase II	Semi-Annual	Groundwater	VOCs SVOCs DO	Groundwater will be sampled on a quarterly basis following completion of Phase II (System Installation).
	Semi-Annual	DNAPL	NA	
Engineering Controls	Annual	Cover System	NA	Inspected on an annual basis to ensure no changes to site use, cover system, or potential exposure scenarios
	Monthy	Groundwater Treatment System	NA	Following installation, system will be checked on a monthly basis.
	As Required Following Emergency Event (i.e. storm, flood)	Cover System, Groundwater Treatment System	NA	Inspections will be conducted following emergency events.

Note:

1. The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH.
2. Phase II Groundwater Analytical requirements are included in Table 6 for each monitoring well.

Table 6. Groundwater Sampling Schedule
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Monitoring Well	Screen Interval (feet below ground surface)	Property	Sampling Frequency	Sample Parameters
PZ-05	8-18	LIPA	Quarterly	VOCs & SVOCs
PZ-06	7-17	LIPA	Quarterly	VOCs & SVOCs
GCMW-08S	26-36	Private Property	Quarterly	VOCs & SVOCs
GCMW-08D	60-70	Private Property	Quarterly	VOCs & SVOCs
GCMW-09S-R	6-16	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-09I-R	24-34	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-10S-R	15-20	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-10I-R	20-30	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-11S	8-20	LIPA	Quarterly	VOCs & SVOCs
GCMW-11I	23-28	LIPA	Quarterly	VOCs & SVOCs
GCMW-12S	14-24	LIPA	Quarterly	VOCs & SVOCs
GCMW-13S	12-22	LIPA	Quarterly	VOCs & SVOCs
GCMW-13I	25-30	LIPA	Quarterly	VOCs & SVOCs
GCMW-14S-R	10-20	LIPA	Quarterly	VOCs & SVOCs
GCMW-14I-R	23-28	LIPA	Quarterly	VOCs & SVOCs
GCMW-15	6-16	Rt 107 ROW	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-16	6-16	Rt 107 ROW	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-20S	9-19	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-20I	35-45	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-20I2	45-55	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-21I	25-35	Private Property	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-21I2	45-55	Private Property	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-22I	27-37	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCMW-22I2	47-57	LIPA	Quarterly	VOCs & SVOCs, Delineation Parameters
GCRW-01	15-25	LIPA	Quarterly	VOCs & SVOCs if No DNAPL in Well
GCRW-02	15-25	LIPA	Quarterly	VOCs & SVOCs if No DNAPL in Well
GCRW-03	15-25	LIPA	Quarterly	VOCs & SVOCs if No DNAPL in Well

Notes:
LIPA - Long Island Power Authority
VOCs - Volatile Organic Componds via EPA Method 8260
SVOCs - Semivolatile Organic Compunds via EPA Method 8270
Delineation Parameters include Total Cyanide, Metals, and Polychlorinated Biphenyls (PCBs).
DNAPL - Dense Non Aqueous Phase Liquid
ROW - Right-of-Way

Table 7. Schedule of Monitoring/Inspection Reports

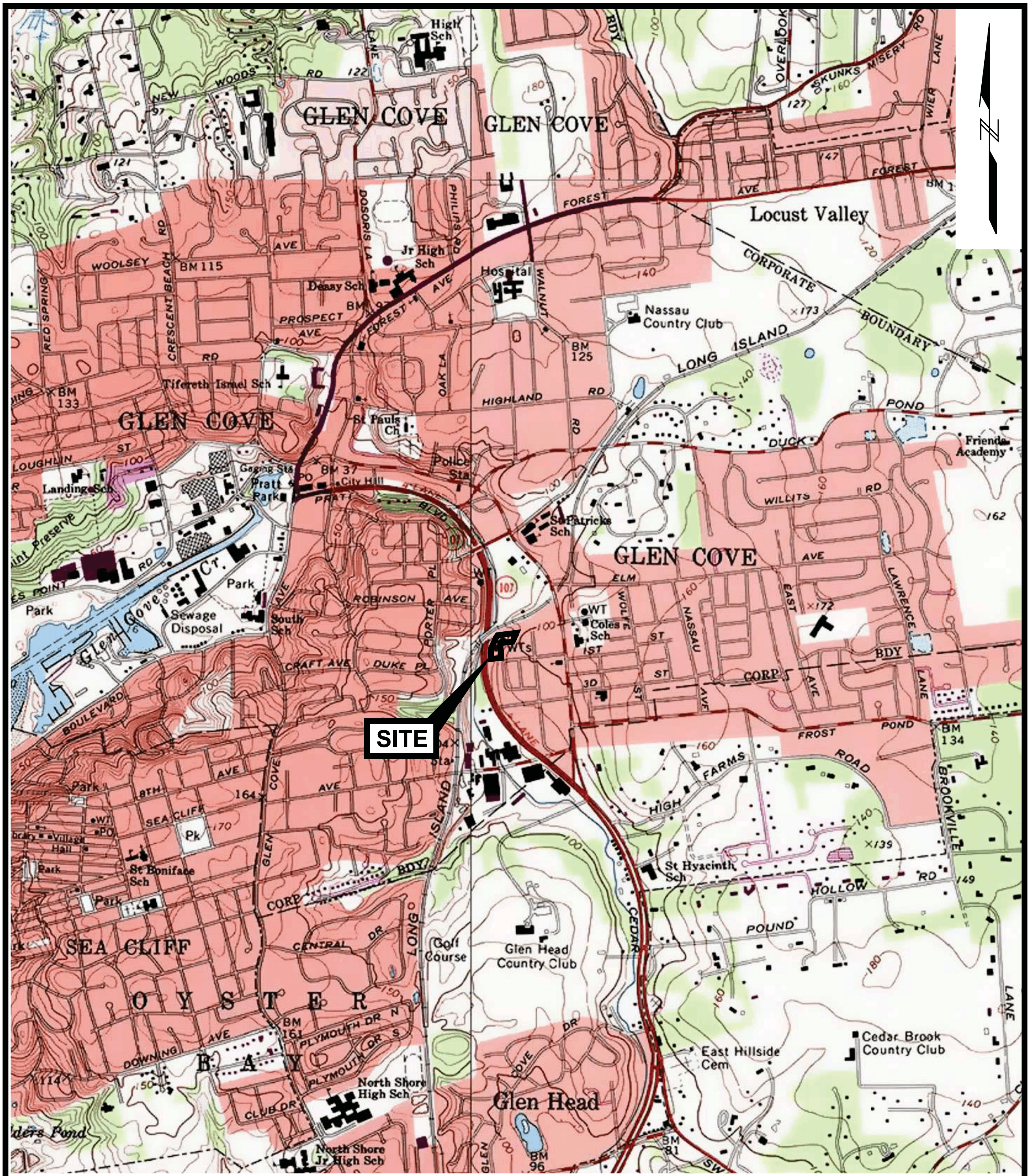
Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York

Monitoring Program	Report Title	Reporting Frequency	Notes
Phase I	Semi-Annual Groundwater Monitoring Report	Semi-Annual	Reports will be provided on a semi-annual basis after each round of sampling following completion of Phase I.
Phase II	Pre-Design Investigation Monitoring Results	Once	Groundwater results collected following installation of new wells will be included in the Final Phase II RAWP.
Phase II	Operations, Maintenance & Monitoring (OM&M) Report	Annually	OM&M Report will be submitted annually
Phase II	Quarterly Groundwater Results	Quarterly	Groundwater analytical results will be submitted quarterly to the NYSDEC. A summary of the full year will be included in the annual OM&M reports.
Phase II	Periodic Review Report	Annually	First report will be submitted 18 months after Final Engineering Report approval.

Note:

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

Figures



~~SOURCE~~: MAP CREATED WITH TOPO!™ ©2000 WILDFLOWER PRODUCTIONS (www.topo.com)

0 2000 4000
SCALE, FEET

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Glen Cove Former MGP Site
Glen Cove, New York

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SITE LOCATION MAP

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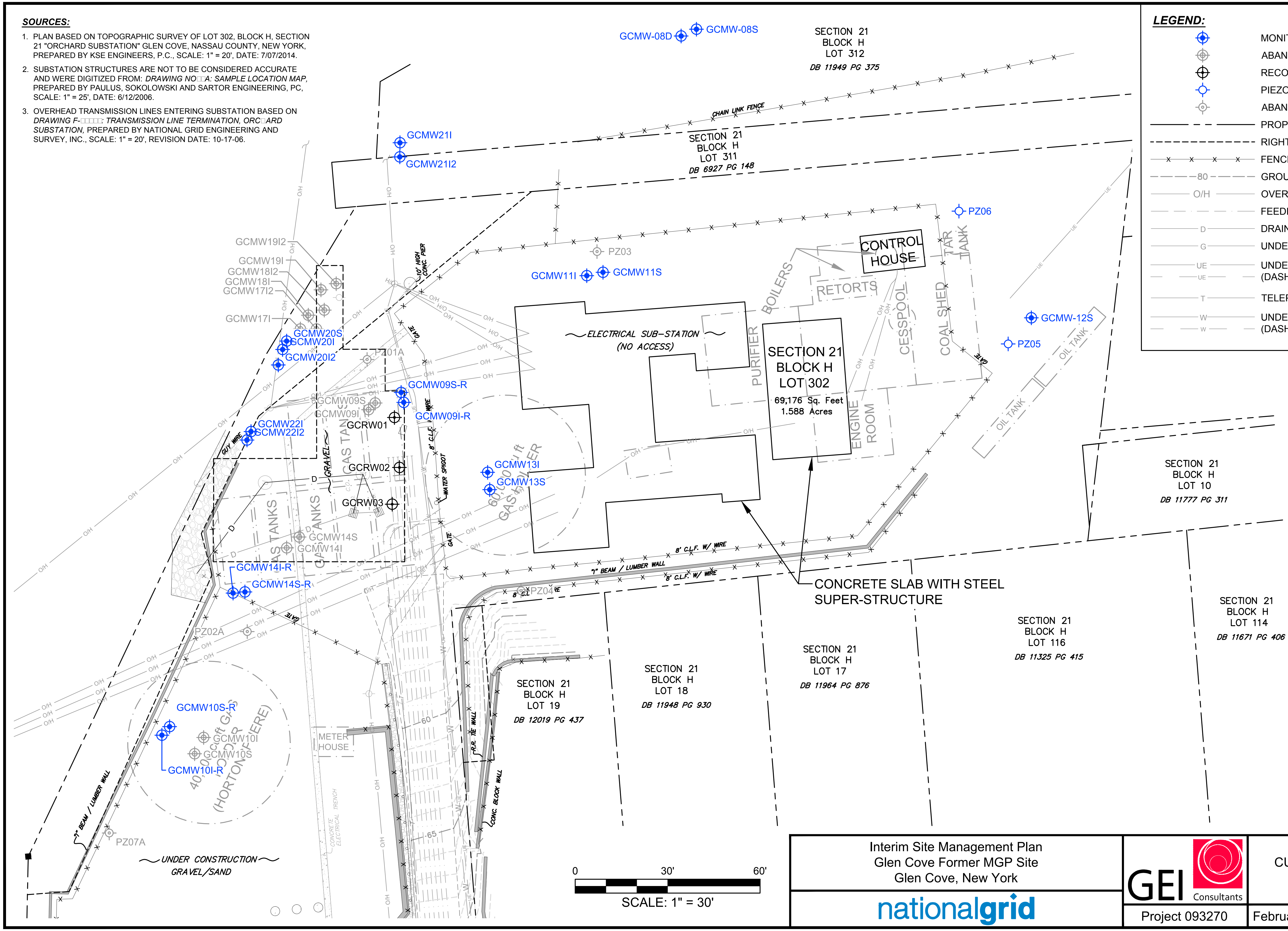
Fig. 1

I:\Project\National Grid\GLEN COVE\Interim Site Management Plan\Glen-SLM and HRM.cdr

SOURCES:

1. PLAN BASED ON TOPOGRAPHIC SURVEY OF LOT 302, BLOCK H, SECTION 21 "ORCHARD SUBSTATION" GLEN COVE, NASSAU COUNTY, NEW YORK, PREPARED BY KSE ENGINEERS, P.C., SCALE: 1" = 20', DATE: 7/07/2014.
2. SUBSTATION STRUCTURES ARE NOT TO BE CONSIDERED ACCURATE AND WERE DIGITIZED FROM: *DRAWING NO□□A: SAMPLE LOCATION MAP,* PREPARED BY PAULUS, SOKOLOWSKI AND SARTOR ENGINEERING, PC, SCALE: 1" = 25', DATE: 6/12/2006.
3. OVERHEAD TRANSMISSION LINES ENTERING SUBSTATION BASED ON *DRAWING F-□□□□□: TRANSMISSION LINE TERMINATION, ORC□ARD SUBSTATION,* PREPARED BY NATIONAL GRID ENGINEERING AND SURVEY, INC., SCALE: 1" = 20', REVISION DATE: 10-17-06.



LEGEND:

⊕	MONITORING WELL
⊕	ABANDONED MONITORING WELL
⊕	RECOVERY WELL
⊙	PIEZOMETER
⊙	ABANDONED PIEZOMETER
——— — — ———	PROPERTY BOUNDARY
- - - - - - - -	RIGHT-OF-WAY
—×—×—×—×—	FENCE
— — —80— — —	GROUND SURFACE CONTOUR
———O/H———	OVERHEAD TRANSMISSION WIRE
— · — · — · —	FEEDER CABLES
———D———	DRAINAGE PIPE
———G———	UNDERGROUND GAS LINE
———UE——— — — —UE— — —	UNDERGROUND ELECTRIC LINE (DASHED WHERE ASSUMED)
———T———	TELEPHONE LINE
———W——— — — —W— — —	UNDERGROUND WATER LINE (DASHED WHERE ASSUMED)

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Glen Cove Former MGP Site
Glen Cove, New York

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CURRENT AND HISTORIC
SITE CONDITIONS

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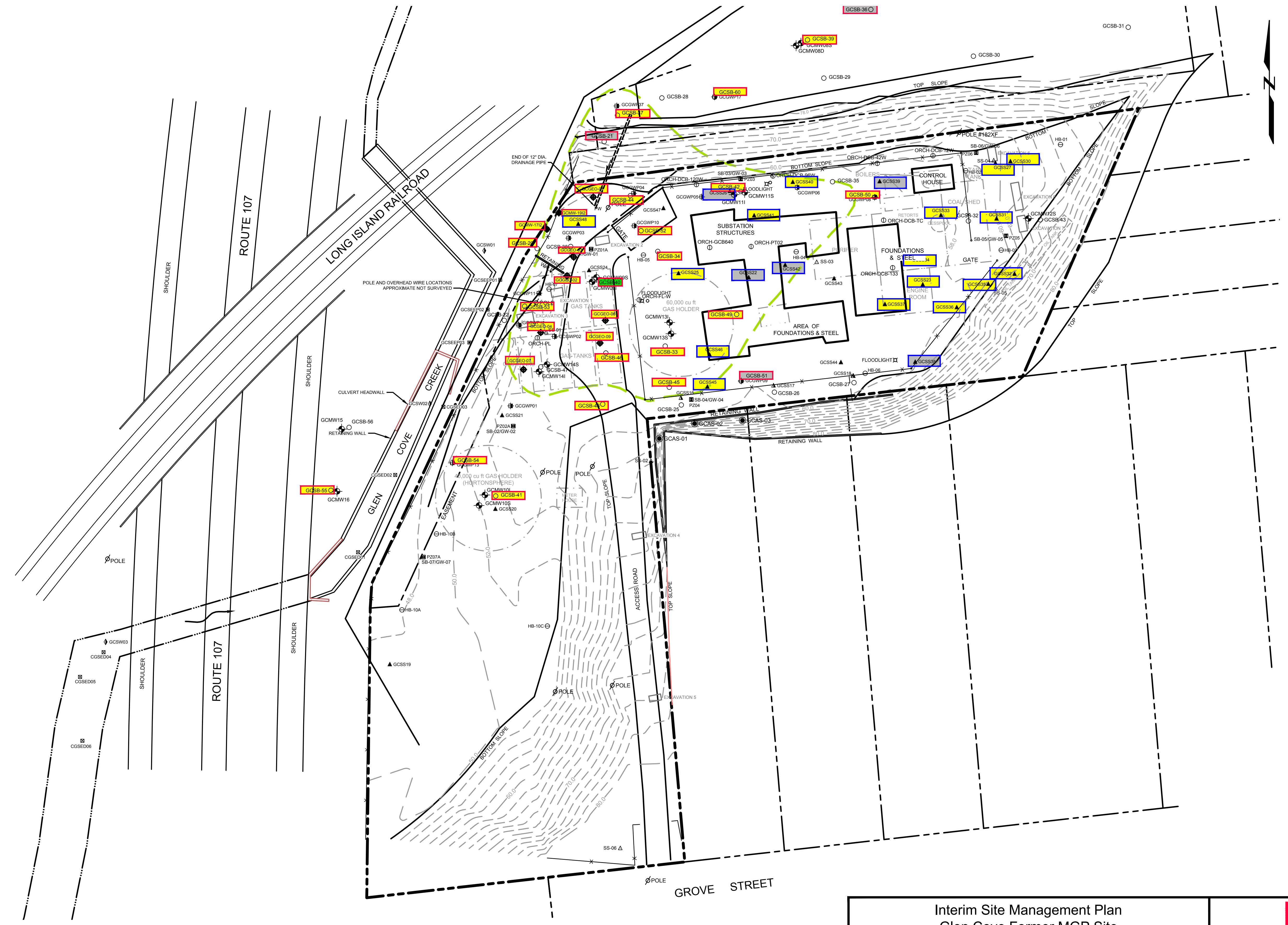
Fig. 2

---- I:\Project\National Grid\GLEN COVE\Interim Site Management Plan\GC-ISMP HISTORIC and GW MWs.dwg - 12/3/2014



0 50' 100'

SCALE: 1" = 50'

LEGEND:

▬ · ▬	PROPERTY BOUNDARY
▭	EXISTING STRUCTURE
⬚	HISTORIC STRUCTURE
80.0	SURFACE ELEVATION CONTOUR
—	CREEK
—×—	FENCE
GCGEO-03	RECOVERY WELL
GCMW-17I2	MONITORING WELL (GEI)
GCMW12S	MONITORING WELL (PS&S)
GCGWP14	GEOPROBE® GROUNDWATER PROBE LOCATION (PS&S)
PZ01A	PIEZOMETER (PS&S)
PZ03	PIEZOMETER (GEI)
SB-01/GW-01	SOIL BORING CONVERTED TO PIEZOMETER (GEI)
	MONITORING POINT (PS&S)
ORCH-FL-WW	SOIL BORING (NATIONAL GRID)
GCGWP01	GEOPROBE® BORING (PS&S)
○ GCSB-25	SUBSURFACE SOIL SAMPLE (DVIRKA AND BARTILUCCI)
HB-01	HAND BORING SOIL SAMPLE (GEI)
GCSS20	SURFACE SOIL SAMPLE (DVIRKA AND BARTILUCCI)
△ SS-01	SURFACE SOIL SAMPLE (GEI)
▲ GCSS19	SURFACE SOIL SAMPLE (PS&S)
CGSED01	SEDIMENT SAMPLE (PS&S)
GCSEEP01	SEEP SAMPLE (PS&S)
GCSW01	SURFACE WATER SAMPLE (PS&S)
● GCAS-01	ASH SAMPLE (DVIRKA AND BARTILUCCI)
EXCAVATION 5	EXCAVATION (DVIRKA AND BARTILUCCI)
	OBSERVED EXTENT OF VISUAL IMPACTS OF TAR/NAPL IN SUBSURFACE SOIL
🟨	SUBSURFACE ANALYTICAL SAMPLE WITH ONE OR MORE INDIVIDUAL VOC OR SVOC EXCEEDANCE OF COMMERCIAL/INDUSTRIAL USE SCOs
⬜	SUBSURFACE ANALYTICAL SAMPLE WITH ONE OR MORE INDIVIDUAL VOC OR SVOC EXCEEDANCE OF UNRESTRICTED USE SCOs
🟩	SUBSURFACE ANALYTICAL SAMPLE WITH ONE OR MORE INDIVIDUAL METAL EXCEEDANCE OF UNRESTRICTED OR COMMERCIAL/INDUSTRIAL USE SCOs
🟨	SURFACE ANALYTICAL SAMPLE WITH ONE MORE INDIVIDUAL VOC OR SVOC EXCEEDANCE OF COMMERCIAL/INDUSTRIAL USE SCOs
⬜	SURFACE ANALYTICAL SAMPLE WITH ONE MORE INDIVIDUAL VOC OR SVOC EXCEEDANCE OF UNRESTRICTED USE SCOs
VOCs	VOLATILE ORGANIC COMPOUNDS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
SCOs	SOIL CLEAN UP OBJECTIVES

SOURCE:

PLAN BASED ON *DRAWING 1: INTERPRETED LATERAL EXTENT OF SOIL AND GROUNDWATER IMPACTS*, PREPARED BY PS&S, SCALE: 1" = 25', DATE: 9/4/07.

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Glen Cove Former MGP Site
Glen Cove, New York

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EXTENT OF MGP IMPACTS

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Fig. 3

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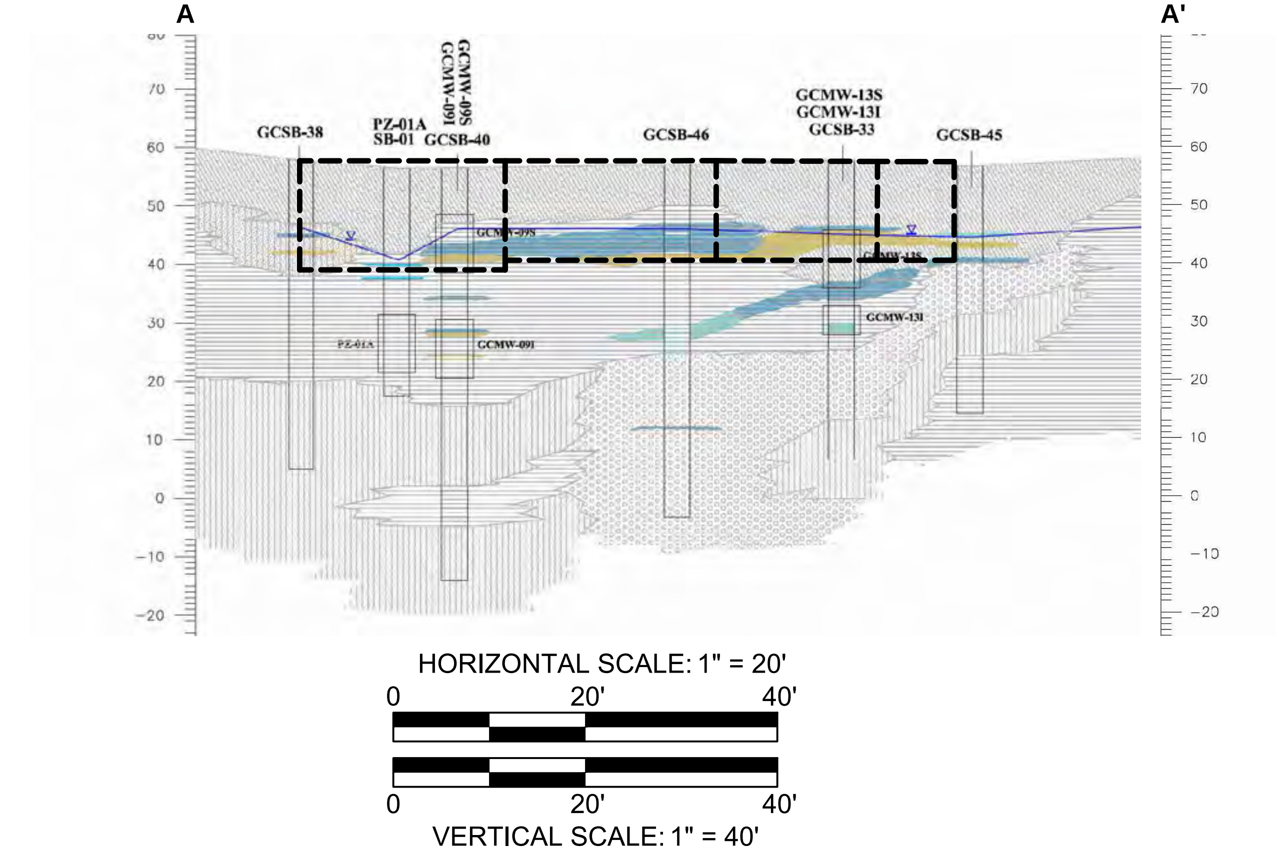
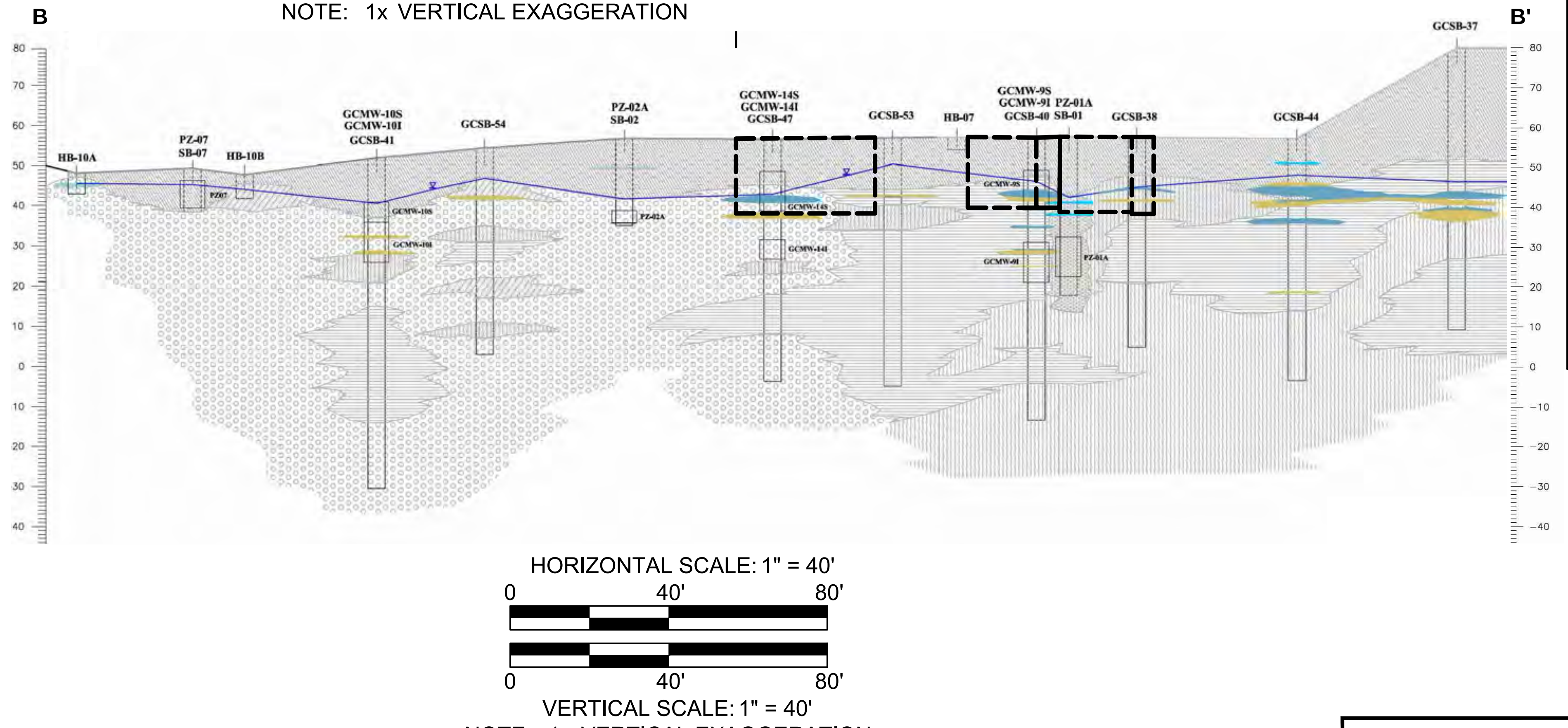


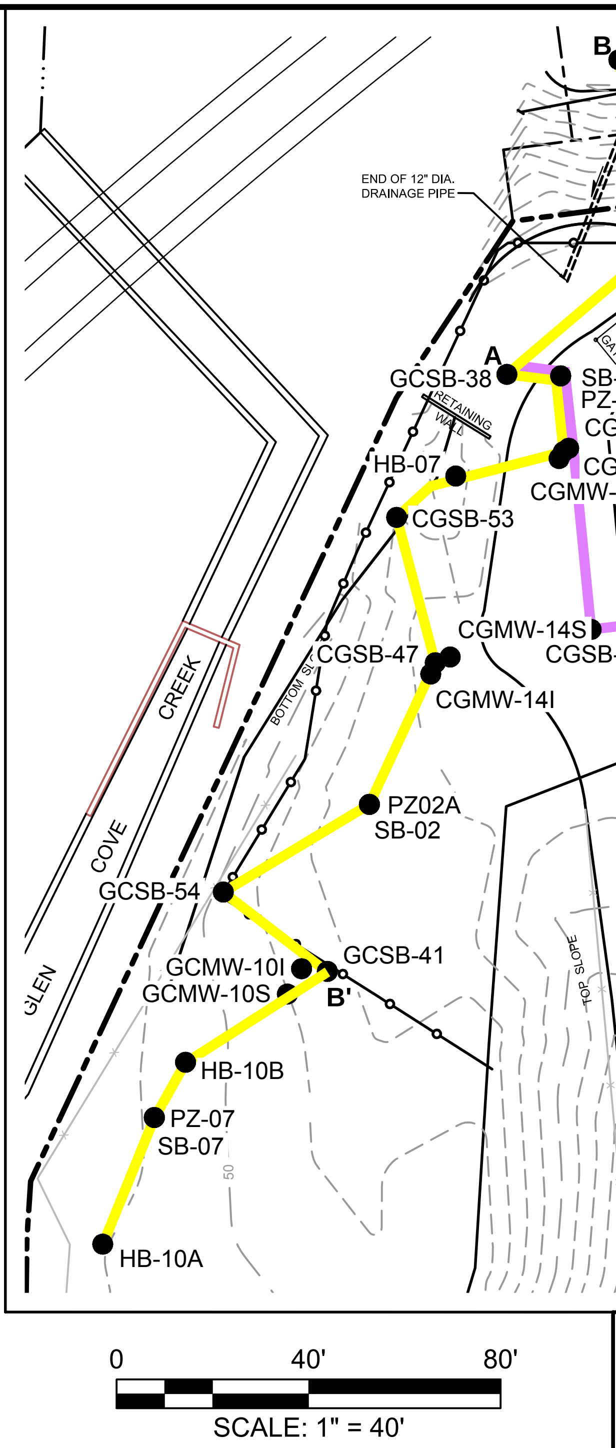
NOTE: 1x VERTICAL EXAGGERATION

CROSS SECTION LEGEND:

- ▨ FILL
- ▨ SAND AND GRAVEL
- ▨ SILTY SAND
- ▨ SILTY CLAY
- ▤ INTERLAYERED SAND WITH GRAVEL
- 🟦 TAR/NAPL SATURATED
- 🟨 BLEBS, SHEENS, LENSES, GLOBES
- 🟩 STAINED
- 🟦 SOLID TAR
- ▽ WATER TABLE
- ▯ WELL SCREEN INTERVAL
- ‐ ‐ ‐ EXTENT OF EXCAVATION



NOTE: 1x VERTICAL EXAGGERATION



PLAN LEGEND:

A 🟪 A' SECTION A-A'

B 🟨 B' SECTION B-B'

NOTES:

1. A-A' IS EXCERPT FROM *FIG3A GEOLOGIC CROSS SECTION A-A'* DATED 6/12/06 PREPARED BY PS&S FOR NOVEMBER 2008 RI REPORT.
2. B-B' IS EXCERPT FROM *FIG3B GEOLOGIC CROSS SECTION B-B'* DATED 6/12/06 PREPARED BY PS&S FOR NOVEMBER 2008 RI REPORT.

SOURCE:

PLAN BASED ON *DRAWING 1: INTERPRETED LATERAL EXTENT OF SOIL AND GROUNDWATER IMPACTS,* PREPARED BY PS&S, SCALE: 1" = 25', DATE: 9/4/07.

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GEOLOGIC CROSS SECTIONS

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Fig. 4

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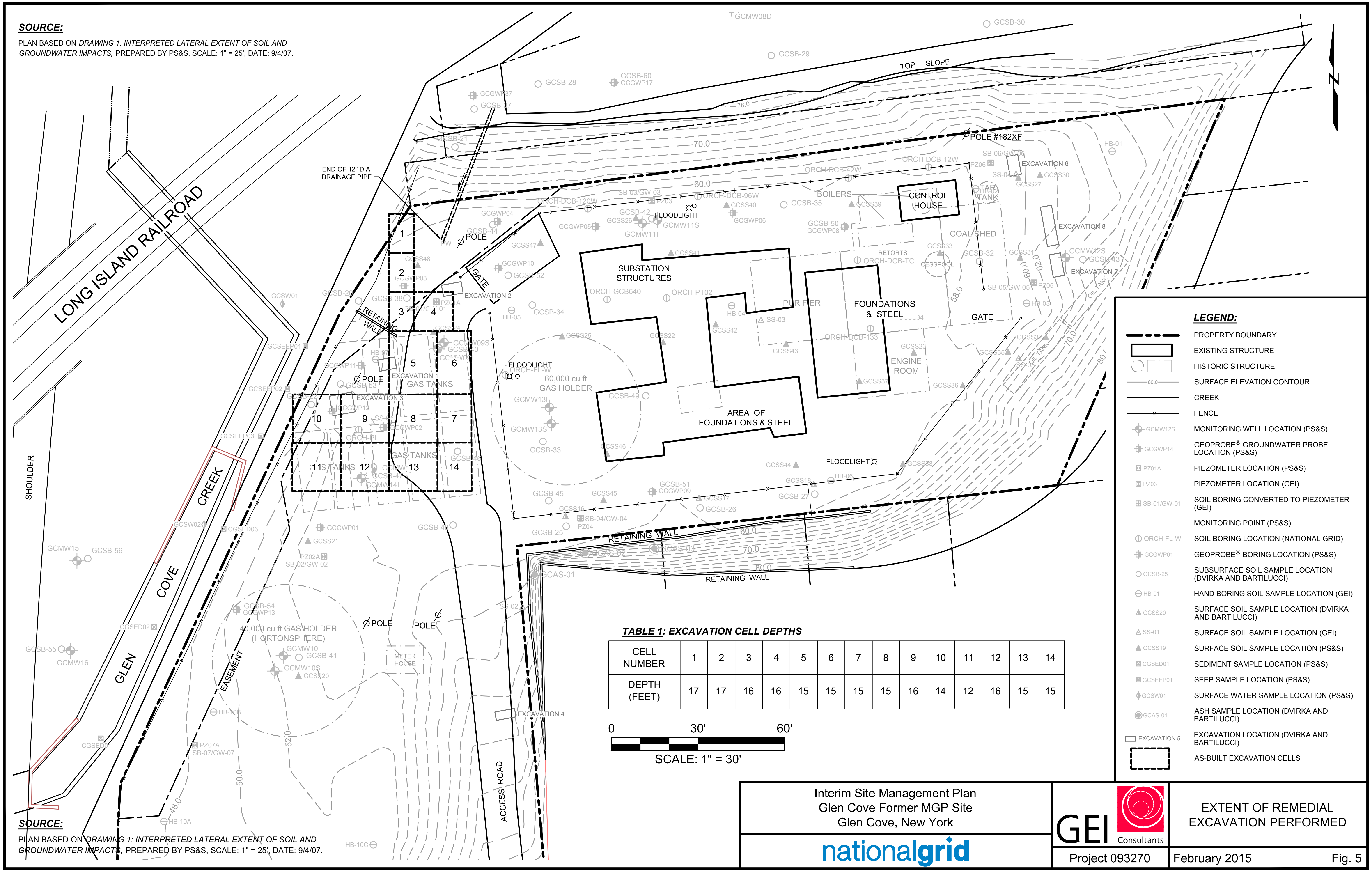

SOURCE:

PLAN BASED ON *DRAWING 1: INTERPRETED LATERAL EXTENT OF SOIL AND GROUNDWATER IMPACTS,* PREPARED BY PS&S, SCALE: 1" = 25', DATE: 9/4/07.

LEGEND:

▬ · ▬	PROPERTY BOUNDARY
▭	EXISTING STRUCTURE
⬚	HISTORIC STRUCTURE
80.0	SURFACE ELEVATION CONTOUR
──	CREEK
─×─	FENCE
GCMW12S	MONITORING WELL LOCATION (PS&S)
GCGWP14	GEOPROBE® GROUNDWATER PROBE LOCATION (PS&S)
PZ01A	PIEZOMETER LOCATION (PS&S)
PZ03	PIEZOMETER LOCATION (GEI)
SB-01/GW-01	SOIL BORING CONVERTED TO PIEZOMETER (GEI)
	MONITORING POINT (PS&S)
ORCH-FL-W	SOIL BORING LOCATION (NATIONAL GRID)
GCGWP01	GEOPROBE® BORING LOCATION (PS&S)
GCSB-25	SUBSURFACE SOIL SAMPLE LOCATION (DVIRKA AND BARTILUCCI)
HB-01	HAND BORING SOIL SAMPLE LOCATION (GEI)
GCSS20	SURFACE SOIL SAMPLE LOCATION (DVIRKA AND BARTILUCCI)
SS-01	SURFACE SOIL SAMPLE LOCATION (GEI)
GCSS19	SURFACE SOIL SAMPLE LOCATION (PS&S)
GCSED01	SEDIMENT SAMPLE LOCATION (PS&S)
GCSEEP01	SEEP SAMPLE LOCATION (PS&S)
GCSW01	SURFACE WATER SAMPLE LOCATION (PS&S)
GCAS-01	ASH SAMPLE LOCATION (DVIRKA AND BARTILUCCI)
EXCAVATION 5	EXCAVATION LOCATION (DVIRKA AND BARTILUCCI)
⬚	AS-BUILT EXCAVATION CELLS

***TABLE 1*: EXCAVATION CELL DEPTHS**

CELL NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DEPTH (FEET)	17	17	16	16	15	15	15	15	16	14	12	16	15	15

0 30' 60'

SCALE: 1" = 30'

SOURCE:

PLAN BASED ON *DRAWING 1: INTERPRETED LATERAL EXTENT OF SOIL AND GROUNDWATER IMPACTS,* PREPARED BY PS&S, SCALE: 1" = 25', DATE: 9/4/07.

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EXTENT OF REMEDIAL EXCAVATION PERFORMED

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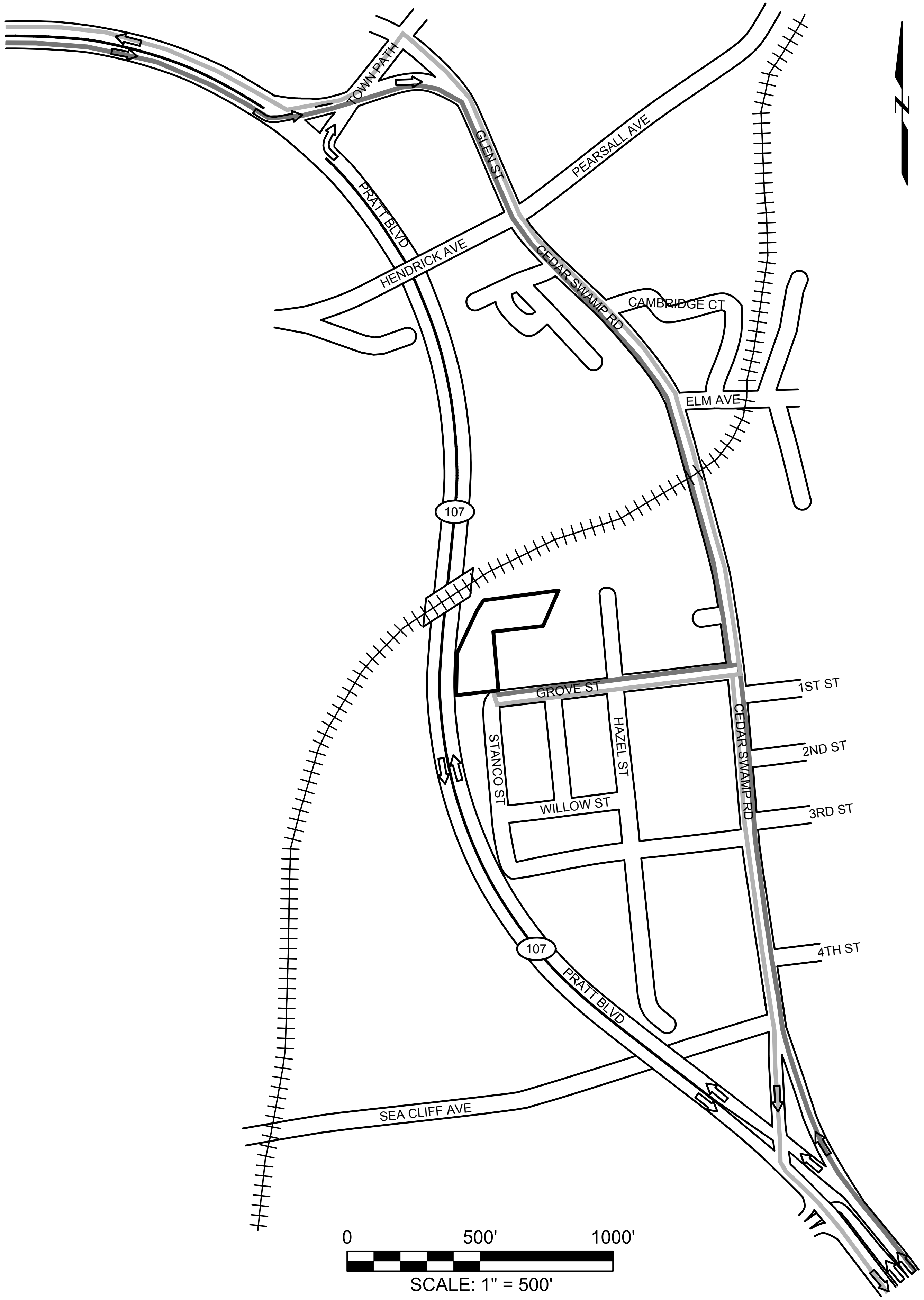

A. TRUCK ROUTE NOTES:

1. ROADWAY BASE MAP SOURCE: NEW YORK STATE OFFICE OF CYBER SECURITY & CRITICAL INFRASTRUCTURE COORDINATION
2. ALL STREETS CONTAIN TWO WAY TRAFFIC UNLESS NOTED OTHERWISE.
3. TRUCKS TRANSPORTING CONSTRUCTION EQUIPMENT OR MATERIALS (SOIL, WATER, PIPE, CEMENT, ETC.) TO OR FROM THE SITE MUST USE SPECIFIED ROUTES.
4. DO NOT QUEUE TRUCKS AND EQUIPMENT IN LOCAL STREETS.
5. TRUCK ROUTE MUST BE INSPECTED DAILY FOR SPILLAGE, DUST, OR OTHER SITE RELATED IMPACTS. ANY IMPACTS MUST BE APPROPRIATELY REMEDIATED AS DIRECTED BY THE ENGINEER.
6. MAINTAIN CONTINUOUS TRAFFIC FLOW ON GROVE STREET OUTSIDE THE PROJECT AREA.
7. PERMANENT ROAD CLOSURES ARE NOT AUTHORIZED DURING THE DURATION OF THE REMEDIATION.
8. NEGOTIATE TEMPORARY ROAD CLOSURES WITH THE CITY OF GLEN COVE, IF NECESSARY.
9. PERFORM MAINTENANCE AND PROTECTION OF TRAFFIC IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, LATEST EDITION, AND TO THE SATISFACTION OF THE ENGINEER.

B. DIRECTIONS ENTERING THE SITE:

FROM THE NORTH OFF ROUTE 107:

1. LEFT ON TOWN PATH	0.1 MI
2. TURN RIGHT ON GLEN ST	0.3 MI
3. CONTINUE ONTO CEDAR SWAMP RD	0.2 MI
4. TURN RIGHT ON GROVE ST	0.2 MI
5. TURN RIGHT INTO SITE	

FROM THE SOUTH OFF ROUTE 107:

1. SLIGHT RIGHT ON CEDAR SWAMP RD	0.4 MI
2. LEFT ON GROVE ST	0.2 MI
3. TURN RIGHT INTO SITE	

C. DIRECTIONS LEAVING THE SITE:

TO POINTS NORTH:

1. LEFT OUT OF SITE	
2. HEAD EAST ON GROVE ST	0.2 MI
3. TURN LEFT ON CEDAR SWAMP RD	0.2 MI
4. CONTINUE ON GLEN ST	0.3 MI
5. TURN LEFT ON TOWN PATH	0.01 MI
6. MERGE ONTO ROUTE 107	

TO POINTS SOUTH:

1. LEFT OUT OF SITE	
2. HEAD EAST ON GROVE ST	0.2 MI
3. TURN RIGHT AT CEDAR SWAMP RD	0.4 MI
4. MERGE ONTO ROUTE 107	

TRUCK ROUTE LEGEND:

━	PROJECT LIMITS
⇨	DIRECTION OF TRAFFIC
━	EXITING SITE TRUCK ROUTE
━	ENTERING SITE TRUCK ROUTE
┼┼┼┼┼┼┼┼	RAILROAD TRACKS

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TRUCK TRANSPORT
ROUTE

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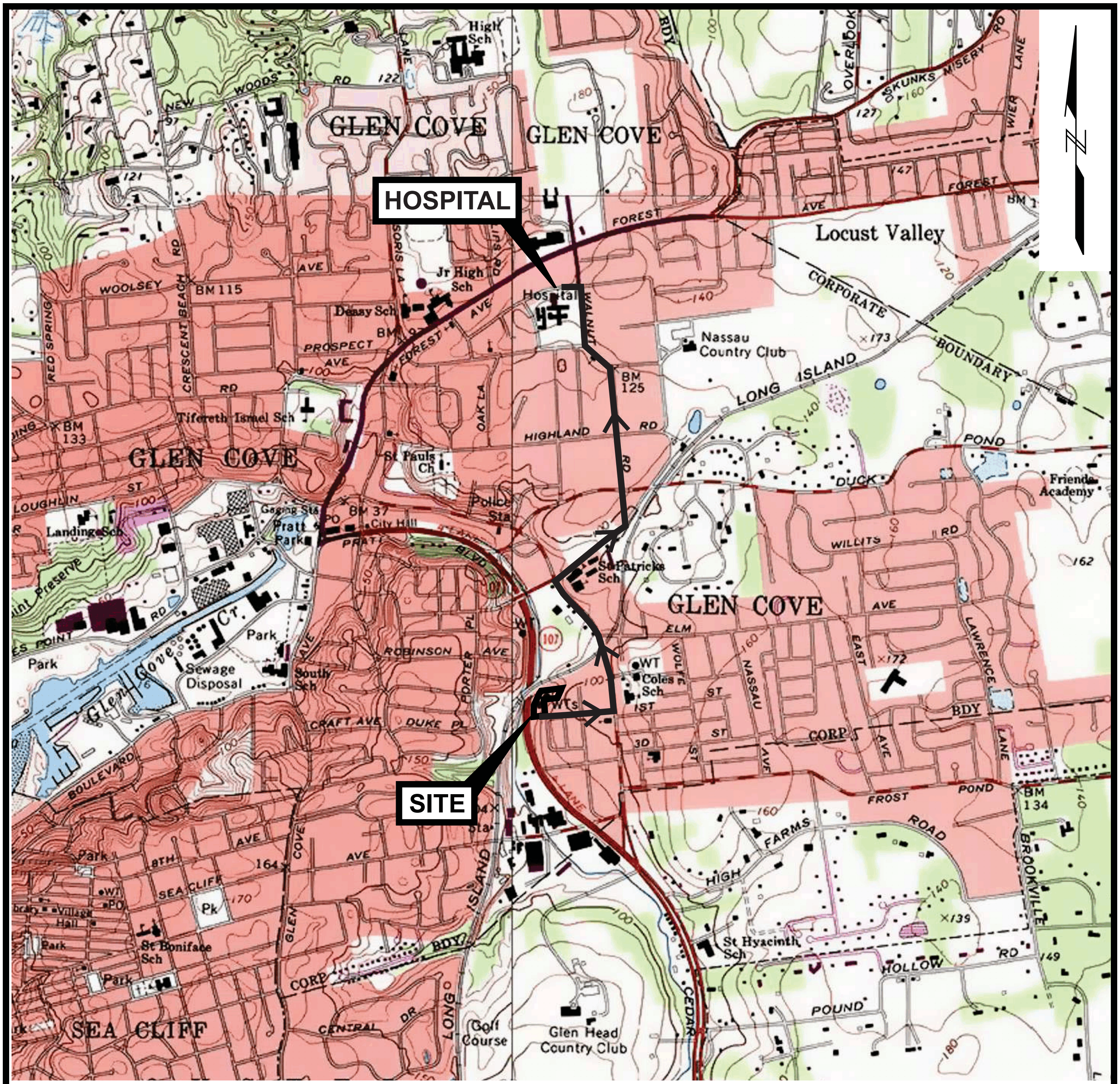
Fig. 6

---- I:\Project\National Grid\GLEN COVE\Interim Site Management Plan\GC-ISMP Truck Route.dwg - 12/3/2014



DIRECTIONS TO EMERGENCY ROOM AT GLEN COVE HOSPITAL FROM SITE:

1. TURN LEFT ONTO GROVE STREET 0.2 MILES
2. TURN LEFT ONTO CEDAR SWAMP ROAD 0.2 MILES
3. CONTINUE ON GLEN STREET 0.2 MILES
4. TURN RIGHT ONTO PEARSALL AVENUE 0.2 MILES
5. BEAR LEFT ONTO WALNUT ROAD 0.6 MILES
6. TURN LEFT ONTO ST ANDREW LANE 0.0 MILES
7. ARRIVE AT 101 SAINT ANDREWS LANE 0.0 MILES

0 2000 4000
SCALE, FEET

~~SOURCE~~: MAP CREATED WITH TOPO!™ ©2000 WILDFLOWER PRODUCTIONS (www.topo.com)

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Glen Cove, New York

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HOSPITAL ROUTE MAP

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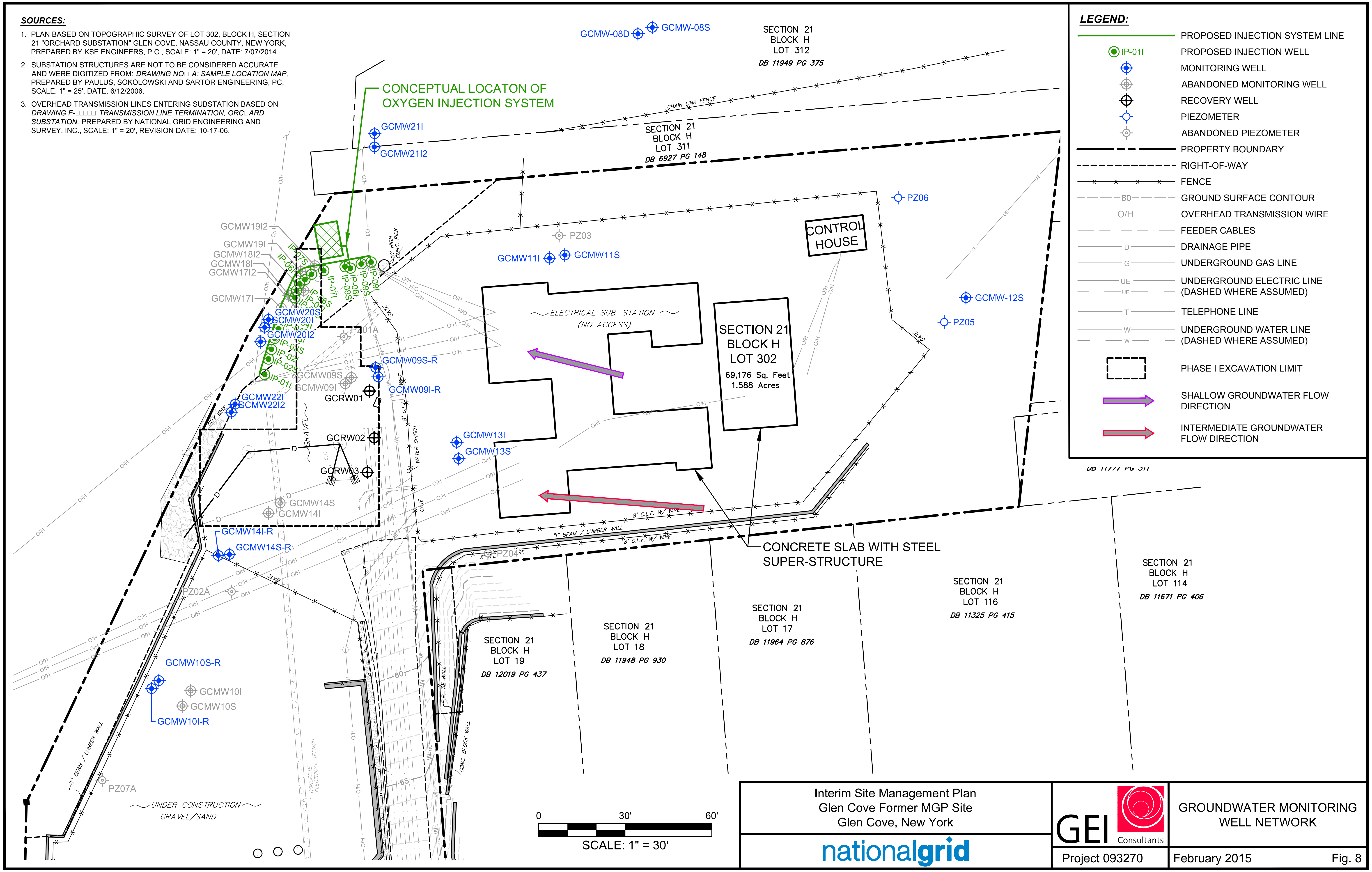
Fig. 7

I:\Project\National Grid\GLEN COVE\Interim Site Management Plan\Glen-SLM and HRM.cdr

SOURCES:

1. PLAN BASED ON TOPOGRAPHIC SURVEY OF LOT 302, BLOCK H, SECTION 21 "ORCHARD SUBSTATION" GLEN COVE, NASSAU COUNTY, NEW YORK, PREPARED BY KSE ENGINEERS, P.C., SCALE: 1" = 20', DATE: 7/07/2014.
2. SUBSTATION STRUCTURES ARE NOT TO BE CONSIDERED ACCURATE AND WERE DIGITIZED FROM: *DRAWING NO□□A: SAMPLE LOCATION MAP,* PREPARED BY PAULUS, SOKOLOWSKI AND SARTOR ENGINEERING, PC, SCALE: 1" = 25', DATE: 6/12/2006.
3. OVERHEAD TRANSMISSION LINES ENTERING SUBSTATION BASED ON *DRAWING F-□□□□□: TRANSMISSION LINE TERMINATION, ORC□ARD SUBSTATION,* PREPARED BY NATIONAL GRID ENGINEERING AND SURVEY, INC., SCALE: 1" = 20', REVISION DATE: 10-17-06.



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Glen Cove, New York

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GROUNDWATER MONITORING WELL NETWORK

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Appendix A

Metes and Bounds

(Not included in Draft)

Appendix B

Excavation Work Plan

Geotechnical
Environmental
Water Resources
Ecological

Excavation Work Plan

Glen Cove Former Manufactured Gas Plant
Glen Cove, New York
AOC Index No. D1-001-98-11
Site No. 1-30-089P

Submitted to:
National Grid
175 East Old Country Road
Hicksville, NY 11801

Submitted by:
GEI Consultants, Inc., P.C.
400 Unicorn Park Drive
Woburn, MA 01801
781-721-4000

February 2015

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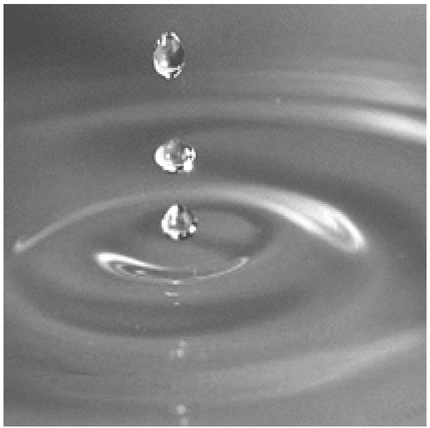


Matthew J. O'Neil, P.E.

Table of Contents

Figure

H:\WPROC\Project\NationalGrid\Glen Cove\Interim SMP\Final\Appendices\AppB-Excavation Work Plan\ISMP.v130089P.2014-12-05.AppB-EWP-DEC_Template_mr.docx

1. Introduction

1.1 General

Any future intrusive work at the Orchard Substation at the Glen Cove Former Manufactured Gas Plant (MGP) site in Glen Cove, Nassau County, New York (the Site) that will penetrate the soil or backfill cover, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover will be performed in compliance with this Excavation Work Plan (EWP) pursuant to the Interim Site Management Plan (ISMP), and the Site's Formal Agreement.

1.1.1 Notifications for Planned Construction and Routine Maintenance

At least 15 days prior to the start of any activity that is anticipated to penetrate the soil cover, or encounter remaining contamination, the Site owner or their representative will notify National Grid of Hicksville, New York, who will in turn notify the New York State Department of Environmental Conservation (NYSDEC) within 10 days prior to the activity. Currently, this notification will be made to:

Mr. R. Scott Deyette
Chief, Inspection Unit
New York State Department of Environmental Conservation
MGP Remedial Section, Division of Environmental Remediation
Bureau of Western Remedial Action, 11th Floor
625 Broadway
Albany, New York 12233-7017

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling
- A schedule for the work, detailing the start and completion of all intrusive work
- A summary of the applicable components of this EWP
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120

- A copy of the health and safety plan, in electronic format,
- Identification of disposal facilities for potential waste streams
- Identification of sources of any anticipated backfill, along with all required chemical testing results

Prior to mobilization, the Site owner or their representative will prepare and submit all required documents identified in this EWP for review and approval by the NYSDEC.

Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP) discussed in the ISMP. Any work conducted in the active substation must be performed in accordance with Long Island Power Authority (LIPA) standard operating procedures including, but not limited to: General Operating Procedure GO-10421 and LIPA CS-3575 Grounding Specification included in Appendix C of the SMP.

National Grid and associated parties preparing the documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of soils and water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations.

1.2 Site Preparation

Prior to performing any intrusive work, the Site preparation features will be implemented and remain in-place throughout the duration of the work.

1.2.1 Site Security

The objectives of the Site Security Plan at the Site are to prevent the vandalism/destruction of construction equipment, to prevent access, and minimize health and safety concerns for the surrounding residential neighborhood.

The active substation is enclosed with an 8-foot-high security fence topped with a triple stand of razor wire. The gates will be closed and locked unless work is being performed in the substation. The Site itself is enclosed in an 8-foot-high fence around the perimeter. There is one entrance/exit to the site that will be locked at the end of each day.

1.2.2 On-Site Personnel

LIPA will maintain an on-site representative at all times that work is being conducted within the active substation. No work will be conducted on-site near overhead and underground utilities without a LIPA representative.

National Grid may maintain a representative on-site for the duration of the work. National Grid will ensure that a qualified environmental professional meeting the requirements of Department of Environmental Remediation (DER)-10 is on-site for all intrusive activities at the Site in accordance with Section 3.3(a)1 of DER-10.

The Contractor will maintain a full time Competent Person for the duration of the work. The Competent Person should have experience of work within energized electrical substations, and/or in close proximity to energized underground and overhead high voltage electrical lines.

A full-time on-Site Health and Safety officer will be on-site during all work. Based on the specific scope of work, the Site Health and Safety officer may have other project duties on site.

1.2.3 Erosion and Sediment Controls

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

1.3 Excavation and Transport

National Grid and the owner of the property and their contractors are solely responsible for safe execution of all invasive and other work performed under this EWP. A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

Visual, olfactory, and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). 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).

Soils will be segregated based on previous environmental data and real-time screening results into materials that require off-site disposal, materials that require testing, material that can be returned to the subsurface, and material that can be used as cover soil.

1.3.1 Utility Protection Requirements

Utility markouts will be maintained for the duration of the work. Copies of all call numbers/tickets/utilities plates/private utility location information/test pit logs will be provided to the qualified environmental professional prior to beginning intrusive activities. The qualified environmental professional will maintain copies on site in a clearance package.

A utility search and identification will be conducted prior to commencement of intrusive field activities and all potential conflicts will be resolved. All existing underground electrical will be marked out by the LIPA. A utility survey of the area of intrusive activities will be conducted by LIPA survey and/or a private utility locating service and all suspected utility locations will be marked out. All suspected utility locations will be confirmed with LIPA prior to beginning intrusive activities. Contractors and/or consultants will contact New York 811 if the excavating plans go beyond the current substation boundaries.

The safe off-set distance, as determined by LIPA, will be marked out for electrical facilities, substation equipment, and utility poles prior to beginning intrusive activities.

The underground 13 kV electrical cables will be located prior to performing any intrusive activities within 5 feet of the markout location. Cables and conduits must be visually located to confirm the markout. Locations must be permanently marked at the surface following hand clearing. No mechanical intrusive activities will be performed within 3 feet of the 13 kV underground cables.

All monitoring well or soil boring locations will be and cleared to a depth of 5 feet below ground surface or to a depth specified by LIPA. The depth of the hand clearing will be determined by LIPA. All hand clearing will be performed using fiberglass non-conductive tools or vacuum extraction methods and/or air knife.

1.3.2 Vehicle and Equipment Grounding Requirements

All equipment involved in invasive activities will be grounded using a LIPA-approved grounding wire. Grounding wire must be a least 10 feet long and have an ampacity equal to or greater than 4 AWG copper wire and be constructed in accordance with LIPA specifications (CS-3575).

Whenever possible, the grounding wire will be connected to a known ground point at the substation. If the activities are located too far from a known ground point, a (temporary) ground rod should be installed in the area of the work and the equipment or vehicle should be attached to the rod with the same 4 AWG ground.

All equipment requiring grounding shall be equipped with a LIPA-approved ground connection welded to the frame of the vehicle. This weld should be metal to metal contact only (i.e. all paint must be scraped off of the equipment in the location of the ground).

1.3.3 Working Restrictions – Overhead Electrical Utilities

There are overhead distribution and transmission lines that run over the substation. Extreme care will be used during the implementation of the intrusive activities so as not to damage or interfere with these utilities. Minimum setbacks, as directed by LIPA, for all booms and trucks operating in the vicinity of energized lines will be maintained at all times. The minimum physical clearance of 5 feet will be maintained for personnel working within close proximity of energized conductors without any mechanical means.

Intrusive activities must be coordinated with National Grid and LIPA to ensure that overhead electrical lines are de-energized prior to working beneath the electrical lines within the minimum approach distance (MAD), as directed by LIPA. Intrusive activities will be sequenced so that no intrusive work that can potentially interrupt, damage or interfere with the overhead electrical utilities is performed during peak summer months (i.e., June 15th to September 1st) unless otherwise approved in writing by LIPA.

Trucks will not be loaded or emptied/dumped under the overhead electrical utilities, unless approved by National Grid and LIPA. Truck covers will not be opened under the overhead electrical utilities. Warning signs of overhead lines and clearances for truck drivers will be posted at the site entrance.

1.3.4 Stockpile Methods

Soil will be placed in lined and bermed stockpile areas of lined and covered roll-off containers. Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used, as needed, near catch basins, surface waters, and other discharge points. Stockpiles will be inspected, at a minimum, once each week and after every storm event. Results of inspections will be recorded in a logbook, maintained at the Site, and available for inspection by NYSDEC.

Stockpiles and rolloffs will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

1.3.5 Vehicle Load Out and Off-Site Transport

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements).

If loads contain wet material capable of producing free liquid, the truck will be made watertight with plastic truck liners before loading occurs. Care will be exercised when loading trucks so as not to spill material on the outside of the trucks. Alternately, an amendment will be used to reduce the moisture content prior to shipment off-site.

Once a truck is filled with excavated material, spray-on odor suppressing materials such as Rusmar Foam or Biosolve® may be used to reduce potential volatile organic compound (VOC) emissions during transit, if necessary. A plastic tarp will then be used to cover the excavated materials.

The truck will then exit the excavation area and proceed immediately to a decontamination location. Trucks will be visually inspected (i.e., box sidewalls, box tailgate, and tires, etc.), cleaned with brushes/brooms, and decontaminated with pressure sprayers, if necessary, prior leaving the Site. The qualified environmental professional will be responsible for ensuring that all outbound trucks are decontaminated in accordance with the Decontamination Plan (Section 1.5) before leaving the Site.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development. The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive activities. Cleaning of the adjacent streets will be performed, as needed, to maintain a clean condition with respect to Site-derived materials.

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including Title 6 of the New York Code of Rules and Regulations Part 364 (6 NYCRR Part 364). Haulers will be appropriately licensed and trucks properly placarded. A proposed truck route can be viewed in Figure 1.

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.

1.3.6 Off-Site Disposal of Soils

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC approval.

Soils that contain too high a water content to be transported safely (e.g. without risk of a liquid spill off-site) must be amended on-site prior to shipment off-site. Dewatering activities will be utilized, if necessary, to control water levels within the excavation. All amendments used at the Site will meet NYSDEC requirements.

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.)

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6 NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted Soil Cleanup Objectives (SCOs) is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility).

1.3.7 Liquid Management and Disposal

All liquids to be removed from the Site, including excavation dewatering and decontamination water, will be handled, transported, and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the Site, but will be managed off-site.

Contaminated liquids from decontamination of equipment and personnel will be pumped into storage tanks (such as fractionalization (frac) tanks or drums) and disposed of off-site. A licensed liquid waste hauler will remove this liquid from the Site and properly dispose of this material in accordance with all applicable regulations. Solid material collected in the frac tank, as a result of settling, will be bulked with soils and sent to an appropriately-licensed disposal facility, as necessary.

1.3.8 Disposal Record Keeping

All manifests and/or bills of lading (BOLs) will be reviewed by the NYSDEC and signed by the National Grid's designated agent.

A log of all shipments and copies of all manifests and/or BOLs will be on-site for reference. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, BOLs, and facility receipts.

1.4 Backfilling

The qualified environmental professional or person under their supervision will oversee all backfilling operations and review all soil analyses to ensure it meets the required criteria. The soil analytical results will be sent to the NYSDEC for review prior to backfilling operations.

1.4.1 Soil Reuse

Material that meets the Unrestricted SCOs listed in Table 375-6.8(a) of 6 NYCRR Part 375 meet the chemical criteria for on-site reuse. Prior to reuse, samples will be collected and analyzed by an Environmental Laboratory Approval Program (ELAP)-certified laboratory for total VOCs via U.S. Environmental Protection Agency (EPA) Method 8260, total semi-volatile organic compounds (SVOCs) via EPA Method 8270C, polychlorinated biphenyls (PCBs) via EPA Method 8082/8082A/8080, Total Petroleum Hydrocarbons (TPH) (DRO/GRO)via EPA Method 8015M (expanded to C44), total cyanide via EPA Method 9010/9014, Total Metals (RCRA+Cu, Ni, Zn, Va,Cn HexChrome) via EPA Method 6010B and 6010, TCLP Metals via EPA Method 1311, Ignitabilty via EPA Method 1030 and 1010A, Corrosivity via EPA Method 1030 and 9040C, Reactivity via EPA Method 1110 and SW846 Ch7.5, Total Sulfur via ASTM D129, TCLP Volatile Organics via EPA Method 8260B, TCLP Semi-volatile Organics via EPA Method 8270D, TCLP Herbicides/TCLP Pesticides via EPA Method1311, TOX via EPA Method 9023B, and Total Mercury via EPA Method 7471.

Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site, will be placed below a demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Concrete crushing or processing on-site will not be performed at this Site. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on site.

Soils proposed for reuse will be segregated in separate stockpiles from soils to be shipped off-site for disposal.

The qualified environmental professional will ensure that procedures defined for materials reuse in this Interim SMP are followed and that unacceptable material does not remain on-site.

1.4.2 Backfill Using Imported Material

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site. Material from industrial sites, spill sites, other environmental remediation sites, or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 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 the Unrestricted Use SCOs listed in Table 375-6.8(a) of 6 NYCRR Part 375, included in Table 4 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 site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

At a minimum, backfill samples will be analyzed for Resource Conservation and Recovery Act (RCRA) 8 Metals, PCBs by EPA Method 8082, VOCs by EPA Method 8260 or New York State Analytical Service Protocol (NYSASP) Method 95.1, and SVOCs by EPA Method 8270C or NYSASP Method 95-2.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

1.4.3 Site Restoration

After the completion of soil removal and any other invasive activities, the Site will be restored in a manner that complies with the Remedial Action Plan and/or the Administrative Order on Consent (AOC). A demarcation layer, consisting of orange snow fencing material or equivalent material will be placed to provide a visual reference to the top of the ‘Remaining Contamination Zone’, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in the Interim SMP.

If the type of cover changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), a figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Interim SMP.

1.5 Decontamination Plan

The objectives of the Decontamination Plan at the Site are to provide the procedures and equipment necessary to decontaminate personnel and equipment to prevent cross-contamination from the excavation area to public areas (i.e., highways, roads, support trailer, vehicles, etc.). This plan does not replace the decontamination procedures outlined in the HASP.

The Contractor will establish decontamination areas for the following activities:

- Personnel decontamination.
- Equipment decontamination.

1.5.1 Personnel Decontamination Station

A personnel decontamination station where workers can drop equipment and remove personal protective equipment (PPE) will be set up within the work zone. It will be equipped with basins for water and detergent, and trash bags or cans for containing disposable PPE and discarded materials. Once personnel have decontaminated at this station and taken off their PPE, they will proceed to a sink where they will wash themselves as a secondary means of personal hygiene (e.g., hands, face, etc.).

1.5.2 Equipment Decontamination Station

Heavy equipment decontamination will be performed within the limits of the on-site decontamination pads. Heavy contamination will be brushed off equipment using a broom and/or brushes within the excavation area prior to movement to the decontamination pads to decrease the amount of respirable particulates leaving the remediation area. If necessary, at the decontamination/anti tracking pad, all heavy equipment will be pressure washed before leaving the Site. All equipment leaving the Site will be decontaminated per these guidelines.

In addition, any equipment previously utilized to excavate impacted material will be decontaminated prior to use in backfilling (e.g. excavator bucket).

Decontamination/anti-tracking pads will be located and operated at any point that equipment leaves the Site. The decontamination pad(s) will be sufficiently sized to ensure that the largest piece of equipment can be adequately decontaminated. Provisions will be made to control overspray at the decontamination pad(s).

Wastewater from equipment decontamination will be collected and pumped into the frac tanks. Soils collected from the decontamination pads will be bulked with the excavated material and sent to the properly-licensed disposal facility as necessary.

1.6 Odor and Dust Controls

Excavation activities at remediation sites typically generate airborne dust and vapors (VOCs) that have the potential to migrate off-site.

Odor controls will be capable of controlling emissions of nuisance odors off site and on 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 the New York State Department of Health (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 qualified environmental professional, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (1) limiting the area of open excavations and size of soil stockpiles; (2) shrouding open excavations with tarps and other covers; and (3) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (4) direct load-out of soils to trucks for off-site disposal; (5) use of chemical odorants in spray or misting systems; and, (6) use of staff to monitor odors in surrounding neighborhoods.

Odor suppressant systems consisting of chemical foam (e.g., Rusmar foam, Biosolve®) or other approved methods may be provided to prevent odors, if necessary. Keep sufficient odor suppressant on-site to manage the odors generated from the excavated materials, including, but not limited to open excavations, limited stockpiles, or materials loaded into trucks for transportation and disposal. The odor suppressant system will be stored near the excavation and will be easily mobile. Open excavations will be backfilled or covered at the end of each working day to suppress odors, if necessary.

Dust controls will address 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, or a source of water on site for road wetting. The truck or on-site water source will be equipped with a water cannon or nozzle capable of spraying water directly onto site areas including excavations and stockpiles.

In recognition of this potential hazard, the NYSDOH has promulgated a CAMP that establishes action levels of respirable dust and VOCs that are protective of the surrounding community. The requirements of the CAMP are contained in Appendix 1A of the DER-10 Technical Guidance for the Site Investigations and Remediation. The CAMP is intended to supplement, but be discrete from the air-monitoring program implemented by the Contractor for purposes of evaluating Site worker health and safety. Conditions within the excavation area will be monitored in accordance with the Contractor's HASP. Conditions on the perimeter will be monitored in accordance with the CAMP.

1.6.1 CAMP Summary

A Site-specific CAMP was prepared for the Site as part of the Interim SMP. The CAMP is included in Appendix E of the SMP for reference purposes. The CAMP is in compliance with DER-10 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 CAMP will be updated and re-submitted for NYSDEC approval.

The CAMP will be designed to provide monitoring procedures, Alert Limits, Action Limits, and contingency measures if Action Limits are approached. An Alert Limit is a contaminant concentration or odor intensity that triggers contingent measures. An Alert Limit does not suggest the existence of a health hazard, but serves instead as a screening tool to trigger contingent measures if necessary, to assist in minimizing off-site transport of contaminants and odors during intrusive activities. An Action Limit is a contaminant concentration or odor intensity that triggers work stoppage.

During times of ground intrusive activities, fence line perimeter air monitoring will be conducted using real-time (continuous and almost instantaneous) air monitoring at upwind and downwind locations. Contaminants commonly found at former MGP sites will be monitored, including VOCs and dust. The CAMP will include a plan that defines Alert Levels, Action Levels, and specific response activities to be implemented during working hours if an exceedance of an Alert Limit or Action Limit for a measured compound occurs. The response actions, potentially including work stoppage, are intended to prevent or significantly reduce the migration of airborne contaminants from the Site.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

1.7 Other Nuisances

A plan will be developed and utilized by the contractor for all work to ensure compliance with local noise control ordinances.

1.8 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 full a full list of analytes (Target Analyte List [TAL] metals; Target Compound List [TCL] volatiles and semi-volatiles, TCL pesticides and PCBs), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

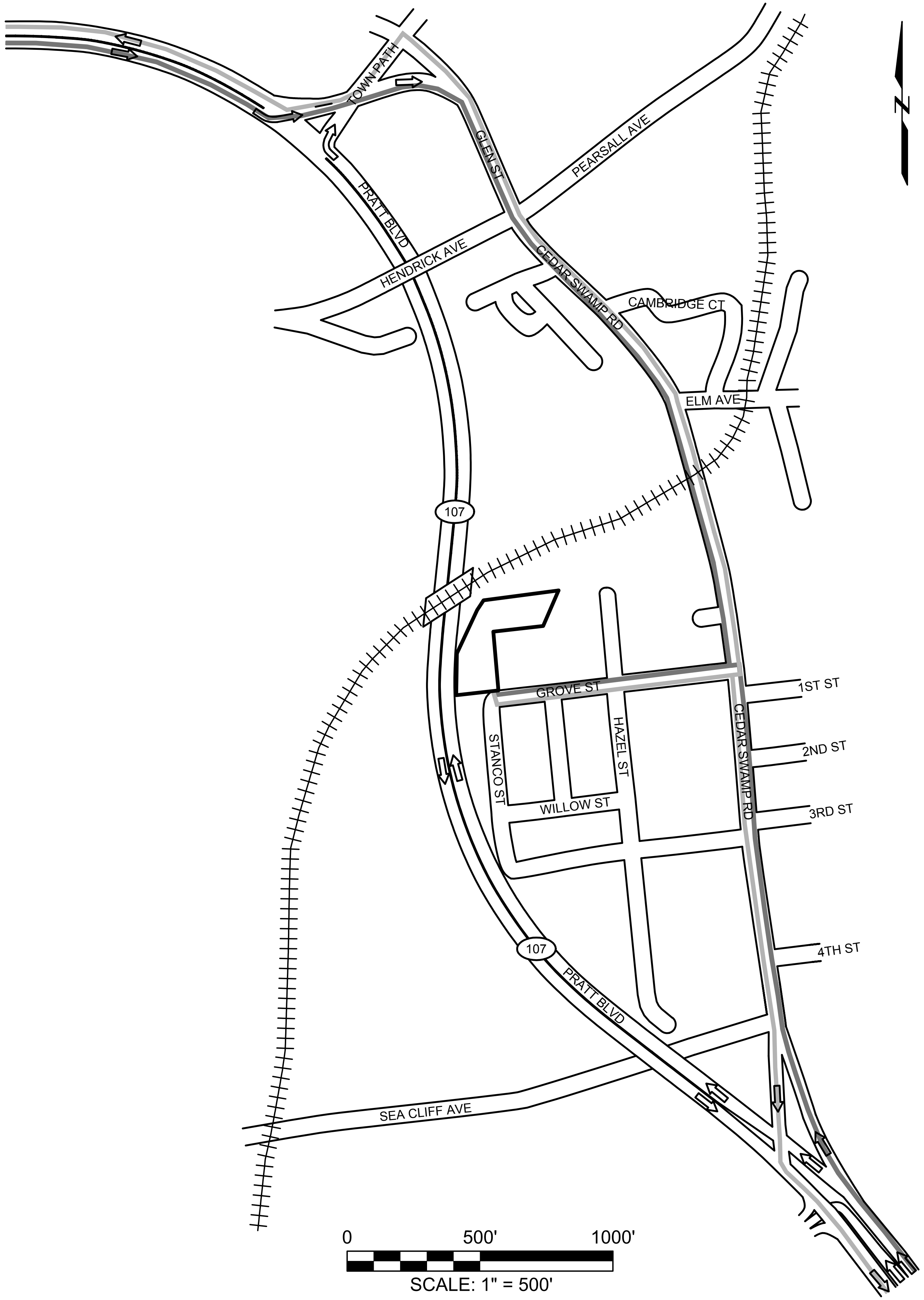
1.9 Reporting

Following the completion of the work, a summation will be included in the Periodic Review Report. The report should include a summary of activities, any changes to the work plan, the final disposal of both solid and hazardous waste, and contain a statement that the work was performed in accordance with the Interim SMP. Specific components of the report may include:

- Record drawings, specifications, addenda, and approved changes.
- The actual volumes of excavated material and treated/discharged wastewater.
- The results of documentation analyses.
- Other plans and figures (if required), photographs, cross sections, data summary tables, and appendices.
- Approved permits.
- Summary of construction work, meetings, and changes in work scope.
- Shipping manifests and BOLs (contaminated soil, clean fill, and construction dewatering liquids).
- Summary of Air Monitoring Data collected during the intrusive activities.
- Certification that material transported off site was disposed of at a properly licensed disposal facility or Treatment Storage and/or Disposal Facility.

The Periodic Review Report should be submitted to the NYSDEC for review in accordance with the Interim SMP.

Figure



A. TRUCK ROUTE NOTES:

1. ROADWAY BASE MAP SOURCE: NEW YORK STATE OFFICE OF CYBER SECURITY & CRITICAL INFRASTRUCTURE COORDINATION
2. ALL STREETS CONTAIN TWO WAY TRAFFIC UNLESS NOTED OTHERWISE.
3. TRUCKS TRANSPORTING CONSTRUCTION EQUIPMENT OR MATERIALS (SOIL, WATER, PIPE, CEMENT, ETC.) TO OR FROM THE SITE MUST USE SPECIFIED ROUTES.
4. DO NOT QUEUE TRUCKS AND EQUIPMENT IN LOCAL STREETS.
5. TRUCK ROUTE MUST BE INSPECTED DAILY FOR SPILLAGE, DUST, OR OTHER SITE RELATED IMPACTS. ANY IMPACTS MUST BE APPROPRIATELY REMEDIATED AS DIRECTED BY THE ENGINEER.
6. MAINTAIN CONTINUOUS TRAFFIC FLOW ON GROVE STREET OUTSIDE THE PROJECT AREA.
7. PERMANENT ROAD CLOSURES ARE NOT AUTHORIZED DURING THE DURATION OF THE REMEDIATION.
8. NEGOTIATE TEMPORARY ROAD CLOSURES WITH THE CITY OF GLEN COVE, IF NECESSARY.
9. PERFORM MAINTENANCE AND PROTECTION OF TRAFFIC IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, LATEST EDITION, AND TO THE SATISFACTION OF THE ENGINEER.

B. DIRECTIONS ENTERING THE SITE:

FROM THE NORTH OFF ROUTE 107:

1. LEFT ON TOWN PATH	0.1 MI
2. TURN RIGHT ON GLEN ST	0.3 MI
3. CONTINUE ONTO CEDAR SWAMP RD	0.2 MI
4. TURN RIGHT ON GROVE ST	0.2 MI
5. TURN RIGHT INTO SITE	

FROM THE SOUTH OFF ROUTE 107:

1. SLIGHT RIGHT ON CEDAR SWAMP RD	0.4 MI
2. LEFT ON GROVE ST	0.2 MI
3. TURN RIGHT INTO SITE	

C. DIRECTIONS LEAVING THE SITE:

TO POINTS NORTH:

1. LEFT OUT OF SITE	
2. HEAD EAST ON GROVE ST	0.2 MI
3. TURN LEFT ON CEDAR SWAMP RD	0.2 MI
4. CONTINUE ON GLEN ST	0.3 MI
5. TURN LEFT ON TOWN PATH	0.01 MI
6. MERGE ONTO ROUTE 107	

TO POINTS SOUTH:

1. LEFT OUT OF SITE	
2. HEAD EAST ON GROVE ST	0.2 MI
3. TURN RIGHT AT CEDAR SWAMP RD	0.4 MI
4. MERGE ONTO ROUTE 107	

TRUCK ROUTE LEGEND:

━━━━	PROJECT LIMITS
⇨	DIRECTION OF TRAFFIC
━━━━	EXITING SITE TRUCK ROUTE
━━━━	ENTERING SITE TRUCK ROUTE
┼┼┼┼┼┼┼┼	RAILROAD TRACKS

Excavation Work Plan
Glen Cove Former MGP Site
Glen Cove, New York

nationalgrid

GEI Consultants

TRUCK TRANSPORT
ROUTE

Project 093270
February 2015
Fig. 1

\\gtb1v-fs01\ I:\Project\National Grid\GLEN COVE\Excavation Work Plan\GC-EWP Truck Route.dwg - 12/1/2014

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York
February 2015

Appendix C

Standard Operating Procedures

GENERAL OPERATIONS PROCEDURE
GO 10421 Rev. 1
Effective: 9/12/13

GENERAL OPERATION PROCEDURE FOR EXCAVATION IN LIPA SUBSTATIONS AND NATIONAL GRID FACILITIES

Approved By:

Nick Lizanich
Vice President of T&D Oper.
Long Island Power Authority

John Bruckner
President of LI T&D Services
National Grid

JP Flannery

James Flannery
VP Generation
National Grid

Rev	Date	Summary of Changes	Author(s)
1	9/12/2013	• Revised departments and sections names. • Added language that pertains to Site Investigation and Remediation Department.	Sarah Aldridge William Ryan

Table of Contents

1.0 PURPOSE

The purpose of this GO is to define the responsibilities and procedures for safe excavation practices in LIPA Substations and National Grid Generating Facilities.

2.0 SCOPE

This procedure will foster and promote consistent work practices for all departments while excavating in LIPA substations and National Grid Generating Facilities.

3.0 POLICY

3.1 This Work Practice has been designated as a Corporate Procedure.

3.1.1 Outside Notifications are not required, unless the site is a regulated environmental site.

3.1.2 Federal, state or local codes do not require the actions detailed in this work method, unless the site is a regulated environmental site.

3.1.3 If the site is a regulated environmental site, the SIR Department should be notified and there is ground intrusive activities, contact NY811 for a utility markout.

3.1.4 This procedure shall be reviewed annually with personnel responsible for its implementation.

3.1.5 This procedure shall be reviewed, updated, and reissued every 5 years or more frequently if necessary.

3.1.6 The Lead Organization for this GO is Transmission Operations & Compliance (TOC) for all LIPA Substations and Power Plant Operations for all National Grid Generating Facilities.

4.0 REFERENCES

4.1 National Grid Energy’s Health & Safety Manual

4.2 OI – 20001 "National Grid Procedure for the Inspection of the Electric Transmission System"

4.3 OI – 20002 "General Rules for the Safe Operation of the Electric Transmission System"

4.4 OI – 40002 "Standard Rules for Personnel Entering Substations"

4.5 GO - 10356 Equipment Abnormal Reports

4.6 GO – 10387 Use of Substations by National Grid Personnel and Contractors

4.7 OSHA 1910.120 – 29CFR OSHA 1910.120 Hazardous Waste Operations and Emergency Response(HAZWOPER)

4.8 OSHA 1926.651 - OSHA 1910.269 (Construction – Maintenance Standard)

4.9 National Grid Construction Standards

4.10 PBWK-5075. National Grid Substructure Damage Prevention Program

4.11 GO-82 Standards and Guidelines For Ordering Property Surveys

4.12 OI – 10002 "Control of Hazardous Energy Sources Work Permit Systems"

4.13 EG-27 "Process Hazard Analysis Policy"

4.14 List of LIPA and National Grid regulated Environmental Sites (See Appendix B)

4.15 LIPA/National Grid and Site Investigation and Remediation Department Regulated Site Responsiblites – Coordination and Environmental Guidelines (Appendix C)

5.0 DEFINITIONS

5.1 Substation Boundary – The secured area (fenced area) within the substation property / generation property.

5.2 Thermal Barrier – Provides thermal protection for facilities operating in vicinity of work carried on where open flame or other sources of heat may come in contact with the facilities. Provides personnel protection against thermal injury form electrical failures and flying debris.

5.3 Dielectric Barrier - Provides insulation of sufficient dielectric strength to safeguard personnel working in the vicinity of energized cables and cable accessories.

5.4 Physical Barrier –provides separation between the facilities to be protected and the personnel, tools and work equipment performing the actual work. Physical barriers fall into two categories of protection:

5.4.1 Heavy Duty - for protection from mechanically operated equipment and mechanically operated tools.

5.4.2 Light Duty - for protection from hand tools and manually operated equipment as well as personnel.

5.5 Non-Conductive Hand Tools - tools designed not to act as a conductor and /or to carry electric current.

5.6 Insulated Digging Bar - a digging bar with a non-conductive handle and a chisel point.

5.7 “Acceptable Means” - method used when the location of the underground utilities have not been identified by use of print review and some type of detection equipment is not used.

Examples:

- Saw cutting and jack hammering in connection with pavement restoration of a previous excavation where only the pavement is involved.
- Vacuum excavation
- The movement of earth by tools manipulated by human power (Hand dig)
- Air pick - Air Lance

5.8 Regulated Environmental Site* - means any real property consisting of a parcel, adjacent properties or parcels, or portions of properties or parcels, identified as:

5.8.1 a property being addressed under the inactive hazardous waste disposal site program (State Superfund);
5.8.2 a brownfield site;

5.8.3 an environmental restoration project;
5.8.4 a voluntary cleanup site;
5.8.5 an environmental site that is regulated through National Grid only;
5.8.6 a petroleum remediation project; or
5.8.7 other approved remedial programs implemented or overseen by New York State Department of Environmental Conservation (Division of Environmental Remediation).

5.9 Intrusive Work* - is any work that is conducted below the existing surface of the site. This includes, but is not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

5.10 HAZWOPER Training* - is the training requirements under 29 CFR 1910.120 required for workers involved in site clean-up operations.

5.11 Worker Monitoring* - refers to the required medical surveillance programs under 29 CFR 1910.120(f) for site workers involved in site clean-up operations.

5.12 Health and Safety Plan* - Health and Safety Plan (HASP). Any person conducting investigation or remediation activities is required to prepare and implement a site-specific health and safety plan which will be adhered to by all personnel involved in the investigation and/or remediation at the site. The HASP is a requirement of the federal Occupational Safety and Health Administration (OSHA) and is not subject to the approval of DER. HASP, prepared in accordance with OSHA 1910.120.

5.12.1 The plan will be prepared by a qualified person in accordance with the most recently adopted and applicable general industry (29 CFR 1910) and construction (29 CFR 1926) standards of OSHA, the U.S. Department of Labor, as well as any other federal, state or local applicable statutes or regulations.

5.12.2 A copy of the health and safety plan (HASP) will be available at the site during the conduct of all activities to which it is applicable.

5.13 Community Air Monitoring Plan* - In addition to the HASP for the protection of site workers, all work plans for any intrusive activities must include a site-specific plan, the CAMP, to address community health and safety which identifies measures and/or actions to ensure that the public living and working near the site as well as employees or visitors to any facility located on the site are protected from exposure to site contaminants during intrusive activities, remedial actions or on-site treatment actions undertaken during the investigation and/or remediation of the site, including site management as detailed in subdivision (b) below.

5.13.1 At a minimum, a CAMP must include the appropriate requirements identified by the NYSDOH for a site, which are included in Appendix 1A of DER-10, most recent edition.

5.14 Exclusion Zone* or Work zone* - is the area where contamination does or could occur during site-cleanup activities. Access to the exclusion zone is limited to personnel with the required training and personal protective equipment (PPE) who are involved in site-cleanup activities.

* Definitions are applicable to work performed on regulated environmental Sites.

6.0 RESPONSIBILITIES

6.1 All organizations and contractors **SHALL** adhere to the applicable sections of National Grid Safety and Health manual. More information can be found on the following website: http://www.nationalgridus.com/commitment/d2-4_safety.asp

6.2 National Grid SIR Department shall determine if the work area is part of a Regulated Environmental Site after filling out the form: LIPA/National Grid and Site Investigation and Remediation Department Regulated Site Responsibilities – Coordination and Environmental Guidelines found in Appendix C.

6.3 No organization will use a manually operated "Pick" to excavate in substations.

6.4 No organization will use mechanized machinery within the boundaries of a substation without authorization from Transmission Operations & Compliance.

6.5 No organization will excavate within the Boundaries of a Generating Facility without the required work permit.

6.6 Transmission Operations & Compliance (TOC) Department

6.6.1 Operates the Electric Transmission System.

6.6.2 Authorizes the operation of all transmission system equipment.

6.6.3 Authorizes work on the transmission system.

6.6.4 For prearranged work, determines if it is practical to remove equipment from service during the requested periods or at other times.

6.6.5 Coordinates prearranged work by checking with all other departments who may have other work to be performed requiring similar outages.

6.6.6 Makes arrangements for the required switching.

6.6.7 Evaluates the type of work being performed, and shall determine if it is appropriate to perform work in the substation due to the system configuration or demand.

6.6.8 Authorizes use of mechanical digging equipment and mechanized machinery prior to work being performed. Constructor must make the request prior to use of such equipment. (This relates to paragraphs 8.3.8 and 8.3.9)

6.7 Overhead/Underground Lines (OH & UG Lines) Department

6.7.1 Ensures all mark outs and surveys are requested for and complete prior to commencing working.

6.7.2 Request and receive up to date engineering drawings prior to designing and constructing work within the LIPA Substation and the National Grid Generating Facility.

6.7.3 Provides as-built prints for all work performed, including exit cables and forwards them to Network Strategy Engineering (NSE) or to Power Engineering, Mapping and Electric Service as per GO-81.

6.8 Substation Protection & Telecom Department - Substation Maintenance division

6.8.1 Requests equipment to be taken out of service according to OI-20002.

6.8.2 Provides qualified personnel to work on or about the electric transmission system, substations and generating facilities.

6.8.3 Ensures all mark outs and surveys are complete prior to working.

6.8.4 Has on site up to date engineering drawings or design drawings before performing any work.

6.8.5 Provides as-built prints for all work they performed, including exit cables and forwards them to Network Strategy Engineering, or to Power Engineering, Mapping and Electric Service as per GO-81 to ensure all one lines, drawings, and maps are updated. Survey is available to perform final as-built location on request.

6.8.6 Supports any work requested by TOC and Power Plant Operations.

6.8.7 Provides oversight for contractors performing projects for Power Plant Operations.

6.9 Construction Delivery Department

6.9.1 Provides qualified personnel to work on the electric transmission system or in the substations.

6.9.2 Provides a responsible qualified person to over see contractors or National Grid personnel to work on the electric transmission system.

6.9.3 Coordinate with Site Investigation and Remediation (SIR) Department all work to be performed in areas designated as a Regulated Environmental Site.

6.9.4 Requests equipment to be taken out of service according to OI 20002.

6.9.5 Assigns qualified personnel to work on the transmission system or in the substations.

6.9.6 Supervise contractor personnel working on line equipment in the substation.

6.9.7 Ensures all mark outs and surveys are complete prior to working.

6.9.8 Has on site up to date engineering drawings or design drawings before performing any work.

6.9.9 Provides as-built prints for all work they performed, including exit cables and forward to Network Strategy Engineering or to Power Engineering, Mapping and Electric Service as per GO-81 to ensure all one lines, drawings, and maps are updated.

6.10 Network Strategy Engineering Department

6.10.1 Provides mark out and location in LIPA Substations and National Grid Properties as requested using form “Request for Survey Division Work” GO-82 Rev. 7 Exhibit 9.1.

6.10.2 Survey will issue a survey job number on the request form and the appropriate completion dates will be documented.

6.11 Site Investigation and Remediation Department

6.11.1 Provides environmental oversight for all Regulated Environmental Sites that are subject to requirements because of known or suspected surface or subsurface contamination.

6.11.2 See Appendix B for a list of Regulated Environmental Sites, as of July 2013.

6.12 Power Plant Operations

6.12.1 Operates and Maintains all National Grid Generating facilities.

6.12.2 Authorizes all work that takes place within the boundaries of the generation facilities.

6.12.3 Issues protection, as required to ensure all work is completed in a safe manner.

6.12.4 Schedules generation equipment outages as required.

6.12.5 Ensures all mark outs and surveys are requested for and complete prior to commencing work.

7.0 SPECIAL TOOLS AND EQUIPMENT

7.1 Use of insulated digging tools is the *preferred* method for digging. (Insulated shovel, sledge hammer, insulated digging bars, etc.)

7.2 Workers excavating shall wear fire retardant clothing while digging in close proximity to “High voltage” cables. (480 volts or more)

8.0 INSTRUCTIONS (GENERAL)

8.1 General

8.1.1 All persons entering the substation for any purpose are required to call the System Operator upon entering, sign the substation log book and show the time, date and reason for entry. A foreman may sign for himself and his crew. Per OI 40002

8.1.2 Keep all gates locked while in the substation, unless the substation entrances are under the observation of an authorized attendant.

8.1.3 All persons entering a generating facility shall contact the Station Shift Supervisor or the Gas Turbine Supervisor to receive required Work Permit per OI-10002.

8.2 When planning to excavate in a LIPA Substation or a National Grid Generating Facility, the excavator shall:

8.2.1 Review the list of sites which are subject to regulatory agreements and restrictions on Regulated Environmental Sites (and possible digging restrictions) because of known or suspected surface or subsurface contamination (Appendix B). For any intrusive work proposed for these sites, Network Strategy Engineering and Construction Delivery Departments need to contact Site Investigation & Remediation (SIR) and Substation Area Coordinator (SAC) as soon as possible in the project planning stages, prior to contractor bidding.

The purpose of this coordination is to obtain appropriate site specific guidance from SIR and National Grid Corporate Safety Departments regarding environmental and safety issues. Proper planning will ensure that the projects can be completed on schedule and all costs associated with environmental work are included in the bids. Some projects will require the use of specially trained workers to perform certain intrusive work functions depending on site specific conditions.

8.2.2 Obtain all underground facility maps for a substation from Network Strategy Engineering - Substation Engineering.

8.2.3 Obtain all underground facility maps for the generating facility from Power Engineering.

8.2.4 Request Survey to mark out all subsurface facilities within the substation/generation work area boundaries. This request shall include the up to date drawing, request for survey and a sketch of the limits of the work area. Survey shall issue a job number for each request that must be maintained by the requesting department. A survey completion form shall be transmitted to the requestor.

8.2.5 Contact New York 811 if the excavating plans go beyond the current substation / generation boundaries.

8.3 When excavating in the LIPA Substation or a National Grid Generating Facility, the excavator shall:

8.3.1 Assure that a National Grid representative will be on site while the excavating process is taking place.

8.3.2 Request a live line clearance or request to take a piece of equipment out of service.

8.3.3 Test hole to locate all marked out facilities in the work area. For facilities running parallel to the proposed trench positioned less than 5 feet from the trench, the test holes must be made at intervals no greater than 10 feet to confirm facility location. Approved dry work gloves shall be worn when using a shovel. Rubber gloves must be worn, when using a digging bar while test holing.

8.3.4 Identify all unidentified underground facilities found during test holing prior to excavating with mechanized equipment.

8.3.5 Uncover all underground facilities by hand digging on all sides prior to excavating with mechanical equipment.

8.3.6 Not use a digging bar within 18 inches of an expected facility. No digging bars shall be used beyond the depth of 2 feet. Rubber gloves must be worn when approaching 18" of an energized cable, assuming all facilities have been located.

8.3.7 If the site is on the list of Regulated Environmental Sites (Appendix B) or is suspected to have known contamination present, special training and monitoring for the excavator and on-site labor personnel may be necessary. National Grid SIR and Safety Departments can provide more details.

8.3.8 Approved protective barriers shall be used to protect all adjacent facilities from damage.

8.3.8.1 See Section 5 for the definitions of thermal barriers, Dielectric Barriers, and physical Barriers.

8.3.8.2 Qualified personnel wearing Class 2 High Voltage rubber gloves and sleeves may install approved barriers on energized cables and cable accessories having non metallic shields.

8.3.8.3 Once approved barrier(s) are properly installed, all work may proceed in close proximity to the barrier, including personnel contacting the barrier without the use of Class 2 High Voltage rubber gloves and sleeves.

8.3.8.4 All work performed on energized equipment inside 36″ diameter and 42″ diameter below grade enclosures shall be performed from outside the enclosure by qualified personnel using approved barriers as required.

8.3.9 Be permitted to utilize a mechanical excavator of an appropriate size when all test holes and facilities are exposed. The size will depend on the type of job and its surroundings. A mechanical excavator may be used to any depth at a lateral distance of 3 feet or more from the located cables or facilities. Permission must be granted by TOC prior to the use of a mechanical excavator.

8.3.9.1 TOC has the right to deny the use of mechanical equipment in substations. The time of the year and the risk of losing a facility will have an affect on their decision.

8.3.10 After digging, all work performed must meet construction standard for underground facilities. The site shall then be restored to designed conditions with the dolomite replaced.

9.0 RECORDS

9.1 Substation Survey requests **SHALL** be kept on file by the user department for three years.

10.0 EXHIBITS

None

11.0 APPENDICES

11.1 Appendix A - Approved Barriers

11.2 Appendix B - LIPA and National Grid Sites designated as Regulated Environmental Sites(as of July 2013)

11.3 Appendix C - LIPA/National Grid SIR - Shared Responsibilities and Coordination for Intrusive Activities

Appendix A: Approved Barriers

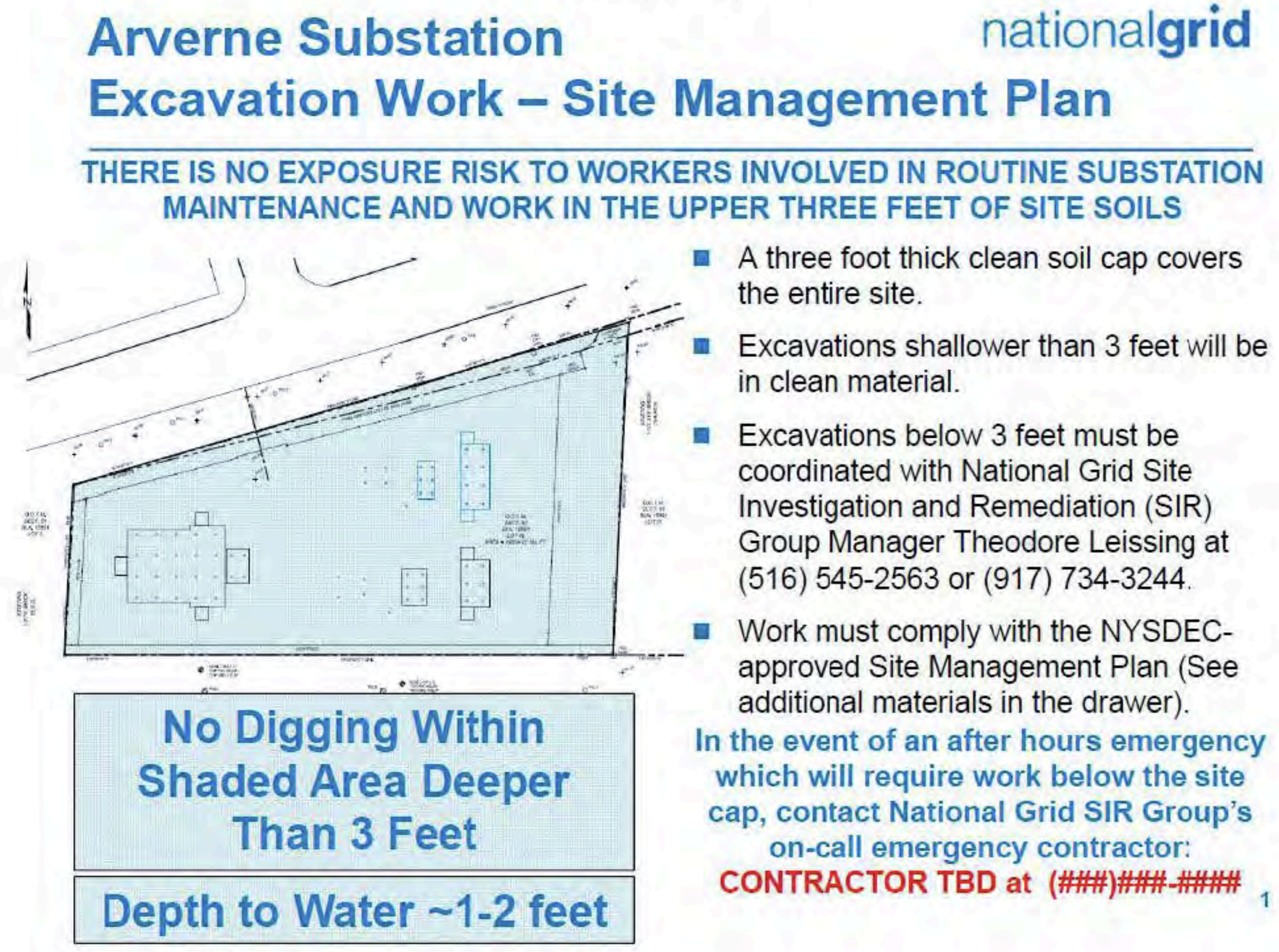
Barrier	Physical Barrier		Thermal Barrier	Dielectric Barrier
	Heavy Duty	Light Duty		
U Guard	X	X	X	
Plywood	X	X	X	
Wooden Handled Shovel		X	X	
Dirt (Earth)			X	
Rubber Blanket		X	X	X*
Rubber EEL		X	X	X*
Bomb Blanket ARC Suppression Blanket	X		X	
Modified bucket Liner**	X	X		

*Rubber blankets and eels must be secured
**Optional, must be utilized with a rubber blanket

Appendix B: **LIPA and National Grid Regulated Environmental Sites**

SITE	**SAC's Substation Area Coordinators** *SAC's as of 02/28/13*	**SIR PROJECT MANAGER**	**CELL**	**WORK**	**NOTES**
2AR-ARVERNE SUBSTATION *Satellite to 2G*	Steve McCaffrey	Thomas Campbell	917-734-33695	516-545-2555	Figure 1
6B-HALESITE SUBSTATION *Satellite to 6UL - Greenlawn*	Martin Kennedy	William Ryan	516-790-1660	516-545-2586	Figure 2
4RH-ORCHARD SUBSTATION (GLEN COVE)	Joseph Giordano	Theodore Leissing	917-734-3244	516-545-2563	Figure 3
4H -EAST GARDEN CITY SUBSTATION	Dave Santee	Patrick Van Rossem	917-572-4075	516-545-2578	Figure 4
4T-LYNBROOK *(Ocean Ave. & Merrick Rd.)*	Transmission Sub - No Distribution	Theodore Leissing	917-734-3244	516-545-2563	Figure 5
5H-OYSTER BAY	James Flannery	Theodore Leissing	917-734-3244	516-545-2563	Figure 6
5R-BELLMORE	Don Tice	Theodore Leissing	917-734-3244	516-545-2563	Figure 7
2G- Rockaway Beach Substation	Steve Mc Caffrey	Thomas Campbell	917-734-33695	516-545-2555	Figure 8

Figure 1



Arverne Substation Excavation Work – Site Management Plan

nationalgrid

THERE IS NO EXPOSURE RISK TO WORKERS INVOLVED IN ROUTINE SUBSTATION MAINTENANCE AND WORK IN THE UPPER THREE FEET OF SITE SOILS

- A three foot thick clean soil cap covers the entire site.
- Excavations shallower than 3 feet will be in clean material.
- Excavations below 3 feet must be coordinated with National Grid Site Investigation and Remediation (SIR) Group Manager Theodore Leissing at (516) 545-2563 or (917) 734-3244.
- Work must comply with the NYSDEC-approved Site Management Plan (See additional materials in the drawer).

In the event of an after hours emergency which will require work below the site cap, contact National Grid SIR Group's on-call emergency contractor:

CONTRACTOR TBD at (###)###-####

No Digging Within Shaded Area Deeper Than 3 Feet

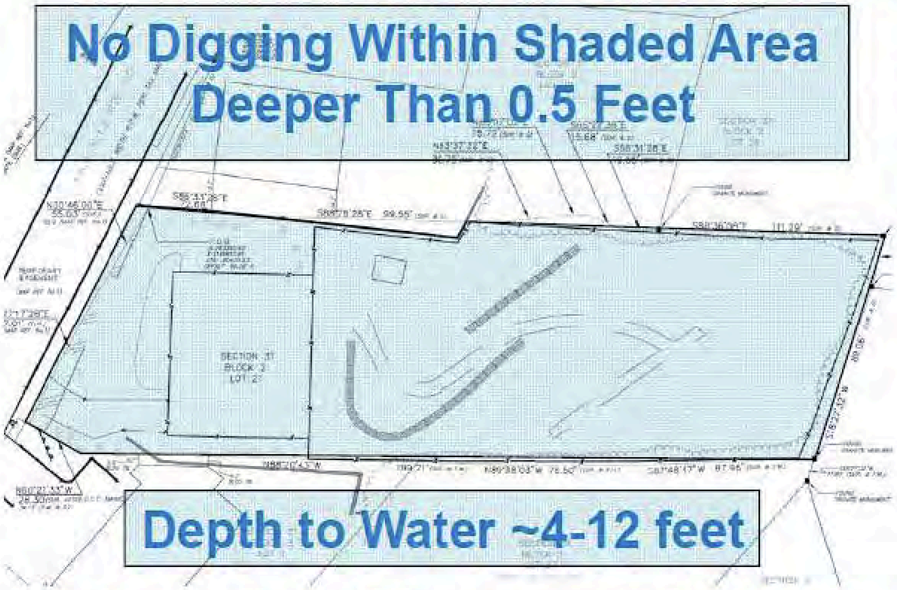
Depth to Water ~1-2 feet

Figure 2

Halesite Substation
Excavation Work – Site Management Plan

nationalgrid

THERE IS NO EXPOSURE RISK TO WORKERS INVOLVED IN ROUTINE SUBSTATION MAINTENANCE AND WORK IN THE UPPER 0.5 FEET OF SITE SOILS



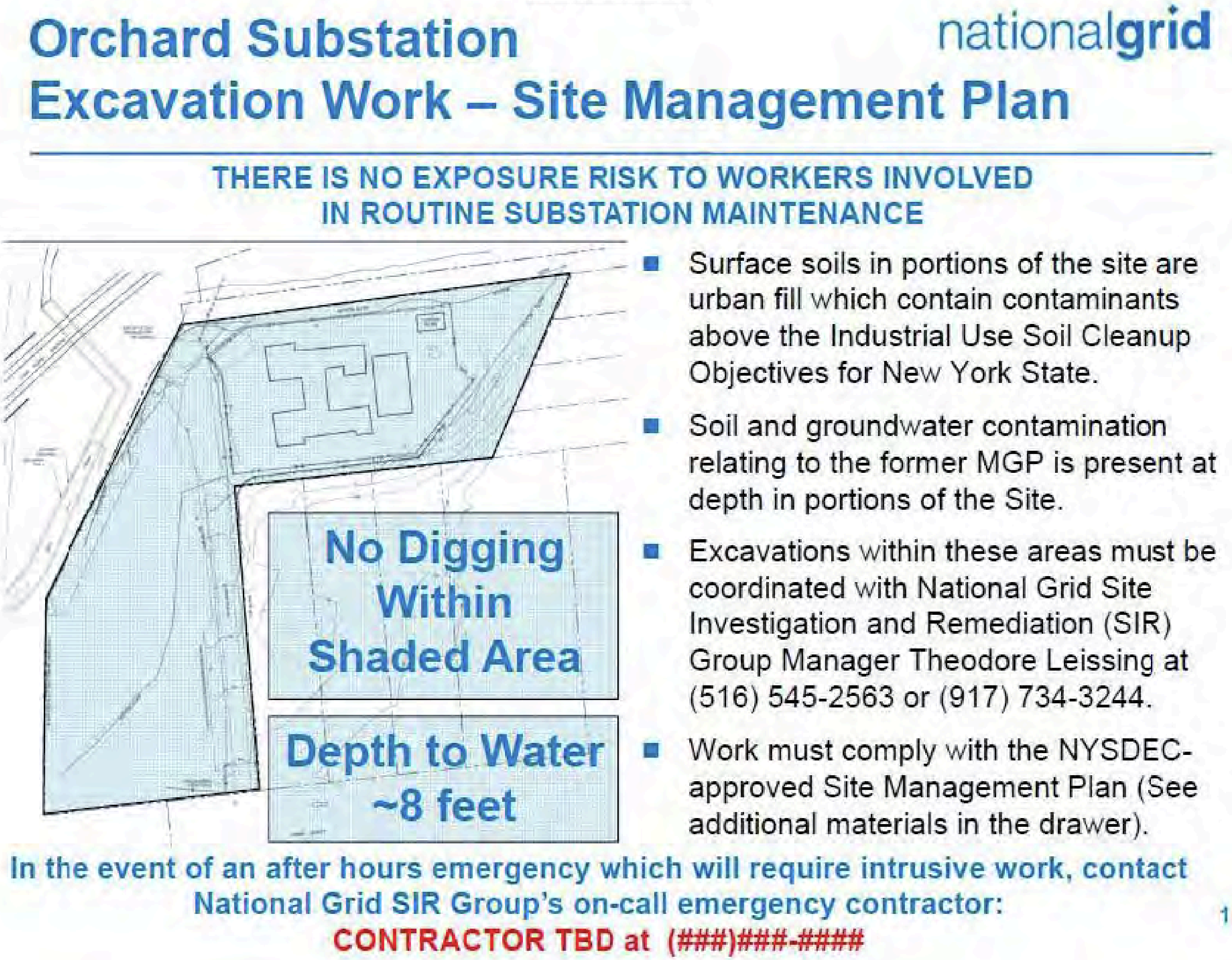
No Digging Within Shaded Area Deeper Than 0.5 Feet

Depth to Water ~4-12 feet

In the event of an after hours emergency which will require work below the site cap, contact National Grid SIR Group's on-call emergency contractor:
CONTRACTOR TBD at (###)###-####

- A 0.5 foot thick clean soil/gravel/asphalt cap covers the entire site.
- Excavations shallower than 0.5 feet will be in clean material.
- Excavations below 0.5 feet must be coordinated with National Grid Site Investigation and Remediation (SIR) Group Manager Theodore Leissing at (516) 545-2563 or (917) 734-3244.
- Work must comply with the NYSDEC-approved Site Management Plan (See additional materials in the drawer).

Figure 3



Orchard Substation
Excavation Work – Site Management Plan

nationalgrid

THERE IS NO EXPOSURE RISK TO WORKERS INVOLVED IN ROUTINE SUBSTATION MAINTENANCE

No Digging Within Shaded Area

Depth to Water ~8 feet

- Surface soils in portions of the site are urban fill which contain contaminants above the Industrial Use Soil Cleanup Objectives for New York State.
- Soil and groundwater contamination relating to the former MGP is present at depth in portions of the Site.
- Excavations within these areas must be coordinated with National Grid Site Investigation and Remediation (SIR) Group Manager Theodore Leissing at (516) 545-2563 or (917) 734-3244.
- Work must comply with the NYSDEC-approved Site Management Plan (See additional materials in the drawer).

In the event of an after hours emergency which will require intrusive work, contact National Grid SIR Group's on-call emergency contractor:

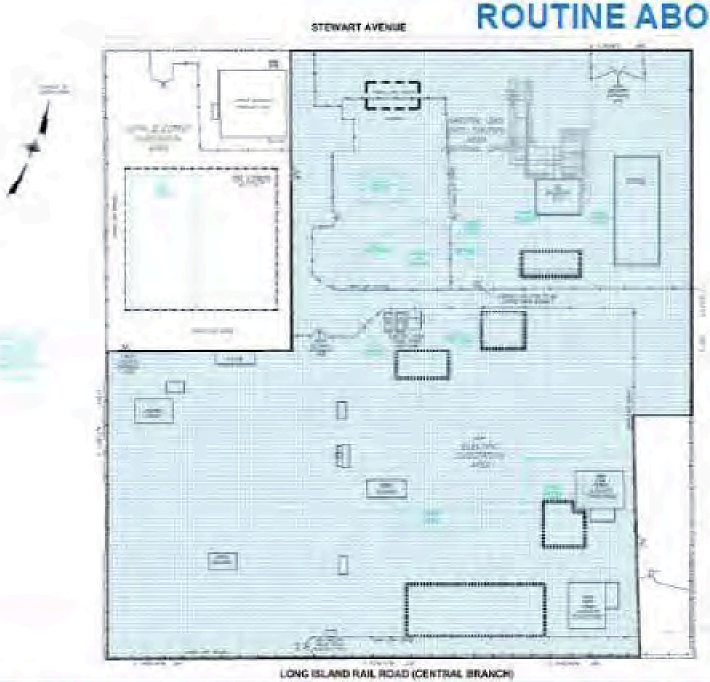
CONTRACTOR TBD at (###)###-####

Figure 4

East Garden City Substation Excavation Work – Site Management Plan

nationalgrid

THERE IS NO EXPOSURE RISK TO WORKERS INVOLVED IN ROUTINE ABOVE GROUND SUBSTATION MAINTENANCE



No Digging Within Shaded Area

Depth to Water ~18-20 feet

- Surface and subsurface soils in portions of the site contain contaminants above the Industrial Use Soil Cleanup Objectives for New York State.
- Excavations at the site must be coordinated with National Grid Site Investigation and Remediation (SIR) Group Manager Theodore Leissing at (516) 545-2563 or (917) 734-3244.
- Work must comply with the NYSDEC-approved Site Management Plan (See additional materials in the drawer).

In the event of an after hours emergency which will require work in shaded areas, contact National Grid SIR Group's on-call emergency contractor:

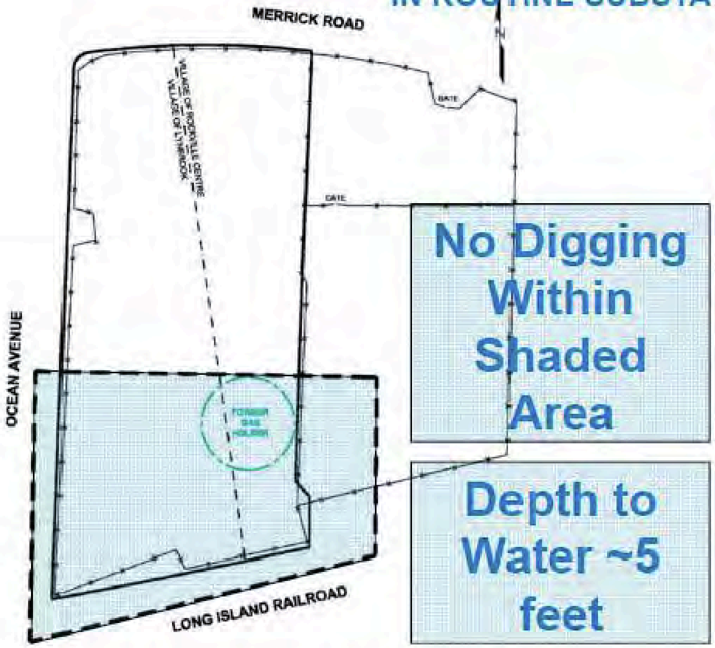
CONTRACTOR TBD at (###)###-####[1]

Figure 5

Lynbrook Substation
Excavation Work – Site Management Plan

nationalgrid

THERE IS NO EXPOSURE RISK TO WORKERS INVOLVED IN ROUTINE SUBSTATION MAINTENANCE



No Digging Within Shaded Area

Depth to Water ~5 feet

- Surface soils on this site meet the Restricted Use Residential Soil Cleanup Objectives for New York State.
- Soil contamination is limited to elevated PAHs related to explosions and fires in1973 .
- Excavations within these areas must be coordinated with National Grid Site Investigation and Remediation (SIR) Group Manager Theodore Leissing at (516) 545-2563 or (917) 734-3244.
- Work must comply with the NYSDEC-approved Site Management Plan (See additional materials in the drawer).

In the event of an after hours emergency which will require intrusive work, contact National Grid SIR Group's on-call emergency contractor:

CONTRACTOR TBD at (###)###-####

Figure 6

Oyster Bay Substation Excavation Work – Site Management Plan

nationalgrid

THERE IS NO EXPOSURE RISK TO WORKERS INVOLVED IN ROUTINE SUBSTATION MAINTENANCE OR EXCAVATION WORK

- Surface materials remaining at the site meet the Industrial Use Soil Clean-up Objectives.
- Soils located below surface materials meet the Residential Use Soil Clean-Up Objectives.
- Excavations at the site must be coordinated with National Grid Site Investigation and Remediation (SIR) Group Manager Theodore Leissing at (516) 545-2563 or (917) 734-3244.

No Digging Within Shaded Area

Depth to Water ~3-7 feet

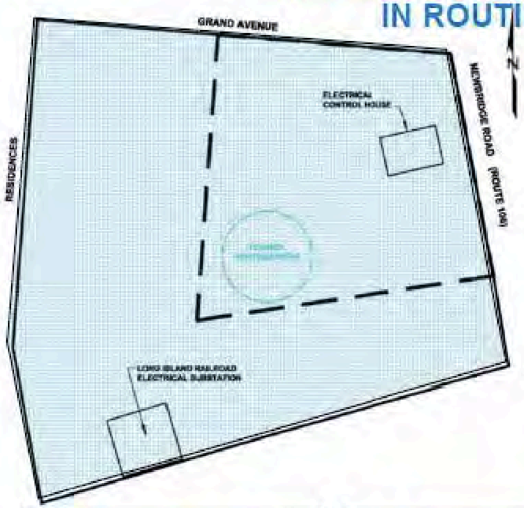
In the event of an after hours emergency which will require work below the site cap, contact National Grid SIR Group's on-call emergency contractor:
CONTRACTOR TBD at (###)###-####

Figure 7

Bellmore Substation
Excavation Work – Site Management Plan

nationalgrid

THERE IS NO EXPOSURE RISK TO WORKERS INVOLVED IN ROUTINE SUBSTATION MAINTENANCE



Depth to Water ~8 feet

No Digging Within Shaded Area

- Surface soils in portions of the site are fill which contain contaminants meeting the Industrial Use Soil Cleanup Objectives for New York State.
- Soil contamination is present at depth in portions of the Site and is limited to odor and visual impacts.
- Excavations within these areas must be coordinated with National Grid Site Investigation and Remediation (SIR) Group Manager Theodore Leissing at (516) 545-2563 or (917) 734-3244.
- Work must comply with the NYSDEC-approved Site Management Plan (See additional materials in the drawer).

In the event of an after hours emergency which will require intrusive work, contact National Grid SIR Group's on-call emergency contractor:

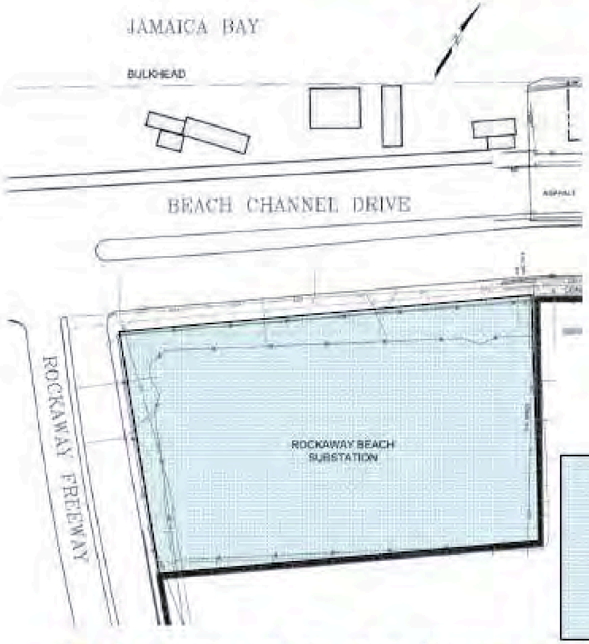
CONTRACTOR TBD at (###)###-####

Figure 8

Rockaway Beach Substation Excavation Work – Site Management Plan

nationalgrid

THERE IS NO EXPOSURE RISK TO WORKERS INVOLVED IN ROUTINE SUBSTATION MAINTENANCE



- Groundwater contamination relating to the former MGP is present at depth in portions of the Site.
- Excavations within these areas must be coordinated with National Grid Site Investigation and Remediation (SIR) Group Manager Theodore Leissing at (516) 545-2563 or (917) 734-3244.
- Work must comply with the NYSDEC-approved Site Management Plan (See additional materials in the drawer).

No Digging Within Shaded Area

Depth to Water ~4 to 8 feet

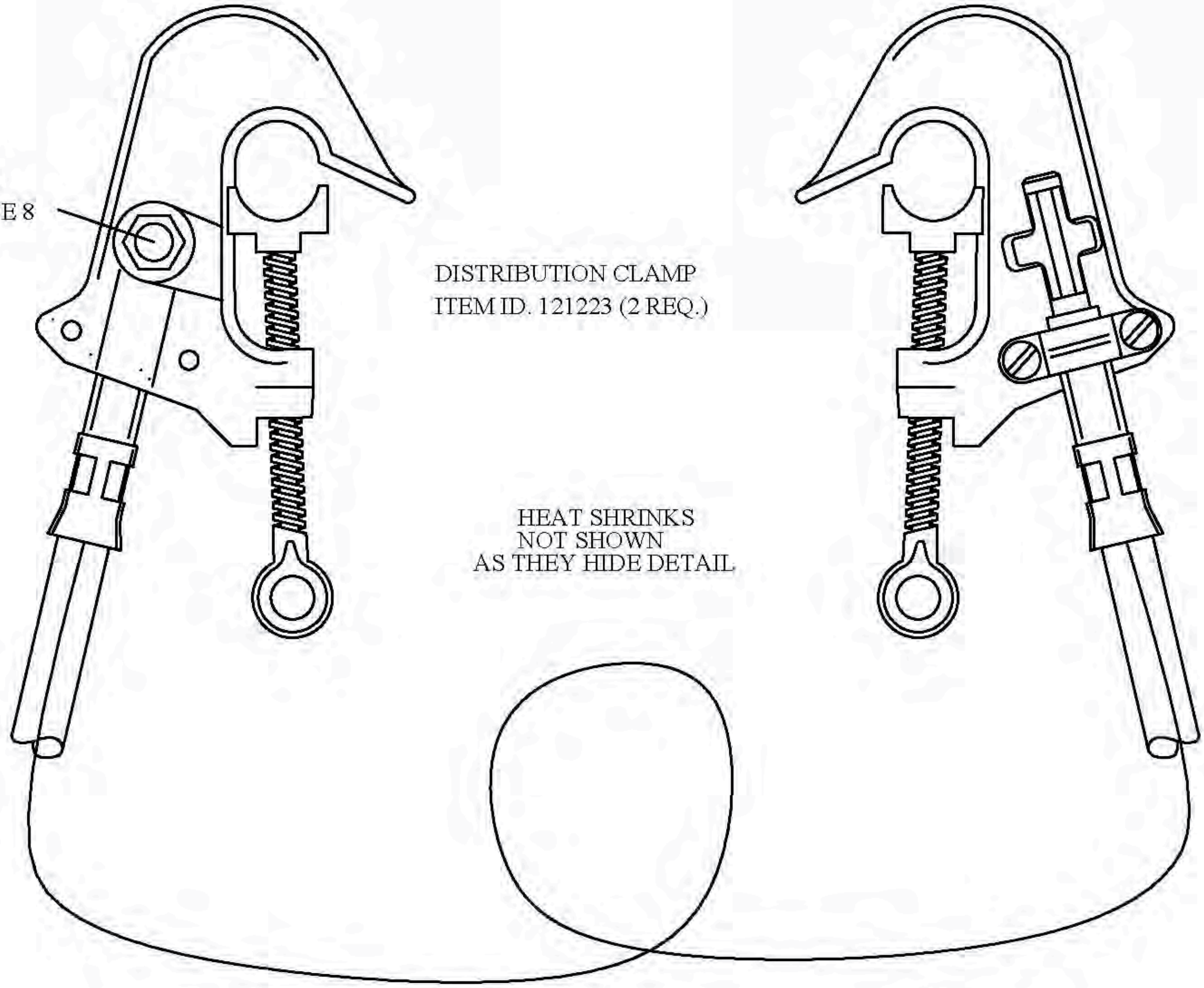
In the event of an after hours emergency which will require intrusive work, contact National Grid SIR Group's on-call emergency contractor:

CONTRACTOR TBD at (###)###-####

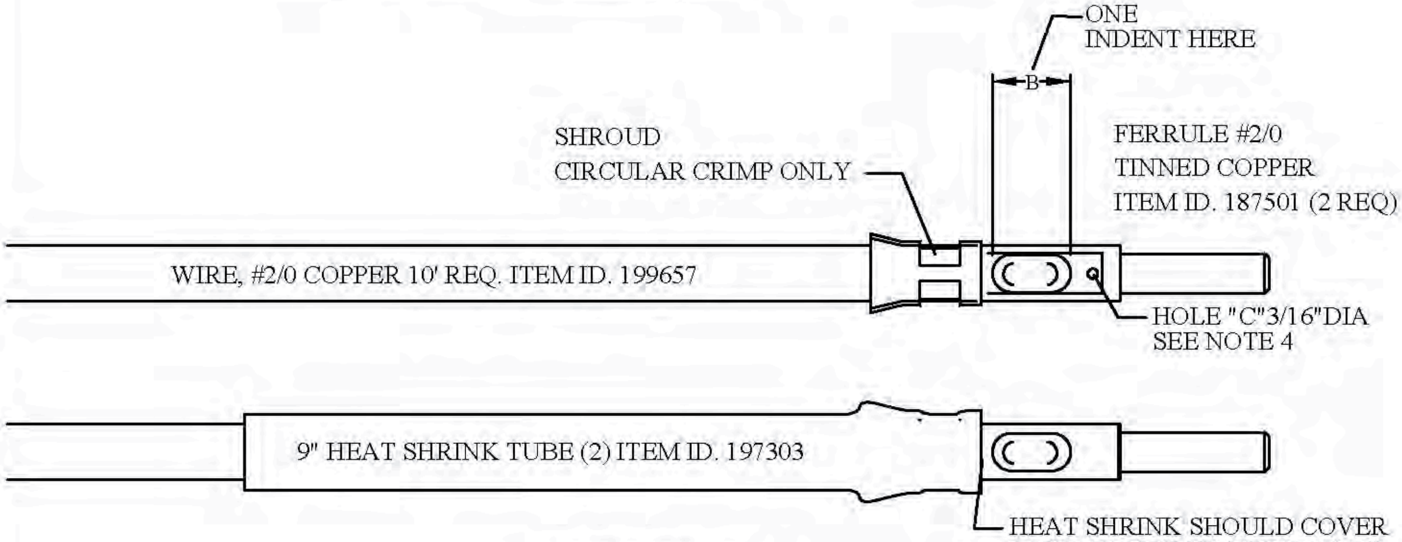
Appendix C: LIPA/National Grid SIR - Shared Responsibilities and Coordination for Intrusive Activities

LIPA/National Grid - Shared Site Responsibilities - Coordination and Environmental Guidelines						
National Grid Site Name			LIPA Site Name			
National Grid PM			LIPA Site PM			
	(____) _____-_______ Office				(____) _____-_______ Office	
	(____) _____-_______ Cell				(____) _____-_______ Cell	
National Grid Contractor			LIPA Contractor			
National Grid Contractor PM			LIPA Contractor PM			
	(____) _____-_______ Office				(____) _____-_______ Office	
	(____) _____-_______ Cell				(____) _____-_______ Cell	
National Grid Contractor Field Staff			LIPA Contractor Field Staff			
	(____) _____-_______ Office				(____) _____-_______ Office	
	(____) _____-_______ Cell				(____) _____-_______ Cell	
NYSDEC PM/Phone #s			(____) _____-_______ Office		(____) _____-_______ Cell	
available; and initiating agency National Grid, LIPA, others)						
Kick-Off Meeting Conducted		Meeting Attendees				
Date of Meeting						
Expected Start Date of Field Work			Agency Coordinating Schedule			
The team may reference EG-27 and complete the EG-27 check list. Based upon the outcome a PHA might be required prior to the start of work						
Soil/Groundwater Potential Environmental Issues (brief description, include existing engineering controls and depth to water)						

Contractor Role and Responsibilities	National Grid	LIPA	NG Contractor	LIPA Contractor	NG Consultant	Other (Specify)
Construction Oversight						
Perimter Air monitoring						
Work Zone Air monitoring						
Soil Monitoring/Screening						
Waste Management (soil/water) - who is responsible?						
On-Site Waste Management Procedures/Methods (Select One) 1. Stockpile on plastic 2. Stockpile in containment 3. Roll-offs/disposal						
Waste Sampling Parameters (analytical methods for each media by facility)						
Waste Management:Off-Site Disposal 1. Identify Receiving Facility 2. Coordinated Transporation 3. Documentation/Manifests						



HEAT SHRINKS NOT SHOWN AS THEY HIDE DETAIL



COMPLETED END

SEE SHEET 3 FOR PROCEDURE

APPROVED BY
DATE: 09/14/04

REVISION
12. 08/04: GENERAL UPDATE

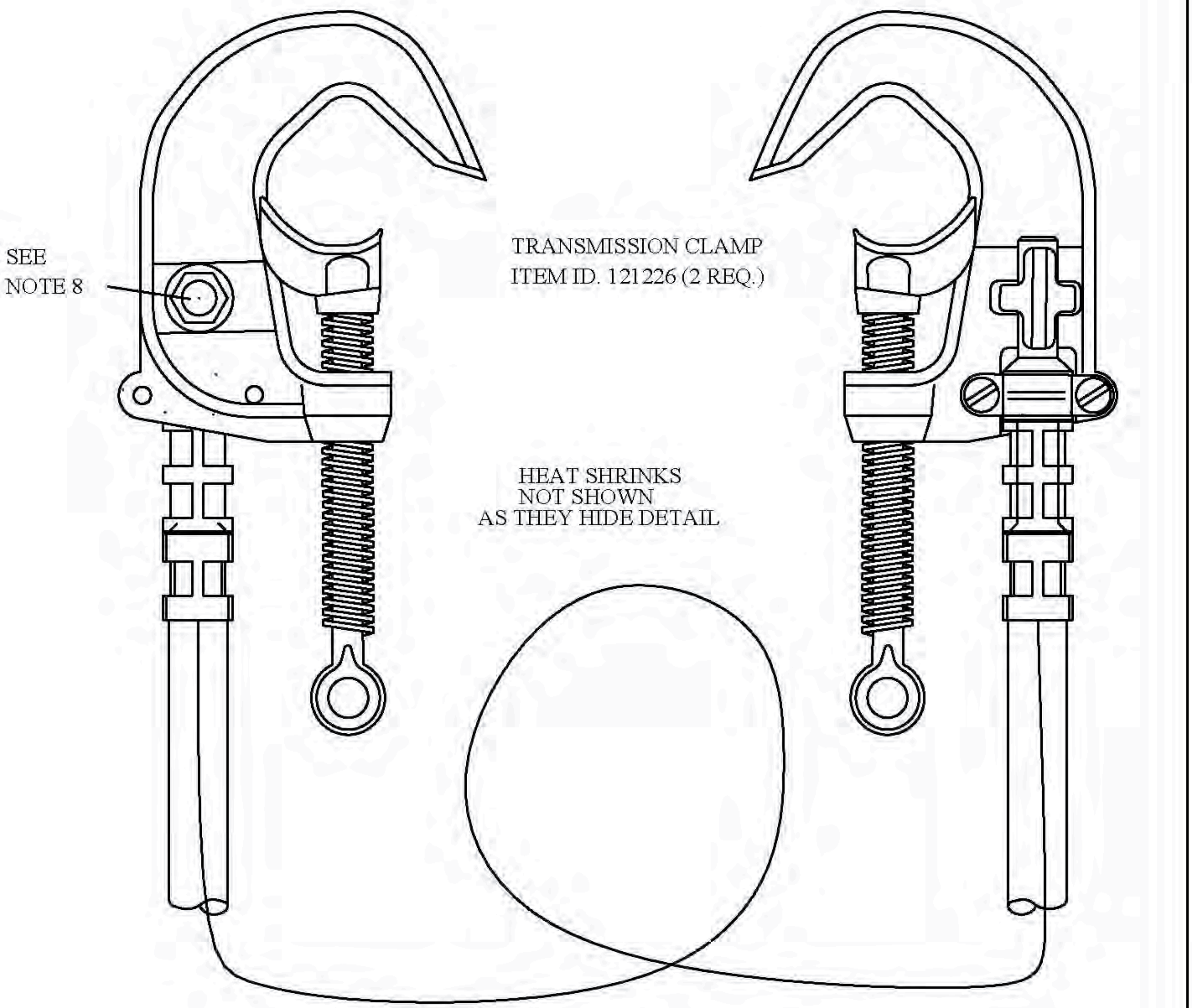
LONG ISLAND POWER AUTHORITY
prepared by KeySpan Energy Corporation

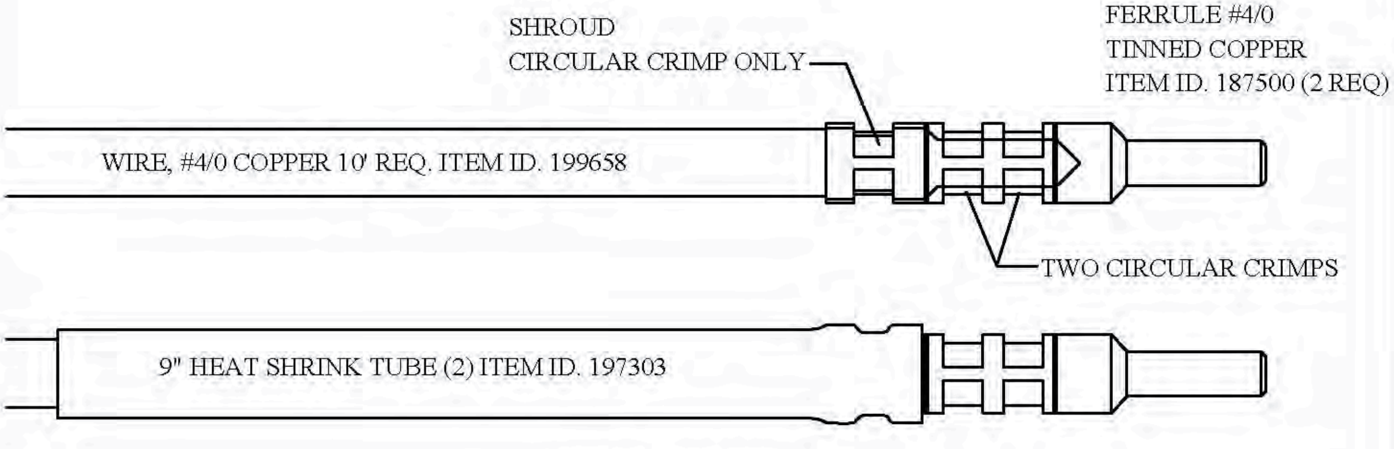
GROUNDING PRACTICES: GENERAL

PORTABLE GROUNDING ASSEMBLIES
DISTRIBUTION (#2/0)

CONSTRUCTION STANDARD
DRAWN BY AH

NUMBER	SHEET No	REV
3575	1 of 3	12





COMPLETED END

SEE SHEET 3 FOR PROCEDURE

REVISION

12. 08/04: GENERAL UPDATE

LONG ISLAND POWER AUTHORITY
prepared by KeySpan Energy Corporation

GROUNDING PRACTICES: GENERAL

PORTABLE GROUNDING ASSEMBLIES
TRANSMISSION (#4/0)

CONSTRUCTION STANDARD
DRAWN BY AH

NUMBER	SHEET No.	REV
3575	2 of 3	12

NOTE: THE TWO CLAMPS FOR ONE ASSEMBLY MUST BE THE SAME.

PROCEDURE

1. CUT CABLE TO 10 FOOT LENGTH.
2. REMOVE NEOPRENE INSULATION AND PAPER SEPARATOR FOR DISTANCE INDICATED IN TABLE I.
3. PENCIL INSULATION FOR A DISTANCE OF 5/16" IF INDICATED IN TABLE I.
4. CHECK HOLE MARKED "C" (IF AVAILABLE) TO BE SURE THAT CONDUCTOR IS SNUG IN FERRULE.
5. APPLY INDENT OR CIRCULAR CRIMP WITH APPROPRIATE TOOL IN SECTION MARKED "B".
6. APPLY CIRCULAR CRIMP ON FERRULE COLLAR.
7. APPLY A 9" LONG HEAT SHRINK TO PROVIDE A SEAL BETWEEN THE FERRULE AND CONDUCTOR CONNECTION. IF HOLE "C" DOES EXIST SOLDER FILL THE HOLE COMPLETELY TO SEAL IT.
8. TORQUE 1/2" HARDWARE TO 25 FOOT POUNDS, AFTER ITEMS HAVE BEEN ASSEMBLIED.

TABLE I

FERRULE SIZE	REMOVE INSULATION	PENCIL LENGTH	TOOL	DIE	
				SECTION "B"	SHROUD
4/0	2"	-	Burndy Y-35	U - L	U - L
2/0	1"	5/16"	Burndy Y-35	U - 658 & Y35P3**	U - 658
			Burndy Y-34A ***	Nest A27D Indent Y34PR - 2	A - 658
			Amp 69099M1 *	46767 - 2 (2/0)	-

*For General Shops Use Only
**Must use 1/2 of each die set to make one indent crimp.
***May not work with ferrules from every manufacturer.

REVISION

12. 08/04: GENERAL UPDATE

LONG ISLAND POWER AUTHORITY
prepared by: KeySpan Energy Corporation

GROUNDING PRACTICES: GENERAL

PORTABLE GROUNDING ASSEMBLIES
#2/0 AND #4/0

CONSTRUCTION STANDARD
DRAWN BY AH

NUMBER	SHEET No	REV
3575	3 of 3	12

Bulletin

Work Methods

Safety
Truck & Tool
Mat'ls & Stds
Work Methods

Transmission Grounding

This bulletin is directed to both the Electric Design and Construction Department and Electric Service Department Lineworkers.

This bulletin is being issued to establish the policy for use of copper portable grounds on the transmission system within the Long Island T&D area. This bulletin identifies the proper grounds to be used for the various transmission system voltages and defines how bundled transmission conductors shall be grounded.

Bundled Transmission

When work requires the grounding of bundled transmission conductors, both conductors shall be grounded utilizing the guidelines of this bulletin listed under Portable Grounding below. The spacers between the conductors are designed to physically keep the two paralleled conductors at a specified distance apart. These spacers are not intended to carry current or fault current. In addition, some of the newer spacers utilize rubber grommets ensuring that they do not conduct.

Portable Grounding

A review has been conducted by Electric Planning on the maximum fault duties that can be expected on LIPA's 345kV, 138kV, 69kV, 33kV and 23kV systems. These values are based upon planned system configurations through the year 2010. Engineering has reviewed the short circuit capabilities of existing copper portable grounds consisting of either 2/o or 4/o wire sizes built as per CS-3575. The information is based upon a maximum short circuit temperature of 300°C, operating temperature of 35°C and trip time of 200ms. Please reference the table below for values.

As required per the chart below, 1 set of 2/o portable grounds SHALL be used when working on the 23kV system, 2 sets of 2/o portable grounds or 1 set of 4/o portable grounds SHALL be used when working on the 33kV or 345kV systems, 2 sets of 2/o portable grounds SHALL be used when working on the 69kV system and 2 sets of 4/o portable grounds SHALL be used when working on the 138kV systems.

These ratings will be reviewed again at the request of the ED&C Overhead Work Methods Committee in the 2009 – 2010 time period to insure continued application and methodology. Engineering shall also notify Electric Design and Construction and Electric Service if planned system configurations alter these values prior to that time frame.

Maximum Fault Duties

Transmission Voltage	Fault Duties
345 kV	35 kA
138 kV	80 kA
69 kV	55 kA
33 kV	32 kA
23 kV	14 kA

Short Circuit Capabilities

Portable Ground Size	
2/o Cu	27.9 kA
4/o Cu	44.4 kA

Grounding Requirements

Transmission Voltage	Portable Ground Size
345 kV	2 sets of 2/o or 1 set of 4/o
138 kV	2 sets of 4/o
69 kV	2 sets of 2/o
33 kV	2 sets of 2/o or 1 set of 4/o
23 kV	1 set of 2/o

Note: Based on the above ratings, 4/o grounds are no longer suitable for the 69 kV systems. If 2 sets of 2/o grounds are not available then 2 sets of 4/o grounds SHALL be used.

Appendix D

Health and Safety Plan

Health and Safety Plan

Glen Cove Former MGP Site

Glen Cove, New York

Submitted to:
National Grid
175 E. Old Country Road
Hicksville, New York, 11801

Submitted by:
GEI Consultants, Inc., P.C.
110 Walt Whitman Road, Suite 204
Huntington Station, New York 11746
631-760-9300

December 2014
Project 093270

Matthew J. O'Neil, P.E.
Project Manager

Health and Safety Plan
Glen Cove Former MGP Site
Glen Cove, New York
December 2014

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Appendices

MJO:amm

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RECORD OF CHANGE		
Revision	**Date**	**Description**
0	**January 2010**	**Initial Draft**
1	**June 2010**	**Revision**
2	**April 2012**	**Revision. Updated to GEI format.**
3	**July 2012**	**Revision**
4	**December 2014**	**Revision**

1. Background Information

1.1 General

Engineer	GEI Consultants, Inc. (GEI) 110 Walt Whitman Road, Suite 204 Huntington Station, NY 11746
Project Name	Glen Cove Former MGP Site Glen Cove, NY

This Health and Safety Plan (HASP) establishes policies and procedures to protect GEI personnel from the potential hazards posed by the activities at the Glen Cove Former Manufactured Gas Plant (MGP) Site located in Glen Cove, within the Town of Oyster Bay, Nassau County, New York (see Appendix A – Site-Specific Information). The site is currently owned by the Long Island Power Authority (LIPA) and operated by Public Service Enterprise Group (PSEG) under contract to LIPA by National Grid.

Reading of and adherence to the HASP is required of all on-site GEI personnel. Subcontractors for this project will be required to develop their own HASP for protection of their employees, but at a minimum must adhere to applicable requirements set forth in this HASP. GEI will verify that its subcontractor's HASP includes National Grid's site-specific requirements as outlined in this HASP. Additionally, federal, state and local representatives, as well as National Grid employees may be required to sign and adhere to this HASP for hazard communication purposes only, depending on the nature of their presence on site during activities conducted by GEI.

The plan identifies measures to minimize accidents and injuries, which may result from project activities, emergencies, or during adverse weather conditions. Activities performed under this HASP will comply with applicable parts of OSHA Regulations, primarily 29 Code of Federal Regulations (CFR) Parts 1910 and 1926, and National Grid policies and procedures.

1.2 Project Description

Activities conducted at the Glen Cove Former MGP Site consist of several tasks. These tasks include:

<u>Mobilization/Demobilization</u>

- Mobilization/Demobilization of Equipment and Supplies

- Establishment of Site Security, Work Zones and Staging Areas

Pre-Construction Activities

- Locate All Utilities to and from the Site
- Locate All Active Utility Lines on Site

Investigation and OM&M Activities

- Installation of Soil Borings, Groundwater Probes, and Monitoring Wells
- Sampling of Groundwater and Soil
- DNAPL Recovery and Gauging
- Groundwater Treatment System Operations and Maintenance

Construction Activities

- Installation of Excavation Support System
- Excavation of Impacted Soils
- Construction Dewatering
- Community Air Monitoring
- Excavation and Trenching
- Groundwater Treatment System Installation

1.3 Site Description

MGP-related activities at the Site began in 1905 under the ownership of the Sea Cliff and Glen Cove Gas Company. The facility's footprint was relatively small and remained unchanged through its operational period, which ended in 1929. Facility structures were located on the northern section of the property, and consisted of a 60,000 cubic foot gas holder, boilers, purifiers, retorts, coal shed, engine room, tar and oil tank, and approximately eight gas tanks. In 1923, Sea Cliff and Glen Cove Gas Company was purchased or merged with the Long Island Lighting Company (LILCO). A 40,000 cubic foot high pressure Hortonsphere gas holder was added to the facility in the southwestern portion of the Site in 1925 for gas distribution purposes.

In 1929, LILCO terminated MGP operations and demolished the facility's surface structures sometime, thereafter. Site activities following 1929 consisted solely of natural gas storage in the Hortonsphere gas holder through the 1950s. The Hortonsphere was decommissioned and demolished between 1959 and 1966. A major electrical substation was constructed on the Site in the mid-1960s. In 1998, Brooklyn Union Gas and LILCO merged to form the KeySpan Corporation, at which time the ownership of the substation was transferred to LIPA. In 2007, National Grid acquired responsibility for the former MGP property through the acquisition of KeySpan. Currently, the Site is owned by LIPA and operated by Public Service Enterprise Group (PSEG) under contract to LIPA.

The substation footprint is coincidental with the majority of the main operations area of the former MGP. High voltage transmission lines transverse the fenced substation area and the west and northwest sections of the Site both aerially and below grade.

Through the 2007 acquisition of KeySpan, National Grid has accepted responsibility for addressing the environmental issues at the site. As such, National Grid will be referenced in the performance of all past and future work throughout the remainder of the document.

The Site is an inverted L-shaped parcel of approximately 1.9 acres presently occupied by an active electrical substation which serves Glen Cove and the surrounding area. Topographically, the Site is a flat depression bounded by approximately 20-foot high slopes to the north, south, and east. The west of the property slopes downward about 17-feet to Glen Cove Creek, a channelized stream, which eventually discharges to Hempstead Bay.

The Site is an approximately 1.9-acre area bounded by a health club parking area to the north with the LIRR tracks to the northwest, mixed commercial/residential properties to the south and to the east, and Glen Cove Arterial Highway (Route 107) right-of-way (ROW) to the west. Glen Cove creek flows in a general south to north direction along the western property line. It approaches the property via a culvert which passes beneath Route 107 and flows along the property line in an open channelized section. The creek leaves the property boundary at the northwest corner of the Site through a box culvert that directs flow beneath the LIRR tracks. The creek eventually discharges to Mosquito Cove (Hempstead Bay).

Vehicle access to the Site is limited to a one-lane steeply-graded access road from a residential neighborhood terminating at the flat area in the center of the Site. The active LIPA substation, located on the flat portion of the Site, is an important component of the utility's infrastructure. The substation is fenced, as is access to the western portion of the Site and access from Grove Street. A separate easement runs along the north boundary of the property parallel to the health club property terminating to the east at Cedar Swamp Road.

1.4 Hazard/Risk Analysis

1.4.1 Physical Hazards

Physical hazards associated with heavy equipment operations may be present should the need arise to excavate, trench, or install or abandon groundwater monitoring wells, oxygen injection wells, or soil vapor points. These activities would require the use of heavy equipment by subcontractors such as a backhoe or a drill rig, which is associated with, but not limited to, the following hazards:

- Bodily injuries
- Slipping, tripping or falling
- Heavy lifting

1.4.2 Fire and Explosion

The presence of oxygen tanks in the oxygen injection system sheds can present a hazard if a fire occurred in or near the oxygen injection shed. No smoking is permitted on site and employees conducting any work within the shed (such as OM&M) should be cognizant of any hazards that may contribute to a fire. A fire extinguisher is located within each system shed. All fires should be reported to 911 emergency services. In the event of an emergency, staff should attempt to disconnect the power supply to the systems; however, if a fire is present, staff should immediately evacuate the system and contact 911. National Grid and the GEI project manager will determine if it is necessary to shut down any of the injection systems due to intrusive activities.

1.4.3 Cold Stress

During the winter months, 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, and poor judgment. The procedures to be followed regarding the avoidance of cold stress are provided in Appendix B – Cold Stress Guidelines.

1.4.4 Heat Stress

A heat stress prevention program will be implemented when ambient temperatures exceed 70ºF. The procedures to be followed are provided in Appendix C – Heat Stress Guidelines.

1.4.5 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps and generators. Site workers who will perform suspected or established high noise tasks and operations for short durations (less than 1-hour) shall wear hearing protection. If deemed necessary by the Site Safety Officer (SSO), the Corporate Health & Safety Officer (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.

1.4.6 Hand and Power Tools

In order to complete the various tasks for the project, personnel will use 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 using hand and power tools and Ground Fault Indicator (GFI)-equipped circuits will be used for all power tools.

1.4.7 Slips, Trips, and Falls

Working in and around the site will pose slip, trip and fall hazards due to slippery surfaces. Excavation at the sites will cause uneven footing in the trenches and around the spoil piles. GEI employees will wear proper footwear (i.e. steel toe boots) and will employ good work practice and housekeeping procedures to minimize the potential for slips, trips, and falls.

1.4.8 Manual Lifting

Manual lifting of objects and equipment may be required. Failure to follow proper lifting technique can result in back injuries and strains. Site workers should use power equipment (such as a forklift) 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
6. Turn with your feet, don’t twist

1.4.9 Projectile Objects and Overhead Dangers

Overhead dangers, including but not limited to falling debris and equipment, can occur while heavy machinery is in operation. GEI staff will be instructed to maintain a minimum distance from large overhead operations. Staff must also maintain proper communication with heavy equipment operators and their handlers, especially if work necessitates their presence beyond the minimum safe distance. Additionally, employees should be cognizant of low-hanging overhead power lines, as these can snag on vehicles entering and exiting the site. Vehicles that are large enough to damage overhead power lines require spotters when entering and exiting the site. Proper PPE will be worn at all times during these types of activities including steel-toed or equivalent boots, safety vests and hard hats.

1.4.10 Heavy Equipment Operation

Heavy equipment will not be operated by GEI personnel, but may be present on site due to continuing projects. GEI personnel should be cautious when working near operating heavy equipment, and maintain a safe distance from the equipment. Personnel should maintain eye contact with the vehicle spotter or operator before traversing any paths that may cross that of the machinery.

1.4.11 Excavation and Trenching

GEI personnel will not enter a trench or excavation that is greater than 4 feet deep.

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.

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 5 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.

1.4.12 Excavation Entry Safety

- 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 hazards 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.

1.4.13 Line Breaking Activities

During line breaking activities, the potential exists for exposure to suspect asbestos containing materials (ACM). If suspect ACM is encountered, work will stop and will not resume until asbestos trained personnel have been upgraded to the proper PPE, and water is available to keep the work area and the suspect ACM wetted. All workers are to have completed asbestos awareness training prior to working with suspect ACM. The project management team (National Grid Project Manager, Consultant Project Manager, Contractor Project Manager, and CHSO) is to be notified if suspect ACM is encountered.

1.4.14 Additional Physical Hazards

GEI personnel should verify that all electric, gas, water, steam, sewer, and other utility service lines are located and marked before any intrusive work is started. In each case, any utility company that is involved should be notified in advance by the Contractor according to markout procedures, and its approval or services, if necessary, shall be obtained.

1.4.15 Electrical Hazards

The most serious physical hazard on site is the electrical hazards present in the LIPA electrical substation. There are several monitoring wells that are either located within the LIPA electrical substation or in an area that can only be accessed by traversing through the substation. Additionally, several monitoring wells are located on the exterior perimeter of the LIPA substation. Oxygen injection wells and system lines will be installed on the exterior perimeter of the substation. The substation proper is enclosed by a perimeter fence and a locked gate. If GEI employees need access to the well point located within the substation they will be escorted by a LIPA representative. Underground distribution electrical components of the substation generate 33 kilovolts of electricity, while aboveground transmission components generate between 69 kilovolts. Both the underground and aboveground electrical components occur inside and outside of the substation proper.

Electrical hazards are typically the most serious physical hazards associated with working on or near an electric substation. Most OM&M activities at the Glen Cove Former MGP Site are conducted outside of the substation perimeter and measures to mitigate exposure to overhead and subsurface electrical transmission and distribution lines should still be adhered to at all times due to the overhead and underground utilities on site. These measures include:

- When working within the perimeter of the substation, or while conducting intrusive work inside or outside the substation, Electrical Hazard (EH)-rated footwear, a hardhat, rubber gloves, and flame resistant clothing that meet NFPA 70E standards is to be worn. See Section 13 for information regarding PPE.

- A LIPA representative or designate must perform oversight during OM&M activities within the substation.

- Avoid carrying tools/equipment above waist height if overhead electric hazards exist.

- Maintain a minimum clearance of 16 feet from bus bars, transformer/capacitor electrodes and overhead transmission/distribution lines.

- Avoid working within the perimeter of the LIPA substation in conditions of high humidity or rain or thunderstorms.

- Stop work immediately and vacate the work area in the event lightning is observed.

Measures of protection that should be adhered to, should work be conducted within the substation perimeter, or if work adjacent to the substation perimeter includes intrusive activities, include:

- Contact DigNet of New York City and Long Island at 1-800-272-4420 at least 72 hours prior to any invasive activities for mark out of underground public utilities.

- Complete utility clearance documentation included in Appendix D.

- Obtain the most recent as-built drawings of the transmission/distribution line layout from National Grid.

- Mark out of underground transmission/distribution lines by National Grid survey/mark out personnel. Markouts must be checked every 10 days and updated as necessary.

- Conduct work under the supervision of a LIPA Health and Safety representative as required.

- Use hand digging tools specifically designed for use on substation property (i.e. insulated digging bar, long-handled spoon shovel, etc.). In addition, rubber gloves and flame resistant clothing are required if hand digging in a substation in/or around energized conductors, which is not anticipated to be the case.

- Use insulated lineman’s gloves (NFPA 70E) when handling equipment that may come into contact with underground utilities.

- Electrical Hazard (EH)-rated footwear is required when working within the substation perimeter.

- Avoid carrying tools/equipment above waist height if overhead electric hazards exist.

- GEI vehicles will be parked outside of the substation proper during sampling activities.

- Maintain a minimum clearance of 16 feet from bus bars, transformer/capacitor electrodes and overhead transmission/distribution lines.

- Maintain a minimum offset of 5 feet from marked underground transmission/ distribution lines.

- Avoid working on substation in conditions of high humidity or rain or thunderstorms.

- Stop work immediately and vacate the work area in the event lightning is observed.

Additional LIPA requirements for working in and around electrical substations include:

- Gate to substation must remain closed and locked unless access is granted and observed by LIPA or LIPA-approved personnel

- safety vests cannot have any zippers (Nomex vests are recommended)

- Be aware of exposed cables, transformers and other electrical structures. Many of these are not insulated and are at ground level or a level within bodily reach.

- Equipment in control houses may be exposed/uninsulated.

- LIPA oversight personnel must be notified if a lever is hit or touched. Do not turn the lever back to its original position.

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 a National Grid/LIPA representative. LIPA representatives will be responsible for de-energizing and lock out/tag out of all electrical equipment. If the equipment cannot be de-energized, work will stop and the Field Representative (FR) and/or SSO will consult with the GEI Project Manager (PM) and CHSO. All GEI employees will use proper PPE when working within the active substation including EH-rated safety boots, a hardhat, rubber gloves, and flame resistant clothing that meet NFPA 70E standards. GEI will notify National Grid prior to working adjacent to this equipment, and will verify that the equipment is energized or de-energized.

All power lines, which have been indicated by LIPA to be de-energized, must be locked out by a National Grid/LIPA representative, such that the lines cannot be energized when personnel are working near them. The lines shall not be unlocked and re-energized until GEI notifies National Grid that they have completed work in the area and that all personnel are clear of the area. PSEG representatives will provide GEI personnel with site-specific lockout/tagout documentation prior to on-site activities.

If power lines cannot be de-energized, the SSO will consult with the Project Manager to discuss how to proceed. 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. All work performed within the substation boundaries requires the use of task-specific PPE, as described in Section 13.

The subcontractor should verify that all electric, gas, water, steam, sewer, and other utility service lines are located and marked before any intrusive work is started. GEI must verify that the subcontractor has completed a utility mark out checklist prior to intrusive work in accordance with the appropriate work plan. In each case, any utility company that is involved should be notified in advance by the subcontractor according to markout procedures, and its approval or services, if necessary, shall be obtained.

Smoking is prohibited at or in the vicinity of hazardous operations or materials.

The potential hazards for this project are listed in the following Activity Hazard Analysis and Site Hazards sections.

Activity Hazard Analysis

Activity: Site Investigations/Site Remediations

Task	Potential Hazard	**Control Measure**
Mobilization and demobilization. Utility location. Excavation and trenching oversight. Construction oversight. Air monitoring.	Silica Dust Inhalation (From Concrete Break-Up, Grout/Cement Mixing)	Stay upwind of concrete break-up and grout mixing areas. Wear a dust mask if necessary.
	Loud Noise	Wear hearing protection.
	Proximity of Impacted Stockpiles	Maintain safe distance from stockpiles. Wear respiratory protection if necessary.
	Heavy Equipment Operations (Debris, Crushing, Pinch Points)	Wear proper PPE, including impact resistant safety glasses. Maintain awareness of location of equipment. Make eye-contact with operators to make sure they are aware of your position when navigating in the vicinity of heavy equipment.

	Slips, Trips and Falls	Keep trafficked areas free of slip/trip/fall hazards. Maintain awareness of excavation and trench perimeters.
	Traffic	Follow traffic safety guidelines in **Appendix F**.
	Contaminant Contact	Wear proper PPE including nitrile gloves and safety glasses. Dispose of gloves after use and wash hands.
	Cave Ins, Objects Rolling Into Trench	Verify that appropriate trenching guidelines are being followed.
	Exposure of Underground Utilities	Utility location should be carried out prior to start of project.

Activity: Installation/Abandonment of Soil Borings, Groundwater Probes, Groundwater Monitoring Wells, and/or Oxygen Injection Wells

Task	Potential Hazard	**Control Measure**
Soil borings, groundwater probes, monitoring well, and/or oxygen injection well installation and abandonment. Associated oversight. Replacement of well boxes and associated concrete on monitoring wells and/or oxygen injection wells.	Contaminant Contact	Wear proper PPE including nitrile gloves and safety glasses. Dispose of gloves after use and wash hands.
	Slips, Trips, and Falls	Keep trafficked areas free of slip/trip/fall hazards.
	Silica Dust Inhalation (From Grout/Cement Mixing)	Stay upwind of mixing area. Wear a dust mask if necessary.
	Heavy Machinery Proximity (Pinch Points, Crushing, Non-Secure Equipment)	Maintain awareness of location of equipment. Subcontractor use of a spotter for equipment operation.
	Loud Noise	Wear hearing protection.
	Electrical Substation Proximity	Wear proper PPE when working within the substation. Follow National Grid/LIPA and OSHA guidelines for working distance to equipment.
Waste Management	Contaminant Contact	Wear proper PPE including nitrile gloves and safety glasses. Dispose of gloves after use and wash hands.
	Cuts or Abrasions (Handling Drums)	Wear work gloves over nitrile gloves.

Waste Characterization Sampling	Contaminant Contact	Wear proper PPE during sampling including nitrile gloves and safety glasses. Dispose of gloves after use and wash hands.
	Cuts or abrasions (handling drums)	Wear work gloves over nitrile gloves.
	Traffic	Follow traffic safety guidelines in Appendix F.
Drum Removal	Contaminant Contact	Wear proper PPE during sampling including nitrile gloves and safety glasses. Dispose of gloves after use and wash hands.
	Cuts or Abrasions (handling drums)	Wear work gloves over nitrile gloves.
	Heavy Lifting-Strains and Sprains	Use proper lifting techniques and equipment for the job. Ask fellow worker for help.
Trenching	Loud Noise	Wear hearing protection.
	Slips, Trips and Falls	Keep trafficked areas free of slip/trip/fall hazards.
	Electrical Hand Tools	Ensure electrical equipment is connected to a Ground Fault Circuit Interrupter (GFCI).
	Electrical Substation Proximity	Wear proper PPE when working within the substation. Follow National Grid/LIPA and OSHA guidelines for working distance to equipment.
	Drill Rig Proximity (Pinch Points, Crushing, Non-Secure Equipment)	Maintain awareness of location of equipment. Subcontractor use of a spotter for equipment operation.
	Contaminant Contact	Wear proper PPE including nitrile gloves and safety glasses. Dispose of gloves after use and wash hands.
	Cuts or Abrasions	Wear work gloves over nitrile gloves.
	Silica Dust Inhalation (From Grout/Cement Mixing)	Stay upwind of mixing area. Wear a dust mask if necessary.
	Traffic	Follow Traffic Safety Guidelines in Appendix F.
	Heavy Lifting-Strains and Sprains	Use proper lifting techniques and equipment for the job. Ask fellow worker for help.
	Insect Bites	Use insect repellant.

	Repetitive Motion Injury (Standing, Squatting and Bending Over)	Take regular breaks and do not work in unusual positions for long periods of time. Walk and stretch between tasks.
	Jackhammer Proximity (Debris, Crushing, Pinch Points)	Wear proper PPE, including impact resistant safety glasses. Maintain awareness of location of equipment.

Activity: Groundwater Monitoring

Task	Potential Hazard	Control Measure
Groundwater sample collection.	Traffic	Follow traffic safety guidelines in **Appendix F**.
	Contaminant contact	Wear proper PPE during sampling including nitrile gloves and safety glasses. Dispose of gloves after use and wash hands.
	Insect Bites	Use insect repellant. Avoid areas where insects may be prevalent.
	Slips, Trips and Falls	Keep trafficked areas free of slip/trip/fall hazards.
	Electrical Substation Interior	Wear proper PPE when working within the substation. Follow National Grid/LIPA and OSHA guidelines for working distance to equipment.
	Heavy Lifting-Strains and Sprains	Use proper lifting techniques. Ask fellow worker for help.
	Poisonous Plants	Avoid heavily wooded areas. Staff should be able to identify common poisonous plants.
	Wild Animals	Avoid contact with wild animals.

Activity: DNAPL Gauging and Recovery (OM&M)

Task	Potential Hazard	Control Measure
DNAPL Gauging & Recovery	Repetitive Motion Injury (Standing, squatting and bending over)	Take regular breaks and do not work in unusual positions for long periods of time. Walk and stretch between tasks.
	Contaminant Contact	Wear proper PPE during sampling including nitrile gloves, face shield (recovery only) and safety glasses. Dispose of gloves after use and wash hands.
	Slips, Trips, and Falls	Keep trafficked areas free of slip/trip/fall hazards.

Activity: Oxygen Injection Systems Check and Maintenance (O&M)

Task	Potential Hazard	Control Measure
Monthly System Check	Oxygen Explosion Hazard	No smoking in and around injection shed. Assure fire hazards are removed from in and around shed. Maintain system components to avoid oxygen leaks and electrical shorts that may spark a fire.
	Slips, Trips and Falls	Keep trafficked areas free of slip/trip/fall hazards. Maintain a safe distance from unprotected fall areas (south side of site next to 36 N. New York Avenue parking lot).

Site-Wide Potential Hazards	Control Measures
Inclement Weather	Weather reports, proper clothing, and work stoppage.
Heat/Cold Stress	Proper clothing, acclimatization, regular work breaks, fluid intake, watch for signs of heat/cold stress.

1.5 Evaluation of Potential Chemical Hazards

The characteristics of 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 1-1 presents chemical data regarding potential exposure and monitoring for the chemical types listed below. Chemicals defined as “present” or “not present” at the site were determined based upon post-remediation data that reflects the current state of contaminants monitored at the site.

1.5.1 Volatile Organic Compounds (VOCs)

VOCs, such as benzene, toluene, ethyl benzene, and xylene (BTEX) are present in soil and groundwater and in some cases chemical components in non-aqueous phase liquids (NAPL) such as oil or tar within soils and underground structures. At high concentrations, 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.

1.5.2 Coal Tar and Coal Tar Products

Coal tar products, which are semi-volatile organic compounds (SVOCs), typically 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)peryline, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3cd)pyrene, 2-methyl naphthalene, naphththalene, phenanthrene, phenols, pyrene.

Coal tar products and other SVOCs are present at the site within impacted soil and groundwater and as a DNAPL by-product of gas production within soils, former MGP structures, and abandoned pipelines.

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. Details for monitoring procedures can be found in Section 2.

1.5.3 Heavy Metals

The Site potentially contains elevated levels of non-MGP related metals. These metals appear to be naturally occurring, associated with background anthropogenic sources and/or associated with historic fill of unknown origin as detailed. These metals include arsenic, antimony, barium, beryllium, cadmium, chromium, copper, iron, manganese, lead, mercury, nickel, selenium, sodium and zinc.

Exposure to high concentrations of 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 high concentrations of antimony can irritate the eyes, skin, and nose. Ingestion can irritate the throat, mouth and lead to coughing and dizziness. Additional symptoms of exposure can include nausea, vomiting, diarrhea, stomach cramps, insomnia and the inability to smell properly.

Exposure to high concentrations of beryllium and beryllium compounds can cause irritation of the eyes and skin. Long term/chronic exposure can lead to low weight, weakness, chest pain, clubbing of the fingers cyanosis, and pulmonary insufficiency.

Exposure to high concentrations of cadmium and cadmium compounds can cause pulmonary edema, cough, chest tightness, headaches, chills, muscle aches, nausea, vomiting, diarrhea, mild anemia, substernal pain, anosmia (loss of the sense of smell), emphysema, and proteinuria.

Exposure to high concentrations of chromium and chromium compounds can causes irritation to the eyes, skin, and respiratory system. Additional symptoms may include nasal septum perforation, liver and kidney damage, skin ulceration, leukocytosis, leucopenia, eosinophilia, eye injury and conjunctivitis.

Exposure to high concentrations of copper through inhalation can cause irritation of the eyes, nose, pharynx, nasal septum. Ingestion may cause a metallic taste. Skin irritation may result from direct contact with skin. Damage to the liver and kidneys may occur.

Exposure to high concentrations of iron through ingestion can cause salivation nausea, vomiting, diarrhea, and abdominal pain. Chronic exposure to mercury can cause liver damage.

Exposure to high concentrations of manganese through ingestion or inhalation can cause tremors, lethargy, impaired coordination, speech difficulties, and an awkward gait similar to the symptoms of Parkinson’s disease.

Exposure to high concentrations of lead may lead to lassitude (weakness, exhaustion), insomnia, facial pallor, anorexia, weight loss, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, tremor, paralysis of the wrist and/or ankles, encephalopathy, kidney disease, eye irritation, and hypertension.

Exposure to high concentrations of mercury can cause eye and skin irritation, cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis, tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion), stomatitis, salivation, gastrointestinal disturbance, anorexia, weight loss, and proteinuria

Exposure to high concentrations of nickel may cause sensitization dermatitis, allergic asthma, pneumonitis.

Exposure to high concentrations of 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.

Exposure to high concentrations of zinc through ingestion can cause abdominal pain, nausea, vomiting, and diarrhea. Chronic exposure can lead to low blood pressure, jaundice, and seizures.

As with VOCs, the primary route of exposure is through inhalation of dust particles when soil is disturbed and becomes airborne.

1.5.4 Asbestos-Containing Materials

As asbestos containing materials (ACM) have not been identified on site, they are not currently monitored for at the site.

1.5.5 Polychlorinated Biphenyls

As polychlorinated Biphenyls (PCBs) have not been identified on site, they are not currently monitored for at the site.

1.5.6 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. Therefore, hydrogen cyanide is not a concern at the Site. However, it is National Grid policy to monitor for hydrogen cyanide in the work zone during earth-disturbing activities at sites where MGP-related contaminants have been found.

1.5.7 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.

1.5.8 Evaluation of Organic Vapor Exposure

During intrusive activities, the requirement for air monitoring reduces the risk of overexposure by indicating when action levels have been exceeded and when PPE must be upgraded or changed. Action levels for VOCs and associated contingency plans for the work zone are discussed within Section 2. Air monitoring will be conducted during intrusive activities (such as drilling) and PID screening of well head spaces will be conducted during groundwater sampling activities.

Exposure to organic vapors shall be evaluated and/or controlled by:

- Monitoring air concentrations for organic vapors in the breathing zone with a photo-ionization detector (PID).

- 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 or other 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.

Specific chemical hazards information from the Material Safety Data Sheet (MSDS) and Occupational Health Guidelines are summarized in Table 1-1. MSDSs for decontamination chemicals, calibration gases, sample preservation chemicals, or other chemicals that may be used on site, are kept in a separate MSDS binder on site.

Chemical Data

Compound	CAS #	ACGIH TLV/ NIOSH REL	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^{o} 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^{o} 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; weekness, headache, confusion; nausea, vomiting; increased reate 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

Chemical Data							
Compound	**CAS #**	**ACGIH TLV/ NIOSH REL**	**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/m^3) 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 sweating; jaundice; hematuria	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

Chemical Data							
Compound	**CAS #**	**ACGIH TLV/ NIOSH REL**	**OSHA PEL**	**Route of Exposure**	**Symptoms of Exposure**	**Target Organs**	**Physical Data**
					(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.
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^{o} F IP: 8.82 eV LEL: 1.1% UEL:7.1% VP: 21 mm
1,2,4-Trimethyl-benzene	95-63-6	NIOSH REL TWA 25 ppm	None	Inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eyes, skin, respiratory system, central nervous system, blood	FP: 112°F BP: 337°F LEL: 0.9% UEL: 6.4% VP: 1 mmHg
Portland Cement	65997-15-1	10 µg/m^3 (total) TWA 5 µg/m^3 (resp)	TWA 50 mppcf	Inhalation, Ingestion, Skin and/or Eye Contact	Irritation eyes, skin, nose; cough, expectoration; exertional dyspnea (breathing difficulty), wheezing, chronic bronchitis; dermatitis	Eyes, skin, respiratory system	Gray, odorless powder FP: NA IP: NA LEL: NA UEL: NA VP: 0 mmHg

Chemical Data							
Compound	**CAS #**	**ACGIH TLV/ NIOSH REL**	**OSHA PEL**	**Route of Exposure**	**Symptoms of Exposure**	**Target Organs**	**Physical Data**
Iron	1309-37-1	Iron oxide dust and fume (Fe_2O_3) as Fe: 5 mg/m3 (TWA);	Iron oxide dust and fume: 10 mg/m3	Inhalation, ingestion, eye contact	Respiratory tract irritation, coughing, shortness of breath, overdose of iron may cause vomiting, abdominal pain, bloody diarrhea, vomiting blood, lethargy, and shock; acidity in the blood, bluish skin discoloration, fever, liver damage, and possibly death; eye and cornea irritation and discoloration	Eyes, respiratory system, GI tract, liver	Reddish brown solid FP: NA LEL: NA UEL: NA VP: 0 mmHg
Zinc	1314-13-2	5 mg/m3 (TWA), 10 mg/m3 (STEL) for zinc oxide fume	10 mg/m3 (TWA), for zinc oxide fume	Inhalation	Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function	Respiratory system	Colorless liquid FP: NA? IP: 11 eV LEL: 7.5% UEL: 12.5% VP: 100 mmHg
Manganese	7439-96-5	TWA 1 mg/m^3 ST 3 mg/m^3	C 5 mg/m^3	Inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage	Respiratory system, central nervous system, blood, kidneys	A lustrous, brittle, silvery solid. FP: NA LEL: NA UEL: Na VP: 0 mmHg
Antimony	7440-36-0	0.50 mg/m3 8-hour TWA		Inhalation, ingestion, skin and or eye contact	Ulceration of nasal septum, GI disturbances, peripheral neuropathy, respiratory irritation,	Liver, kidney, skin, lungs, lymphatic system	Metal: Vapor Pressure: 0 mmHg, Ionization Potential: NA

Chemical Data

Compound	CAS #	ACGIH TLV/ NIOSH REL	OSHA PEL	Route of Exposure	Symptoms of Exposure	Target Organs	Physical Data
					hyperpigmentation of skin, potential carcinogen		
VOCs[1]	NA	0.5 ppm (Skin)	0.5 ppm TWA 2.5 ppm STEL	Inhalation, Skin Absorption, Ingestion, Skin Contact	Irritate eyes and skin; headaches; dizziness; nausea; kidney; liver damage; depress CNS	Skin, eyes, liver, kidney, CNS	Colorless volatile liquid, sometimes with a sweet or solvent odor

Abbreviations

C = ceiling limit, not to be exceeded
CNS = Central Nervous System
CVS = Cardiovascular System
eV = electron volt
FP = Flash point
IP = Ionization Potential
GI = Gastro-intestinal
A.L. Action Level
LEL = Lower explosive limit
mm = millimeter
ppm = parts per million
Skin = significant route of exposure
STEL = Short-term exposure limit (15 minutes)
TWA = Time-weighted average (8 hours)
UEL = Upper explosive limit
VP = vapor pressure approximately 68° F in mm Hg (mercury)

1.6 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 will be instructed in hazard recognition, health hazards, and control measures during site-specific training.

1.6.1 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.

1.6.2 Insects

Insects, including bees, wasps, hornets, 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. 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 should have bee sting allergy medication on site and should provide this information to the SSO prior to commencing work.

1.6.2.1 Tick Borne Illnesses

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 that could lead to the worker contracting Lyme disease.

Lyme disease may cause a variety of medical conditions including arthritis, which can be treated successfully if the symptoms are recognized early and medical attention is received. Treatment with antibodies has been successful in preventing more serious symptoms from developing. Early signs may include a flu-like illness, an expanding skin rash, and joint pain.

If left untreated, Lyme disease can cause serious nerve or heart problems, as well as a disabling type of arthritis.

Symptoms can include a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. This flu-like illness is out of season, commonly happening between May and October when ticks are most active. A large expanding skin rash may develop around the area of the bite. More than one rash may occur. The rash may feel hot to the touch and may be painful. Rashes vary in size, shape, and color, but often look like a red ring with a clear center. The outer edges expand in size. It's easy to miss the rash and the connection between the rash and a tick bite. The rash develops from three days to as long as a month after the tick bite. Almost one third of those with Lyme disease never get the rash.

Joint or muscle pain may be an early sign of Lyme disease. These aches and pains may be easy to confuse with the pain that comes with other types of arthritis. However, unlike many other types of arthritis, this pain seems to move or travel from joint to joint.

Lyme disease can affect the nervous system. Symptoms include stiff neck, severe headache, and fatigue usually linked to meningitis. Symptoms may also include pain and drooping of the muscles on the face, called Bell's Palsy. Lyme disease may also mimic symptoms of multiple sclerosis or other types of paralysis.

The disease can also cause serious but reversible heart problems, such as irregular heartbeat. Finally, Lyme disease can result in a disabling, chronic type of arthritis that most often affects the knees. Treatment is more difficult and less successful in later stages. Often, the effects of Lyme disease may be confused with other medical problems.

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 PM should be contacted immediately. The tick can be removed by pulling gently at the head with tweezers. The affected area should then be disinfected with an antiseptic wipe. The employee will be offered the option for medical treatment by a physician, which typically involves prophylactic antibiotics. If personnel feel sick or have signs similar to those above, they should notify the PM immediately.

The deer tick can also cause Babesiosis, an infection of the parasite Babesia Microti. Symptoms of Baesiosis may not be evident, but may also include fever, fatigue and hemolytic anemia lasting from several days to several months. Babesiosis is most commonly diagnosed in the elderly or in individuals whose immune systems are compromised.

Ehrlichiosis is a tick-borne disease which can be caused by either of two different organisms. Human monocytic ehrlichiosis (HME) is caused by Ehrlichia chaffeensis, which is transmitted by the lone star tick (Amblyomma americanum). Human granulocytic anaplasmosis (HGA), previously known as human granulocytic ehrlichiosis (HGE), is caused by Anaplasma phagocytophilia, which is transmitted by the deer tick (Ixodes scapularis).

In New York State, most cases of ehrlichiosis have been reported on Long Island and in the Hudson Valley. Ehrlichiosis is transmitted by the bite of infected ticks, including the deer tick and the lone star tick. The symptoms of HME and HGE are the same and usually include fever, muscle aches, weakness and headache. Patients may also experience confusion, nausea, vomiting and joint pain. Unlike Lyme disease or Rocky Mountain spotted fever, a rash is not common. Infection usually produces mild to moderately severe illness, with high fever and headache, but may occasionally be life-threatening or even fatal. Symptoms appear one to three weeks after the bite of an infected tick. However, not every exposure results in infection.

Rocky Mountain spotted fever (RMSF) is a tick-borne disease caused by a rickettsia (a microbe that differs somewhat from bacteria and virus). Fewer than 50 cases are reported annually in New York State. In the eastern United States, children are infected most frequently, while in the western United States, disease incidence is highest among adult males. Disease incidence is directly related to exposure to tick-infested habitats or to infested pets. Most of the cases in New York State have occurred on Long Island. RMSF is characterized by a sudden onset of moderate to high fever (which can last for two or three weeks), severe headache, fatigue, deep muscle pain, chills and rash. The rash begins on the legs or arms, may include the soles of the feet or palms of the hands and may spread rapidly to the trunk or rest of the body. Symptoms usually appear within two weeks of the bite of an infected tick.

*(Information on Ehrlichiosis, Babesiosis, and Rocky Mountain Spotted Fever was derived from the New York State Department of Health).

1.6.3 Plants

The potential for contact with poisonous plants exists when performing field work 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 be identified to the PM.

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 a field worker believes they 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.

1.7 Personal Safety

Field activities have the potential to take site workers into areas which may pose a risk to personal safety. The following website (source) has been researched to identify potential crime activity in the area of the project:

- http://www.cityrating.com/crime-statistics/new-york/glen-cove.html

2009 crime statistics show that the violent crime rate in Glen Cove was 73% lower than the national violent crime rate, and 70% lower than the New York violent crime rate. The property crime rate of Glen Cove was 68% lower than the national property crime rate, and lower than the New York property crime rate by 50%.

To protect yourself, take the following precautions:

- Use the buddy system (teams of a minimum of two persons present);
- Let the Site Safety Officer (SSO) know when you begin work in these areas and when you leave;
- Call in regularly;
- Pay attention to what is going on around you; and
- If you arrive in an area and it does not look safe to get out of your vehicle, lock the doors and drive off quickly but safely.

Site workers must not knowingly enter into a situation where there is the potential for physical and violent behaviors to occur. If site workers encounter hostile individuals or a confrontation develops in the work area, suspend work activities, immediately leave the area of concern, and contact local 911 for assistance. Notify the SSO and CHSO of any incidents once you are out of potential danger.

In the event of an emergency, prompt communications with local emergency responders is essential. At least one charged and otherwise functioning cell phone to facilitate emergency communications will be on site. Confirmation of cellular phone operation and site worker safety will be confirmed at the start, mid-point, and near the end of each working day.

2. Air Monitoring

Air 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 in the event that intrusive work is conducted. Work requiring air monitoring includes the installation and/or abandonment of monitoring wells, DNAPL recovery wells, oxygen injection wells, and soil vapor points.

GEI may conduct perimeter air monitoring, and work zone monitoring for on-site workers during intrusive activities only. Activities requiring air monitoring will be conducted in accordance with a pre-approved work plan. GEI will monitor and document daily site conditions and operations and inform field representatives (FR) of results.

GEI will provide the following equipment for health and safety monitoring of on-site personnel:

- PID with 10.6 eV lamp or equivalent
- Drager Chip Measurement System (CMS) with appropriate gas detection chips
- Dust Meter
- Combustible Gas Indicator (CGI): LEL / Oxygen (O2) / hydrogen sulfide (H2S) / hydrogen cyanide (HCN) meter
- Sound Level Meter if deemed necessary by the PM and CHSO, type to be appropriate to the activities performed.

All air monitoring equipment will be calibrated and maintained in accordance with manufacturer’s requirements. All calibrations will be recorded in the project notes daily or on a daily calibration form.

Organic vapor concentrations will be measured using the PID during intrusive activities. During intrusive operations, organic vapor concentrations shall be measured continuously. Organic vapor concentrations will be measured upwind of the work site(s) to determine background concentrations at least twice a day, (once in the morning and once in the afternoon). The FR will interpret monitoring results using professional judgment and according to the alert and action limits set forth in the associated site work plan.

A dust meter will be used to measure airborne particulate matter during intrusive activities. Monitoring will be continuous and readings will be averaged over a 15-minute period for comparison with the action levels. Monitoring personnel will make a best effort to collect dust monitoring data from downwind of the intrusive activity. If off-site sources are considered to be the source of the measured dust, upwind readings will also be collected.

A combustible gas indicator (CGI) meter shall be used to monitor for combustible gases and oxygen content during intrusive activities. The CGI will also be equipped with an H2S sensor and an HCN sensor. H2S monitoring will be completed every 15 minutes or, if a sulfur odor is present, monitoring will be continuous. HCN monitoring will be completed every 15 minutes or, if an almond odor is detected, monitoring will be continuous.

Guidelines have been established by the National Institute for Occupational Safety and Health (NIOSH) concerning the action levels for work in a potentially explosive environment. These guidelines are as follows: 10-percent of the lower explosive limit (% LEL). Limit all activities to those which do not generate sparks and 20% LEL. Cease all activities in order to allow time for the combustible gases to vent.

Perimeter and work zone air monitoring will be conducted during intrusive activities such as monitoring well installation and abandonment, recovery well installation and abandonment, soil borings and groundwater probes. Table 2-1 provides a summary of real time air monitoring action levels and contingency plans for work zone activities. The below action levels are determined by halving the permissible exposure limits (PELs) or Threshold Limit Values (TLVs) as set forth by the Occupational Safety and Health Administration (OSHA) and the American Conference of Government Industrial Hygienists (ACGIH). Oxygen values are based on the maximum use limits of a full face respirator if oxygen were being displaced by a chemical.

TABLE 3
WORK ZONE AIR MONITORING ACTION LEVELS

Air Monitoring Instrument	Monitoring Location	Action Level	Site Action
PID	Breathing Zone	1.0 ppm	Use Dräger Chip Measurement System (CMS) or tube for benzene or Z-nose® to verify if concentration is benzene. No respiratory protection is required if benzene is not present.
		10 ppm	Use Dräger Chip Measurement System (CMS) or tube for naphthalene or Z-nose® to verify if concentration is naphthalene. No respiratory protection is required if naphthalene is not present.
		10 - 50 ppm	No respiratory protection is required if benzene or naphthalene is not present.
		50 - 100 ppm	Stop work, withdraw from work area, institute engineering controls, if levels persist, upgrade to Level C.
		> 100 ppm	Stop work, withdraw from work area; notify PM & CHSO.

3. Statement of Safety and Health Policy

TABLE 2-1
REAL TIME WORK ZONE AIR MONITORING ACTION LEVELS

Air Monitoring Instrument	Monitoring Location	Action Level (above background)	Site Action
PID	Breathing Zone	1.0 ppm	Use Dräger Chip Measurement System (CMS) or tube for benzene or Z-nose® to verify if concentration is benzene. No respiratory protection is required if benzene is not present.
PID	Work Zone	10 ppm	Use Dräger Chip Measurement System (CMS) or tube for naphthalene or Z-nose® to verify if concentration is naphthalene. No respiratory protection is required if naphthalene is not present.
		10 - 50 ppm	No respiratory protection is required if benzene or naphthalene is not present.
		50 - 100 ppm	Stop work, withdraw from work area, institute engineering controls, if levels persist, upgrade to Level C.
Oxygen meter	Work Zone	< 20.7%	Stop work; withdraw from work area; ventilate area, notify SSO & CHSO.
		> 21.1%	Stop work; withdraw from work area; notify SSO & CHSO.
H_2S meter	Work 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	Work Zone	<1.0 ppm	Run CMS Drager tube. Continue monitoring with real time meter, and 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 33 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	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 & CHSO.
Particulate Meter	Work Zone	150 $\mu g/m^3$	Implement work practices to reduce/minimize airborne dust generation, e.g., spray/misting of soil with water

GEI is committed to providing a safe and healthy work environment for its employees. To maintain a safe work environment, GEI has established an organizational structure and a Corporate Health and Safety Program to promote the following objectives:

- Reduce the risk of injury, illness, and loss of life to GEI employees.
- Maintain compliance with federal, state, and other applicable safety regulations.
- Minimize GEI employees' work exposure to potential physical, chemical, and biological hazards.

4. Key Project Personnel/Responsibilities and Lines of Authority

GEI Personnel		
Errol Kitt	Long Island MGP Program Manager	Office: 631-759-2964 Cell: 631-513-7191
Matt O' Neil	Project Manager (PM)	Office: 401-533-5152 Cell: 860-608-9725
Mike Quinlan	Site Safety Officer (SSO)	Office: 631-759-2972 Cell: 631-708-8063
Chris Anastasiou	Field Representative (FR)	Office: 631-759-2976 Cell: 631-609-7085
Chris Berotti	Local Health and Safety Coordinator	Office: (631) 759-2962 Cell: (631) 481-5868
Steve Hawkins	Regional Health and Safety Officer (RHSO)	Office: 860-368-5348 Cell: 860-916-4167
Robin DeHate	Corporate Health and Safety Officer (CHSO)	Office: 813-774-6564 Cell: 813-323-6220

Lines of Authority will be as follows:

On site – GEI will have responsibility for safety of its employees during the work performed at the site. GEI's FR will have a cell phone available to contact the appropriate local authorities, in the event of an emergency. The FR will be available for communication with the SSO and PM and with the National Grid representative. The FR and/or SSO may change due to the nature of work being conducted on site.

4.1 Project Manager (PM)

Responsibilities of the PM include the following:

- Verifies implementation of the HASP
- Conducts periodic inspections and documents these in the field book
- Participates in incident investigations
- Verifies the HASP has all of the required approvals before any site work is conducted

- Verifies that the National Grid site manager is informed of project changes, which require modifications of the HASP
- Has overall responsibility for project health and safety
- Acts as the primary point of contact with National Grid for site related activities and coordination with non-project related site operations
- Overseeing of performance of project tasks as outlined in the scope of work
- Plans field work using appropriate safe procedures and equipment
- Verifies and documents current training and medical monitoring clearance for GEI project staff
- Verifies that subcontractor has a site-specific HASP

4.2 Corporate Health and Safety Officer (CHSO)

The CHSO is a qualified health and safety professional with experience in hazardous waste site remediation activities. Responsibilities of the CHSO include the following:

- Provides support 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 PPE with the site manager
- Leads the investigation of all accidents/incidents
- Provide the necessary training of GEI field crews in accordance with OSHA regulations and provides proof of training to the SSO prior to GEI personnel entering the site

4.3 Site Safety Office (SSO)

Responsibilities of the SSO include the following:

- Verifies that the HASP is implemented and that all health and safety activities identified in the HASP are conducted and/or implemented

- Verifies that field work is scheduled with adequate personnel and equipment resources to complete the job safely and enforces site health and safety rules
- Verifies that adequate communications between field crews and emergency response personnel is maintained during emergency situations
- Verifies that field site personnel are adequately trained and qualified to work at the site and that proper PPE is utilized by field teams
- Investigate and report all accidents/incidents to the CHSO and PM
- Stop work if necessary
- Identifies operational changes which require modifications to the HASP and ensures that the procedure modifications are implemented and documented through changes to the HASP, with CHSO and National Grid approval
- Determines upgrades or downgrades of PPE based on site conditions and/or real-time monitoring results with CHSO and National Grid approval
- Reports to the CHSO and provides summaries of field operations and progress

4.4 Field Representative (FR)

The FR is responsible for carrying out field work on a monthly, quarterly, or as-needed basis. Responsibilities of the FR include:

- Conducts routine safety inspection of the work area
- Documenting occurrences of unsafe activity and what actions were taken to rectify the situation
- Reports any unsafe or potentially hazardous conditions to the SSO and PM
- Maintains familiarity of the information, instructions, and emergency response actions contained in the HASP
- Complies with rules, regulations and procedures set forth in the HASP
- Prevents admittance to work site by unauthorized personnel
- Inspects all tools and equipment, including PPE, prior to use and documents inspection on the daily safety meeting form or in the appropriate field book
- Ensures that monitoring instruments are calibrated
- Stops work if necessary

5. Subcontractors

GEI subcontracts with various companies to conduct various work on site on an as-needed basis. Contact information for these subcontractors will be available when such work is being conducted.

GEI requires its subcontractors to work in a responsible and safe manner. Subcontractors for this project will be required to develop their own HASP for protection of their employees and must adhere to applicable requirements set forth in this HASP. GEI will verify that its subcontractor’s HASP includes National Grid’s site specific requirements as outlined in this HASP.

6. Emergency Contact List

EMERGENCY INFORMATION		
Important Phone Numbers		Directions to: Glen Cove Hospital 101 Saint Andrews Lane Glen Cove, NY 11542
Police	911	• Head east on Grove Street toward Cedar Swamp Road • Left on Cedar Swamp Road • Continue onto Glen Street after 0.2 miles • Turn right onto Pearsall Ave. after 0.2 miles • Bear left onto Walnut Road and continue 0.6 miles • Turn left onto Saint Andrews Lane • Hospital will be on the left Refer to Hospital Route Map in **Appendix A**.
Fire Department	911	
Ambulance	911	
Occupational Health Clinic Plainview Medical Group	(516) 822-2541	
Local Hospital Glen Cove Hospital	(516) 674-7325 Emergency (516) 674-7300 General	
Project Manager	Matt O’Neil	(401) 533-5152 office (860) 608-9725 office
NYSDEC Spill Hotline		(518) 457-7362
Corporate H&S Officer	Robin DeHate	(813) 323-6220 cell (813) 774-6564 office
Regional H&S Officer	Steve Hawkins	(860) 916-4167 cell (860) 368-5348 office
Local H&S Coordinator	Chris Berotti	(631) 481-5868 cell (631) 759-2962 office
Client Contacts		
Ted Leissing	(516) 545-2563-office	(917) 734-3244-cell
Melissa Riendl	(516) 545-3551-office	(516) 779-8035-cell
Sarah Aldridge	(516) 545-2568-office	(860) 334-0554-cell

7. Training Program

7.1 HAZWOPER 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 operations and emergency response (HAZWOPER). At a minimum, the training shall have consisted of instruction in the topics outlined in the standard and can include applicable sections of 29 CFR 1926. 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 CHSO or her representative prior to the start of field activities.

7.2 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 CHSO or her representative prior to the start of field activities.

7.3 Site-Specific Training

Prior to commencement of field activities, the CHSO or her representative will ensure all field personnel assigned to the project are familiarized with the activities, procedures, monitoring, and equipment used in the site operations. This includes site and facility layout, hazards associated with site tasks and activities, 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. All GEI personnel working on site will have current First Aid and CPR training.

7.4 Supervisor Training

Personnel acting in a supervisory capacity will have received 8 hours of instruction in addition to the initial 40 hours training. In addition, supervisors will have 1 year of field experience and training specific to work activities (i.e., sampling, construction observation, etc.).

7.5 On-site Safety Briefings

Other on site GEI personnel will be given health and safety briefings by a FR to assist GEI 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 workers on monitoring results. These safety briefing will be documented in the GEI field book or on the daily safety briefing form.

8. Medical Surveillance Program

GEI maintains a continuous, corporate, medical surveillance program that includes a plan designed specifically for field personnel engaged in work at sites where hazardous or toxic materials may be present. Robin DeHate is GEI's CHSO and is responsible for the administration and coordination of medical evaluations conducted for GEI's employees at all branch office locations. Comprehensive examinations are given to all GEI field personnel participating in hazardous waste operations on an annual or biennial basis (as determined to be appropriate by the CHSO). The medical results of the examinations aid in determining the overall fitness of employees participating in field activities.

Under the CHSO's supervision, all field personnel undergo a complete initial physical examination, including a detailed medical and occupational history, before they participate in hazardous waste site investigations. Extensive annual/biennial reexaminations are also performed. Upon completion of these tests, personnel are certified by an occupational health physician as to whether they are fit for field work in general, and fit to use all levels of respiratory protection, in particular.

If a GEI employee or other project worker shows symptoms of exposure to a hazardous substance and wishes to be rechecked, he/she will be directed to the nearest area hospital or medical facility.

All GEI subcontractor personnel that will enter any active waste handling or other potentially impacted area must certify that they are participating in a medical surveillance program that complies with OSHA regulations for hazardous waste operations (i.e., 29 CFR 1910.120 and 29 CFR 1926.65). Proof of medical clearance shall be submitted to the CHSO or their representative prior to the start of field activities.

9. Site Control Measures

9.1 Site Zones

During intrusive activities, site zones are intended to control the potential spread of contamination and to assure that only authorized individuals are permitted into potentially hazardous areas. Barricade tape and cones will be used to designate work zone areas. Decontamination will be conducted as outlined in Section 12. If any heavily contaminated soils are encountered during intrusive work, separate wash areas for heavy equipment and personal PPE will be established.

10. Incident Reporting

GEI will report incidents involving GEI personnel or subcontractor personnel, such as: lost time injuries, injuries requiring medical attention, near miss incidents, fires, fatalities, accidents involving the public, and property damage. The report will be made to the GEI Project Manager verbally within 2 hours of the incident. The PM will immediately inform the CHSO and the Director of Human Resources of the incident. An Accident Report Form will be completed and submitted to the CHSO and the Director of Human Resources within 24 hours of the incident. In addition, National Grid will be notified immediately of any injury or accident. A preliminary Accident Report will be submitted to the National Grid representative within 6 hours of the incident.

11. Medical Support

In case of minor injuries, on site care shall be administered with the Site first aid kit. Staff may also go to the nearest occupational health provider (Plainview Medical Group) located at 87 Cold Spring Road, in Syosset, NY. Directions to Plainview Medical Group can be found in Appendix A.

For serious injuries, call 911 and request emergency medical assistance. Seriously injured persons should not be moved, unless they are in immediate danger.

Section 6 and Appendix A contain detailed emergency information, including directions to the nearest hospital, and a list of emergency services and their telephone numbers. GEI field personnel will carry a cellular telephone.

12. Decontamination Procedures

12.1 Personnel Decontamination Station

As needed, a personnel decontamination station where workers can drop equipment and remove PPE will be set up at the decontamination pad by the Contractor when intrusive activities are conducted at the site. It will be equipped with basins for water and detergent, and trash bag(s) or cans for containing disposable PPE and discarded materials. Once personnel have decontaminated at this station and taken off their PPE, they will proceed to a portable sink where they will wash themselves wherever they have potentially been exposed to any contaminants (e.g., hands, face, etc.).

Contaminated PPE (gloves, suits, etc.) will be decontaminated and stored for reuse or placed in plastic bags (or other appropriate container) and disposed of in an approved facility.

Decontamination wastewater and used cleaning fluids will be collected and disposed of in accordance with all applicable state and federal regulations.

12.2 Decontamination Equipment Requirements

If heavily contaminated soils are encountered during intrusive work, the following equipment, as needed, will be in sufficient supply to implement decontamination procedures for GEI’s equipment.

- Buckets
- Alconox™ detergent concentrate
- Hand pump sprayers
- Long handle soft bristle brushes
- Large sponges
- Cleaning wipes for respirators
- Bench or stool(s)
- Methanol
- Liquid detergent and paper towels
- Plastic trash bags

13. Personal Protective Equipment

PPE required for each level of protection is as follows.

Safety Equipment	Level A	Level B	Level C	Level D
Tyvek® suit or work overalls as appropriate for work being performed and materials handled				•
Hard hats with splash shields or safety glasses			•	•
Steel-toe boots with overboots as appropriate for work being performed and materials handled			•	•
Chemical-resistant gloves			•	•
Reflective Vest			•	•
Half- or full-face respirators with HEPA cartridges as approved by the CHSO			•	
Tyvek® splash-resistant suit			•	
Chemical-resistant clothing		•		
Long Pants	•	•	•	•
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	•			

PPE requirements for field activities are as follows.

Activity	Level of Protection	Backup Protection
Groundwater monitoring	D	C
DNAPL gauging and recovery	D	C
Install/Abandon wells and sample points	D	C
Oxygen injection system check	D	C
Intrusive activities (i.e. excavation, trenching)	D	C
Site investigation and remediation (including oversight)	D	C
Site Maintenance	D	C

PPE can include hardhats, safety glasses or face shields, steel toe/steel shank boots, hearing protection, nitrile gloves, and leather gloves as necessary.

13.1 OSHA Requirements for PPE

All PPE used during the course of this field investigation must meet the following OSHA standards:

Type of Protection	Regulation	Source
Eye and Face	29 CFR 1910.133	ANSI Z87.1 1968
Respiratory	29 CFR 1910.134	ANSI Z88.1 1980
Head	29 CFR 1910.135	ANSI Z89.1 1969
Foot	29 CFR 1910.136	ANSI Z41.1 1999 or ASTM F-2412-2005, and ASTM F-2413-2005

CRF = Code of Federal Regulations
ANSI = American National Standards Institute
ASTM = American Society For Testing and Materials

Any on-site personnel who have the potential to don a respirator must have a valid fit test certification and documentation of medical clearance. The CHSO will maintain such information on file for on-site personnel. The PM will obtain such information from the subcontractor’s site supervisor prior to the initiation of any such work. Both the respirator and cartridges specified for use in Level C protection must be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910.134). Air purifying respirators cannot be worn under the following conditions:

- Oxygen deficiency;
- IDLH concentrations; and
- If contaminant levels exceed designated use concentrations.

For most work conducted at the site, Level D PPE will include long pants, hard hats, safety glasses with side shields, and steel toe safety boots. When work is conducted in areas where NAPL or tar-saturated soil is anticipated, workers shall wear, at a minimum, modified Level D PPE, which can include Tyvec® coveralls and safety boots with overboots. The use of respirators is not anticipated.

Use of Level A or Level B PPE is not anticipated. If conditions indicating the need for Level A or Level B PPE are encountered, personnel will leave the work zone and this HASP will be revised with oversight of the CHSO, GEI personnel will not re-enter the work zone until conditions allow.

14. Supplemental Contingency Plan Procedures

14.1 Hazard Communication Plan

GEI personnel have received hazard communication training as part of their 40-hour HAZWOPER training. All hazardous materials used on the Site will be properly labeled, stored, and handled. MSDS will be available to on-site staff.

14.2 Fire

In the event of a fire, all personnel will evacuate the area. GEI's field representative will contact the local fire department and report the fire. Notification of evacuation will be made to the GEI PM and the CHSO. The field representative will account for GEI personnel and subcontractor personnel and report their status to the PM. Appendix H contains the Emergency Evacuation Plan should staff need to relocate during an emergency.

14.3 Severe Weather

The contingency plan for severe weather includes reviewing the expected weather to determine if severe weather is in the forecast. Severe weather includes high winds over 30 mph, heavy rains or snow squalls, thunderstorms, hurricanes, and lightning storms. If severe weather is approaching, the decision to evacuate GEI personnel and subcontractor personnel from the site is the responsibility of GEI's field representative. Notification of evacuation will be made to the GEI Project Manager, the CHSO, and the National Grid PM. The field representative will account for GEI personnel and subcontractor personnel and report their status to the PM.

14.4 Spills or Material Release

If a hazardous waste spill or material release, the SSO or their representative will immediately assess the magnitude and potential seriousness of the spill or release based on the following:

- MSDS, if applicable, for the material spilled or released
- Source of the release or spillage of hazardous material
- An estimate of the quantity released and the rate at which it is being released
- The direction in which the spill or air release is moving

- Personnel who may be or may have been in contact with the material, or air release, and possible injury or sickness as a result

- Potential for fire and/or explosion resulting from the situation

- Estimates of area under influence of release

If the spill or release is determined to be within the on-site emergency response capabilities, the SSO will ensure implementation of the necessary remedial action. If the release is beyond the capabilities of the site personnel, all personnel will be evacuated from the immediate area and the local fire department will be contacted. The SSO will notify the PM, the CHSO and the National Grid PM. Spills related to the OU-1 groundwater treatment facility and DNAPL recovery system are regulated under the Emergency Response and Release Reporting Plan, which can be found in Appendix I.

14.5 Alcohol and Drug Abuse Prevention

Alcohol and drugs will not be allowed on the work site. Project personnel under the influence of alcohol or drugs will not be allowed to enter the site.

Health and Safety Plan Sign-Off

All GEI personnel conducting site activities must read this Health and Safety Plan, be familiar with its requirements, and agree to its implementation.

All other personnel on site for regulatory, observational and other activities not directly associated with remedial activities must read this Health and Safety Plan for hazard communication purposes.

Once the Health and Safety Plan has been read, complete this sign-off sheet, and return it to the Project Manager.

Site Name:

Glen Cove Former MGP Site

Activity:

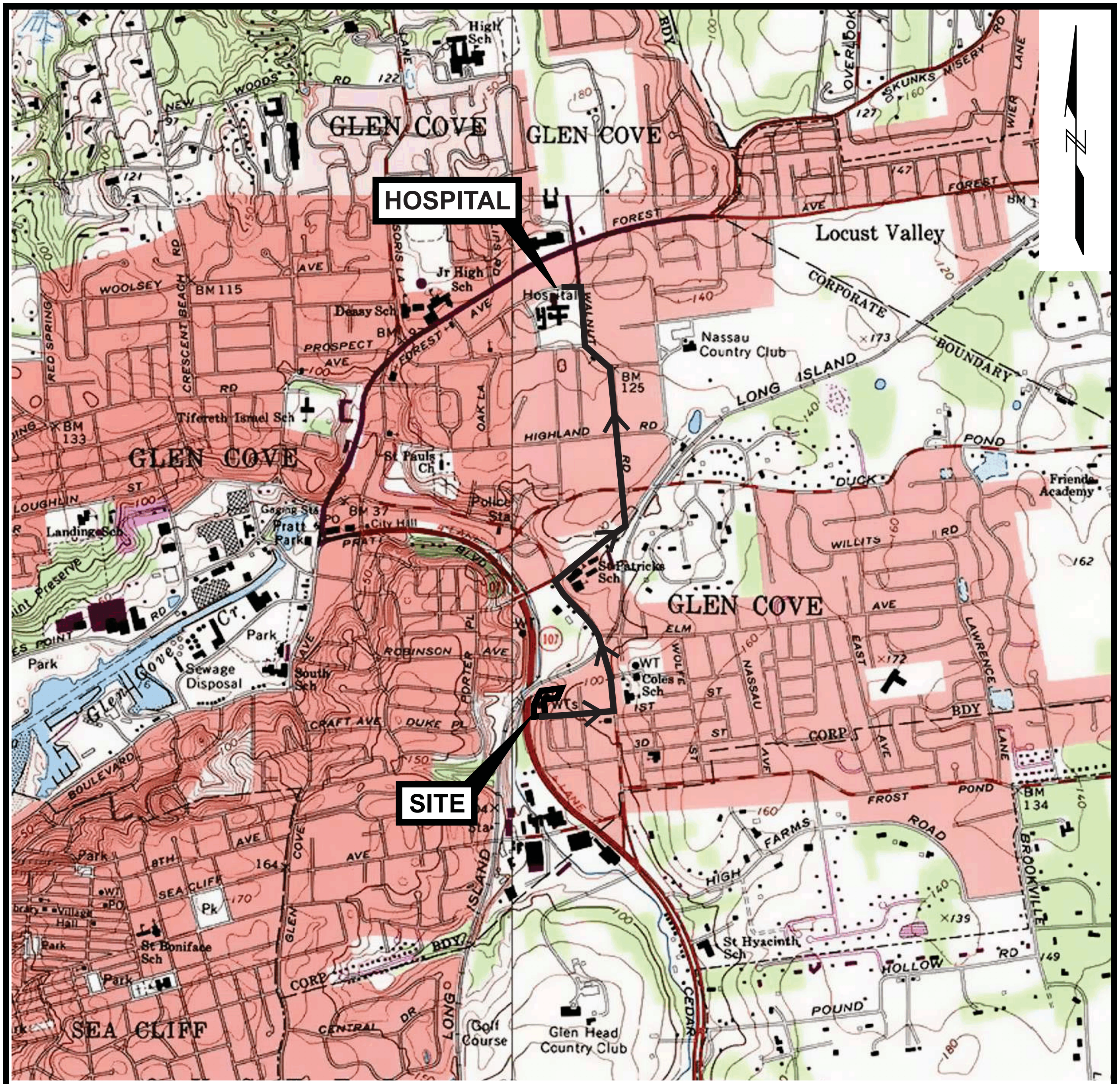
Mobilization, demobilization, utility location, excavation/trenching/construction oversight, air monitoring, gauging and recovery of Dense Non-Aqueous Phase Liquids (DNAPL), oxygen injection systems checks, installation/abandonment/maintenance of soil borings, groundwater probes, wells and sample points, groundwater monitoring.

GEI Project No: 093270

Name	Signature	Date	Company	Check if HAZCOM only

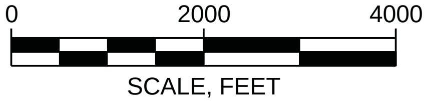
Appendix A

Site-Specific Information



DIRECTIONS TO EMERGENCY ROOM AT GLEN COVE HOSPITAL FROM SITE:

1. TURN LEFT ONTO GROVE STREET	0.2 MILES
2. TURN LEFT ONTO CEDAR SWAMP ROAD	0.2 MILES
3. CONTINUE ON GLEN STREET	0.2 MILES
4. TURN RIGHT ONTO PEARSALL AVENUE	0.2 MILES
5. BEAR LEFT ONTO WALNUT ROAD	0.6 MILES
6. TURN LEFT ONTO ST ANDREW LANE	0.0 MILES
7. ARRIVE AT 101 SAINT ANDREWS LANE	0.0 MILES



SOURCE: MAP CREATED WITH TOPO!™ ©2000 WILDFLOWER PRODUCTIONS (www.topo.com)

Health and Safety Plan
Glen Cove Former MGP Site
Glen Cove, New York

nationalgrid

GEI Consultants

HOSPITAL ROUTE MAP

Project 093270

November 2014

Fig. 1

DIRECTIONS TO:
Occupational Health Provider
Plainview Medical Group
87 Cold Spring Road
Syosset, NY 11791
516-822-2541

- Head east on Grove Street toward Cedar Swamp Road (go 459 ft.)
- Turn right onto Cedar Swamp Road (go 0.4 mi)
- Continue onto Pratt Blvd/Pratt Oval (go 0.8 mi)
- Continue onto Cedar Swamp Road (go 1.8 mi)
- Turn left onto Northern Blvd (go 3.8 mi)
- Turn right onto Split Rock Road (go 1.8 mi)
- Turn left onto Muttontown Eastwoods Road (go276 ft)
- Continue onto Cold Spring Road (go 0.1 mi)
- Destination will be on the left

Appendix B

Cold Stress Guidelines

Cold Stress Guidelines

	Symptoms	What to do
Mild Hypothermia	• Body Temp 98-90°F • Shivering • Lack of coordination, stumbling, fumbling hands • Slurred speech • Memory loss • Pale, cold skin	• Move to warm area • Stay active • Remove wet clothes and replace with dry clothes of blankets • Cover the head • Drink warm (not hot) sugary drink
Moderate Hypothermia	• Body temp 90-86°F • Shivering stops • Unable to walk or stand • Confused irrational	• All of the above, plus: • Call 911 • Cover all extremities completely • Place very warm objects, such as hot packs on the victim's head, neck, chest and groin
Severe Hypothermia	• Body temp 86-78°F • Severe muscle stiffness • Very sleepy or unconscious • Ice cold skin • Death	• Call 911 • Treat victim very gently • Do not attempt to re-warm
Frostbite	• Cold, tingling, stinging or aching feeling in the frostbitten area, followed by numbness • Skin color turns red, then purple, then white or very pale skin • Cold to the touch • Blisters in severe cases	• Call 911 • Do not rub the area • Wrap in soft cloth • If help is delayed, immerse in warm, not hot, water
Trench Foot	• Tingling, itching or burning sensation • Blisters	• Soak feet in warm water, then wrap with dry cloth bandages • Drink a warm sugary drink

Health and Safety Plan
Glen Cove Former MGP Site
Glen Cove, New York
December 2014

Appendix C

Heat Stress Guidelines

HEAT STRESS GUIDELINES

Form	Signs & Symptoms	Care	Prevention[3]
Heat Rash	Tiny red vesicles in affected skin area. If the area is extensive, sweating can be impaired.	Apply mild lotions and cleanse the affected area.	Cool resting and sleeping areas to permit skin to dry between heat exposures
Heat Cramps	Spasm, muscular pain (cramps) in stomach area and extremities (arms and legs).	Provide replacement fluids with minerals (salt) such as Gatorade.	Adequate salt intake with meals[1] ACCLIMATIZATION[2]
Heat Exhaustion	Profuse sweating, cool (clammy) moist skin, dizziness, confusion, pale skin color, faint, rapid shallow breathing, headache, weakness, muscle cramps.	Remove from heat, sit or lie down, rest, replace lost water with electrolyte replacement fluids (water, Gatorade) take frequent sips of liquids in amounts greater than required to satisfy thirst.	ACCLIMATIZATION[2] Adequate salt intake with meals 1 only during early part of heat season. Ample water intake, frequently during the day
Heat Stroke	HOT Dry Skin. Sweating has stopped. Mental confusion, dizziness, nausea, severe headache, collapse, delirium, coma.	HEAT STROKE IS A MEDICAL EMERGENCY - Remove from heat. - COOL THE BODY AS RAPIDLY AS POSSIBLE by immersing in cold (or cool) water, or splash with water and fan. Call for Emergency Assistance. Observe for signs of shock.	ACCLIMATIZATION[2] Initially moderate workload in heat (8 to 14 days). Monitor worker's activities.

Footnotes:

1.) American diets are normally high in salt, sufficient to aid acclimatization. However, during the early part of the heat season, (May, June), one extra shake of salt during one to two meals per day may help, so long as this is permitted by your physician. Check with your personal physician.

2.) ACCLIMATIZATION - The process of adapting to heat is indicated by worker's ability to perform hot jobs less fluid loss, lower concentrations of salt loss in sweat, and a reduced core (body) temperature and heart rate.

3.) Method to Achieve Acclimatization - Moderate work or exercise in hot temperatures during early part of heat season. Adequate salt (mineral) and water intake. Gradually increasing work time in hot temperatures. Avoid alcohol. Normally takes 8 to 14 days to achieve acclimatization. Lost rapidly, if removed from strenuous work (or exercise) in hot temperature for more than approximately five days.

Appendix D

Utility Clearance Forms and Procedures

Utility Clearance Documentation

Client: ______________________________

Project: ______________________________

Site: ______________________________

Drilling Location ID: ______________________________

Driller: ______________________________

GEI PM: ______________________________

GEI Field Team Leader: ______________________________

Utility Drawings Reviewed: ______________________________

Provided By: ______________________________

Reviewed By: ______________________________

One Call Utility Clearance Call Date: ______________________________

Utility Clearance Received back from (list utilities): ______________________________

Completed By (Company): ____________________ Date: __________

GEI Staff Responsible for Oversight: ______________________________

Metal Detector Survey (yes/no): ______________________________

Drilling Location Cleared by: ______________________________

Contractor: ____________________ Date: __________

GEI Staff Responsible for Oversight: ______________________________

Physical Test Pit Clearance Required (yes/no): ______________________________

Contractor: ____________________ Date: __________

GEI Staff Responsible for Oversight: ______________________________

Hand Clearing Performed: ____________________ Date: __________

Contractor: ______________________________

GEI Staff Responsible for Oversight: ______________________________

Notes:

Based upon the best available information, appropriate utility clearance procedures were performed for the invasive work specified. If client ordered/site specific deviations from existing GEI utility clearance procedures exist, they are approved by the client signature below.

Client Signature (Optional): ________________________ Date: ________________

GEI, Inc. Representative: ________________________ Date: ________________

Call 1-800-272-4480 TOLL FREE!

LOCATION REQUEST FORM

1. Caller's Name____
2. Telephone Number____
3. Contractor____
4. Contractor 's Address____
5. Work Date ___/___/___ Starting Work Time ________ AM or PM
6. Borough/County____
7. Street Number____
8. First Intersection____
9. Second Intersection____
10. Type of Work____
11. Method of Excavation____
    ____
12. Street ______ Sidewalk ______ Private Property ___________________________________

Other (specify)____
____ If Private Property: Front ______ Rear ______ Side ____________________________________

13. Person to contact____
14. Telephone Number____
15. Work Being Done For____
16. Remarks____
    ____
17. Serial Number____

____

18. Member List____
____

For Your Reference: Today's Date _________________________ Time__________________

Please fill in the above info before you call, it will speed up your response.

Appendix E

Incident Reporting

INCIDENT REPORT FORM

Please attach photographs relating to the incident if possible.

Report No. ________

Site: ____ Project No. ____________________

Location: ____

Date of Report: ______________________________ Preparer's Name:___________________________________

Name and Address of Injured: ____

____

Date of Birth: _____________ Date of Hire: _____________ Title/Classification: ______________________

Division/Department: ______________________________ Date of Accident: __________ Time: ____________

Accident Category: ___ Motor Vehicle ___ Property Damage ___ Fire

___ Chemical Exposure ___ Near Miss ___ Other

For vehicles involved in a motor vehicle incident, please fill out the following information:

MAKE: MODEL: VIN:__________________PLATE NO.:______

___STATE:_____

MAKE: MODEL: VIN:__________________PLATE NO.:______

___STATE:_____

MAKE: MODEL: VIN:__________________PLATE NO.:______

___STATE:_____

MAKE: MODEL: VIN:__________________PLATE NO.:______

___STATE:_____

Please attach photographs of the area the vehicle incident occurred in and of any damage to vehicles involved.

Severity of Injury or Illness: ____ Non-disabling ___ Disabling

____ Medical Treatment ___ Fatality

Amount of Damage: $____________________________ Property Damaged: ________________________________

Estimated Number of Days Away from Job: ____

Nature of Injury or Illness: ____

CLASSIFICATION OF INJURY:

____ Fractures
____ Dislocations
____ Sprains
____ Abrasions
____ Lacerations
____ Punctures
____ Bites
____ Toxic Ingestions

____ Heat Burns
____ Chemical Burns
____ Radiation Burns
____ Bruises
____ Blisters
____ Toxic Respiratory Exposure
____ Toxic Ingestions
____ Dermal Allergy

____ Cold Exposure
____ Frostbite
____ Heat Stroke
____ Heat Exhaustion
____ Concussion
____ Faint/Dizziness
____ Toxic Respiratory

Part of Body Affected: ____

Degree of Disability: ____

Date Medical Care Was Received: ____

Where Medical Care Was Received: ____

Address (if off-site):
____

ACCIDENT LOCATION:

Please provide a sketch of the accident location, vehicles involved, and any details as to how the accident occurred in the space below.

Causative agent most directly related to accident (object substance, material, machinery, equipment conditions):

____

____

Was weather a factor? ____

Unsafe mechanical/physical/environmental condition at time of accident (be specific):

____

____

Unsafe act by injured and/or others contributing to the accident (be specific, must be answered):

____

Personal factors (improper attitude, lack of knowledge or skill, slow reaction, fatigue):

____

____

Level of personal protection equipment required in Site Safety Plan: ____________________

____

Modifications: ____

Was injured using required equipment? ____________________________

If not, how did actual equipment use differ from plan? ____________________

____

What can be done to prevent a recurrence of this type of accident (modification of machine; mechanical guards; correct environment training):

____

____

Detailed narrative description (how did accident occur, why; objects, equipment, tools used, circumstance assigned duties) (be specific):

____

____

(Use separate sheet as required)

Witnesses to accident ____________________________________

Signature of Preparer ____________________________________

Signature of Site Leader ____________________________________

Health and Safety Plan
Glen Cove Former MGP Site
Glen Cove, New York
December 2014

Appendix F

Traffic Control

Utility Work Zone Traffic Control Field Guide Book

nationalgrid
The power of action.℠

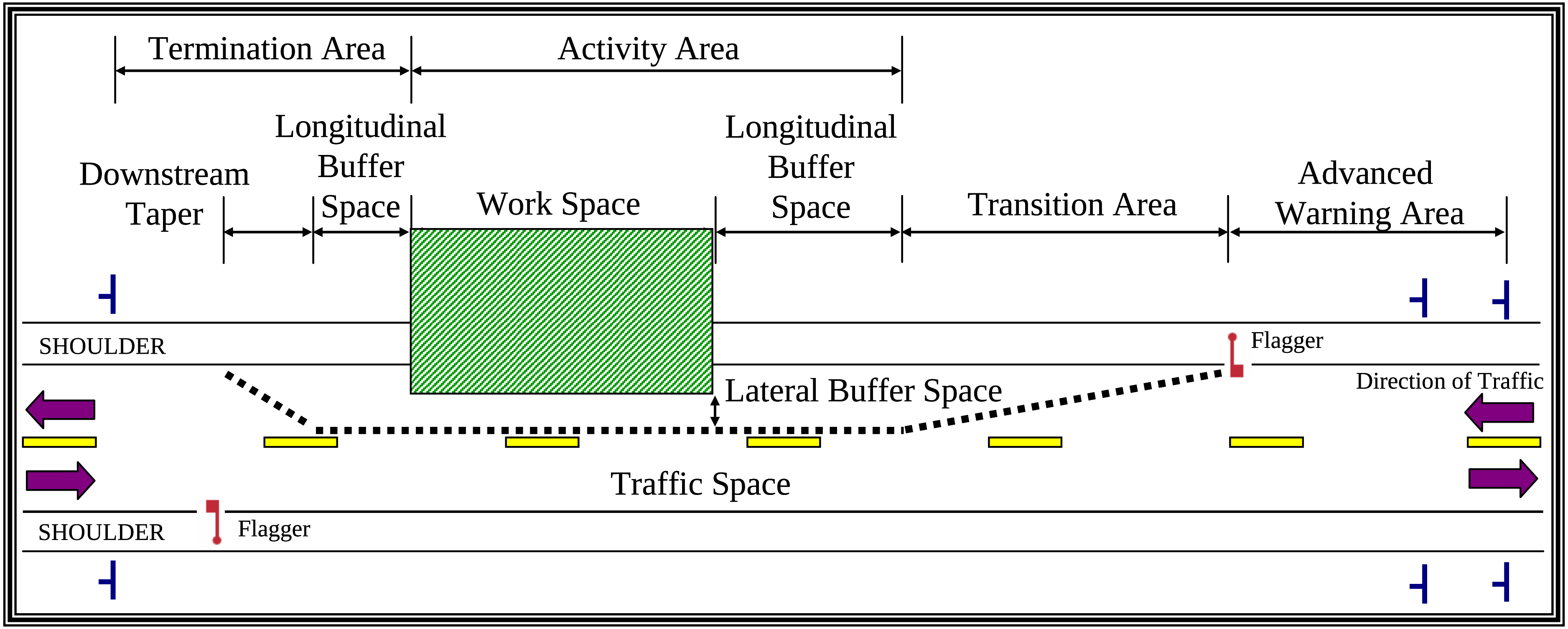
June 2009

- The Work Zone Traffic Control Plans in this guidebook meet the minimum requirements of the federal Manual of Uniform Traffic Control and Devices (MUTCD).

- State and local requirements must be considered when developing specific Work Zone Traffic Control Plans.

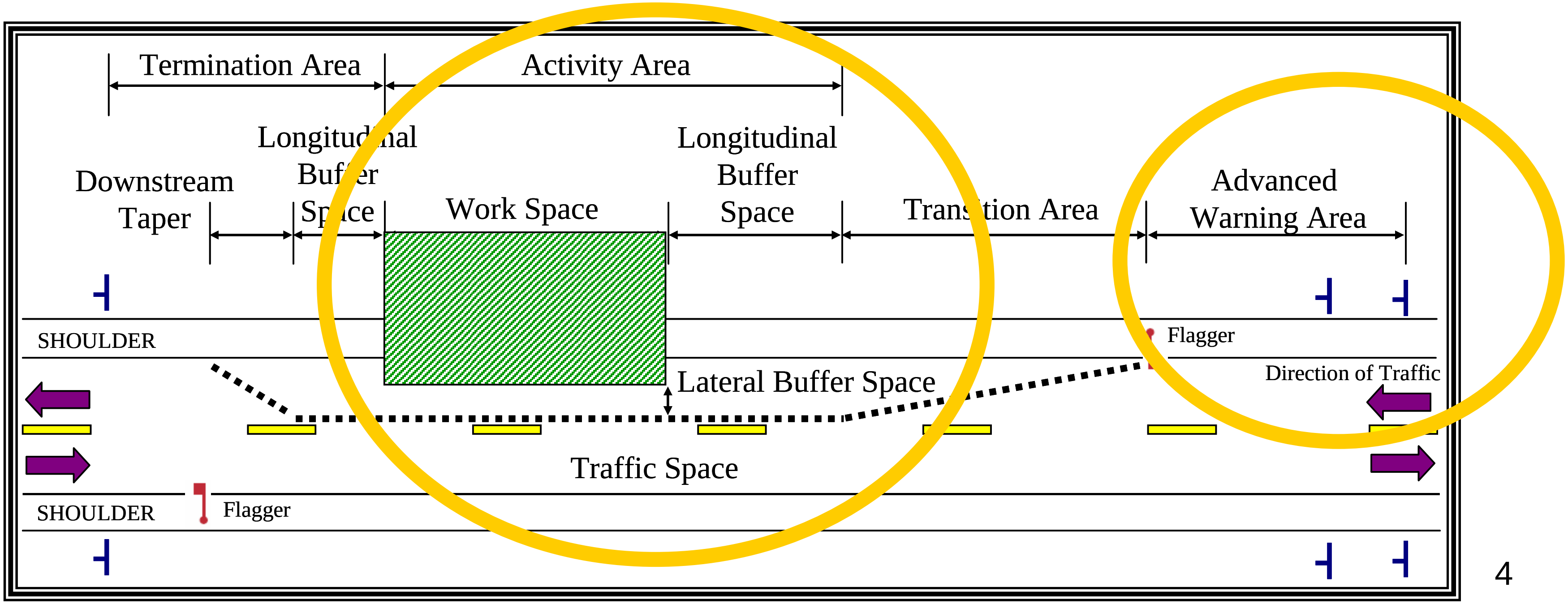
- The Work Zone Traffic Control Plans were developed for the United States Department of Transportation, Federal Highway Administration through a grant to Wayne State University and Bradley University. (August 2008)

Utility Work Zone Temporary Traffic Control Components



Temporary Traffic Control Components

- Activity Area – **work space, traffic space, and buffer space.**
- Advanced Warning Area – **used to provide warning to motorists of an upcoming utility activity.**

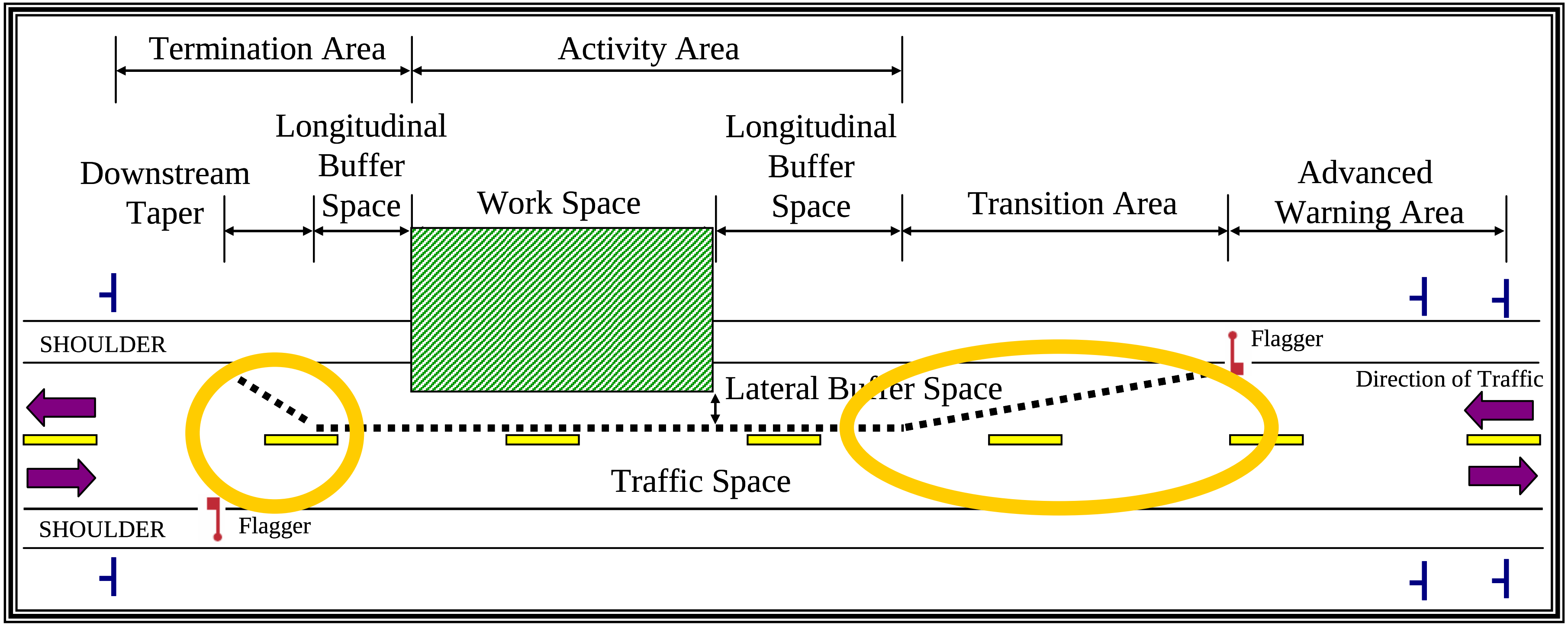


Distance Between Traffic Signs

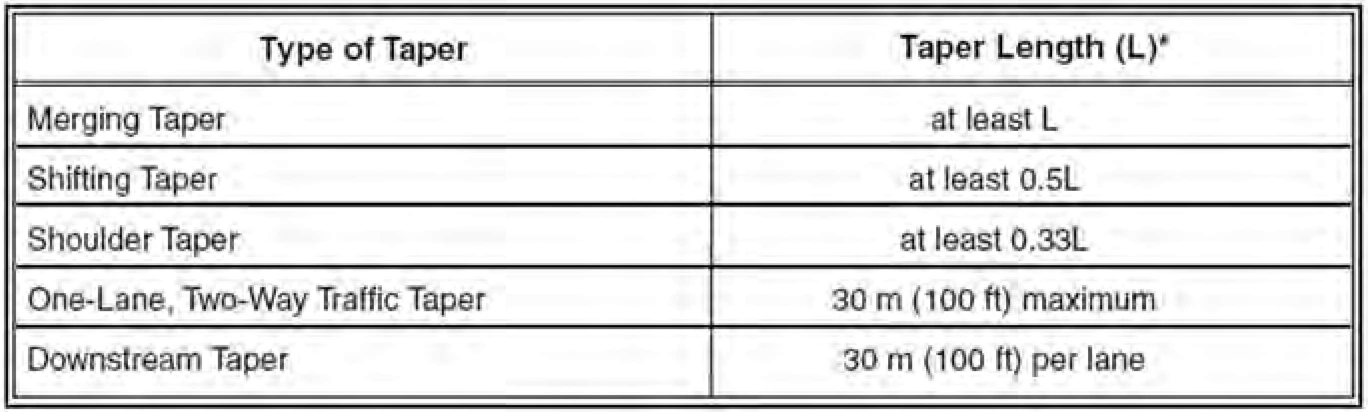
Road Type	A (Distance Between Signs)
Urban (Low speed)< 45mph	30 m (100 ft)
Urban (High speed) ≥ 45 mph	100 m (350 ft)
Rural	150 m (500 ft)

Temporary Traffic Control Components

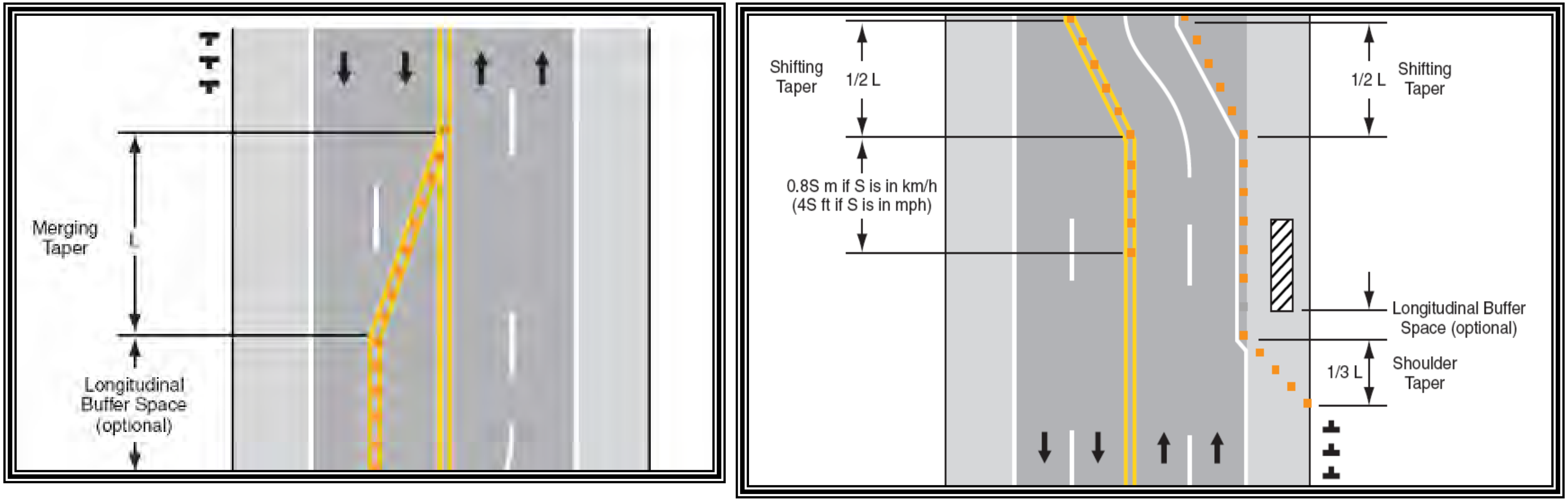
- Tapers – **gradual transition to direct traffic from normal paths to designated path, must be free of workers, vehicles, equipment, etc.**



Different Types of Tapers

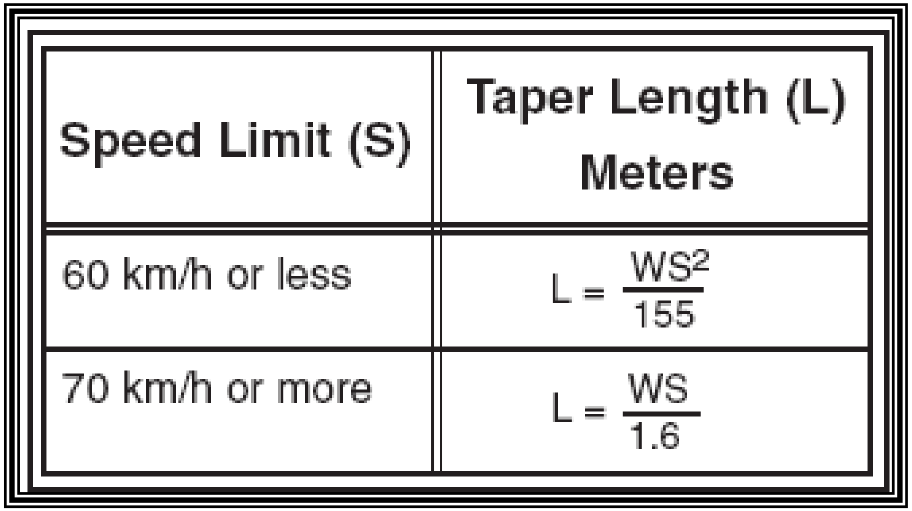


Type of Taper	Taper Length (L)*
Merging Taper	at least L
Shifting Taper	at least 0.5L
Shoulder Taper	at least 0.33L
One-Lane, Two-Way Traffic Taper	30 m (100 ft) maximum
Downstream Taper	30 m (100 ft) per lane

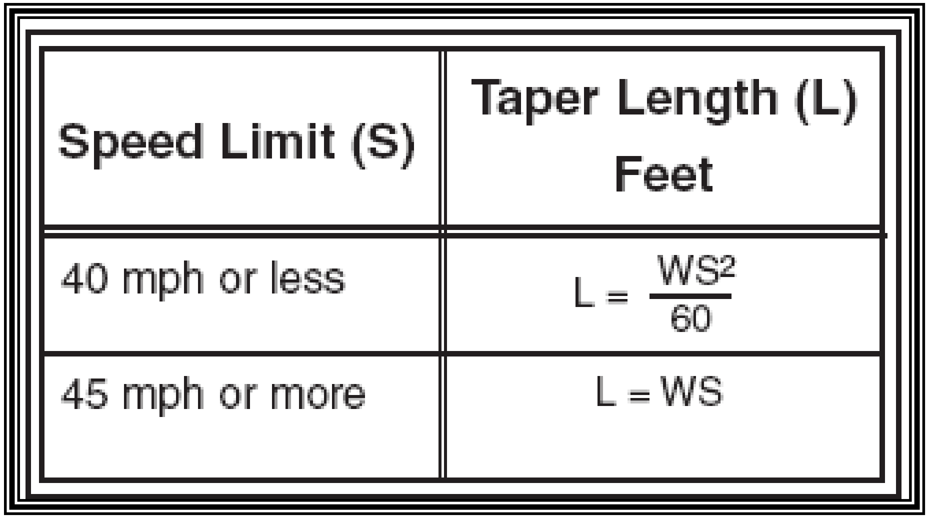


Source: MUTCD Figure 6C-2 and Table 6C-3

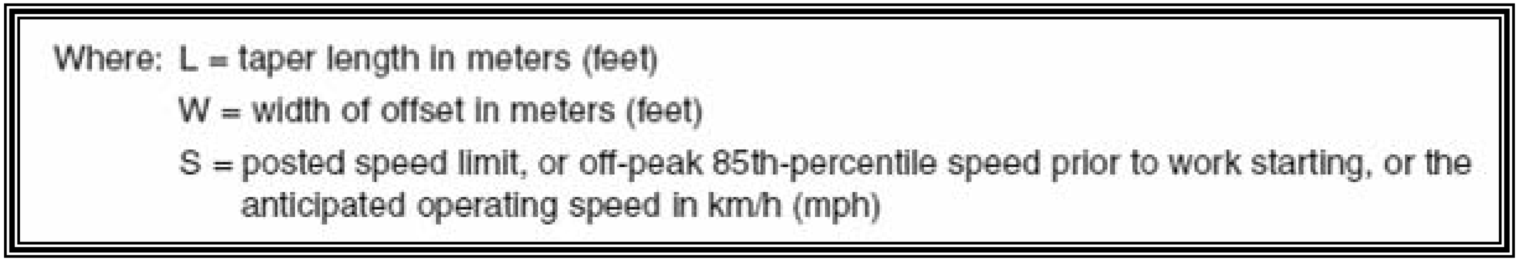
Formulas for Calculating Taper Lengths



Speed Limit (S)	Taper Length (L) Meters
60 km/h or less	$L = \frac{WS^2}{155}$
70 km/h or more	$L = \frac{WS}{1.6}$



Speed Limit (S)	Taper Length (L) Feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$



Where: L = taper length in meters (feet)

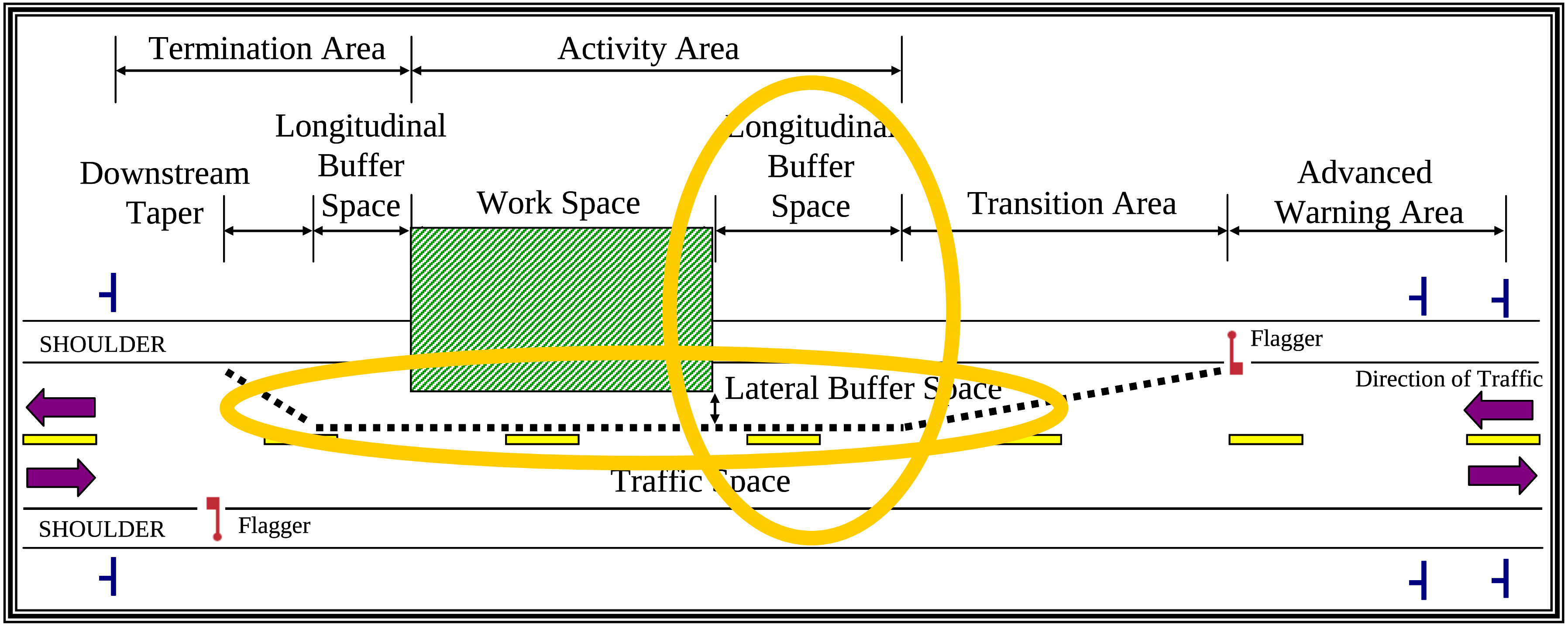
W = width of offset in meters (feet)

S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in km/h (mph)

Source: MUTCD Table 6C-4

Temporary Traffic Control Components

- Buffer Space (Optional) **– lateral and/or longitudinal area that separates traffic from work space, must be free of workers, vehicles, equipment, etc.**

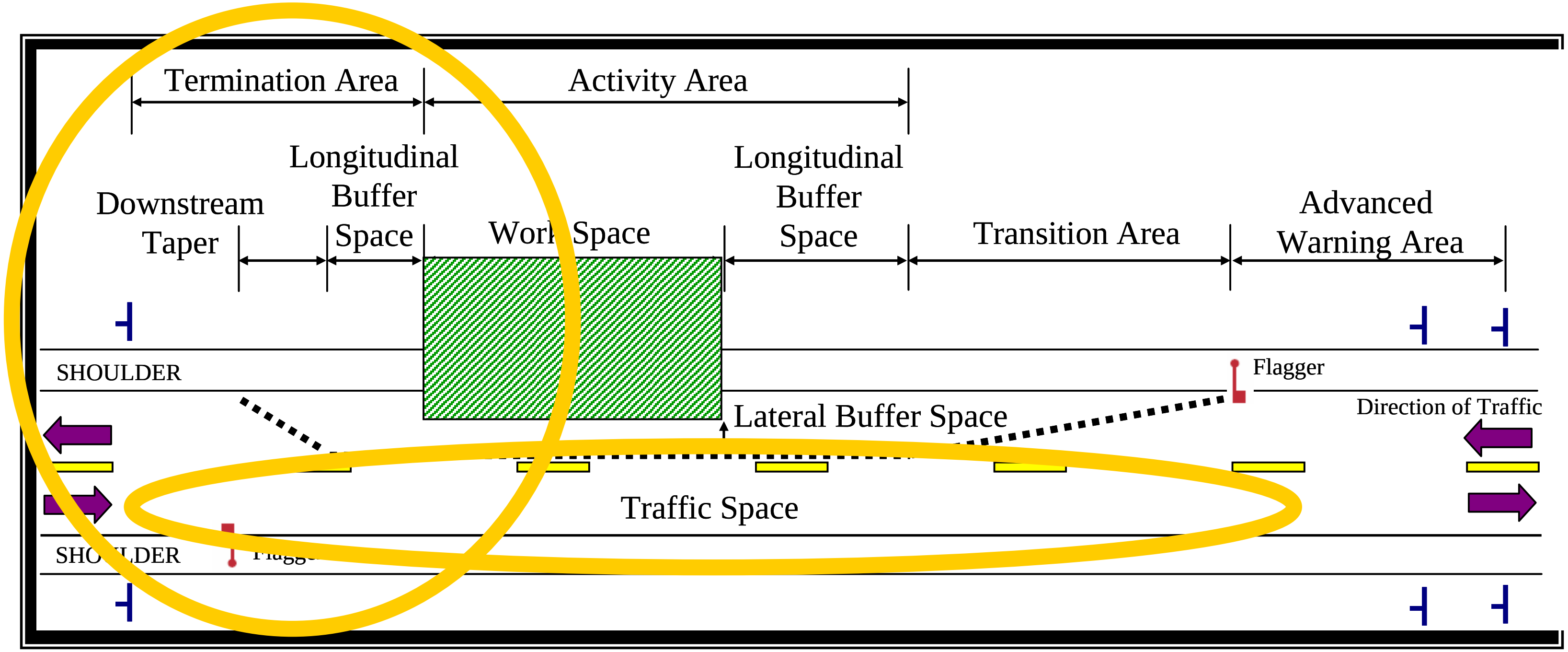


Why Use a Buffer Space?

- Improves worker safety
- Required in some jurisdictions
- May alleviate the need for more complex Traffic Control measures
- Provides additional space between work zone and motorists
- Easy to accommodate into Work Zone plan

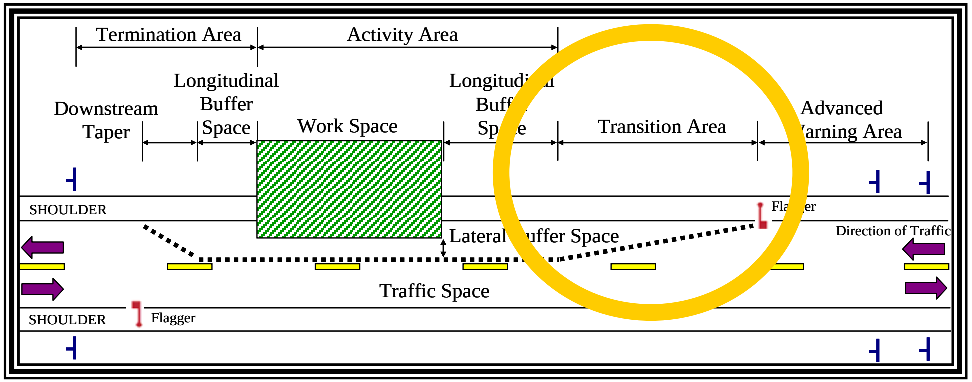
Temporary Traffic Control Components

- Termination Area – **area used to return to normal path**
- Traffic Space – **portion of highway in which road users are routed through the activity area**

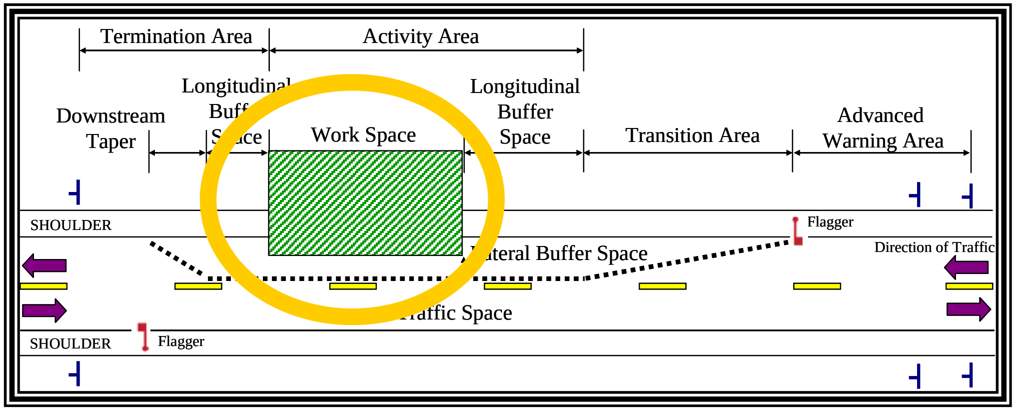


Temporary Traffic Control Components

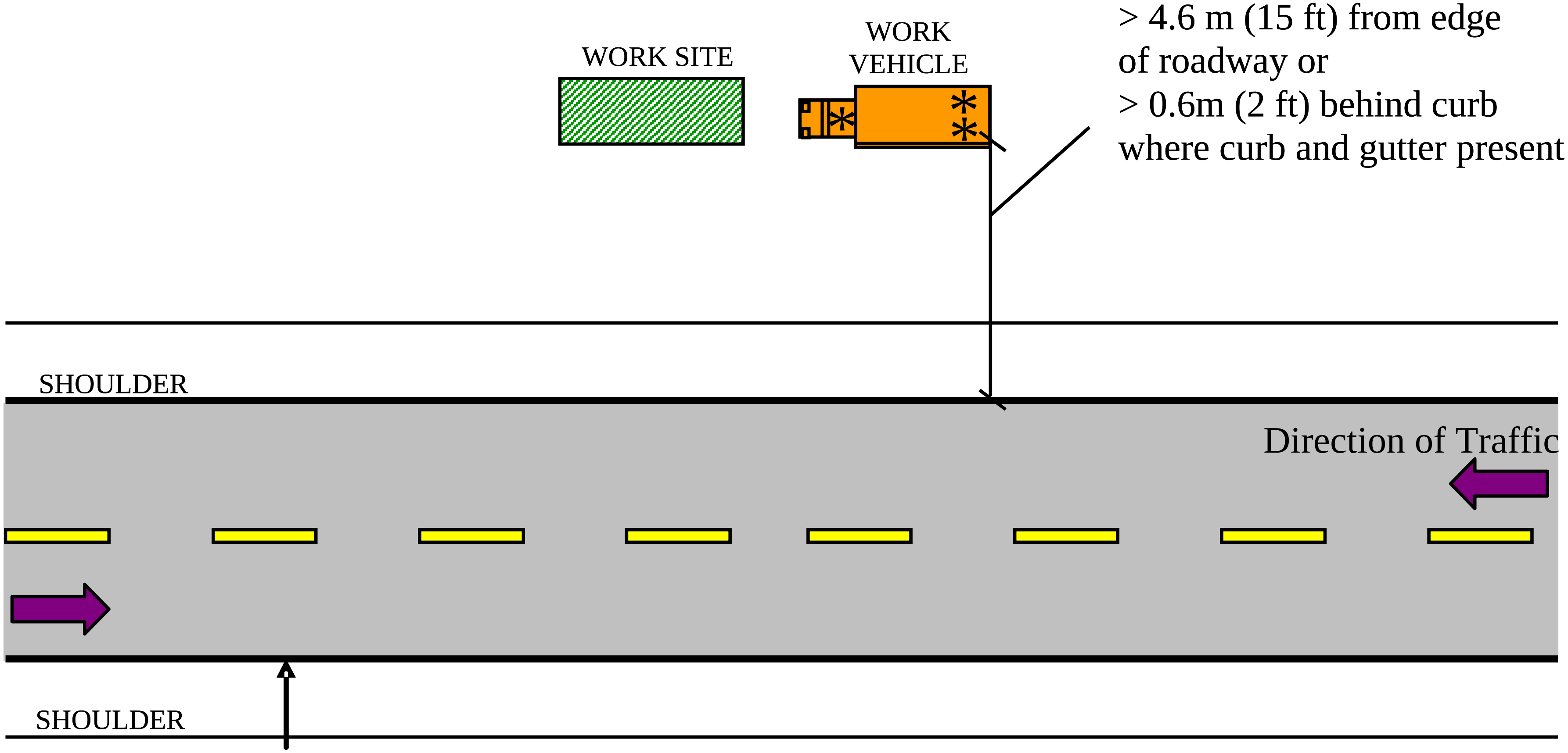
- Transition Area – **area utilized to move motorists from their normal path**



- Work Space – **portion closed to road users – occupied by utility workers, equipment and vehicles.**



Utility Work Beyond Shoulder



WORK SITE

WORK VEHICLE

> 4.6 m (15 ft) from edge of roadway or
> 0.6m (2 ft) behind curb where curb and gutter present

SHOULDER

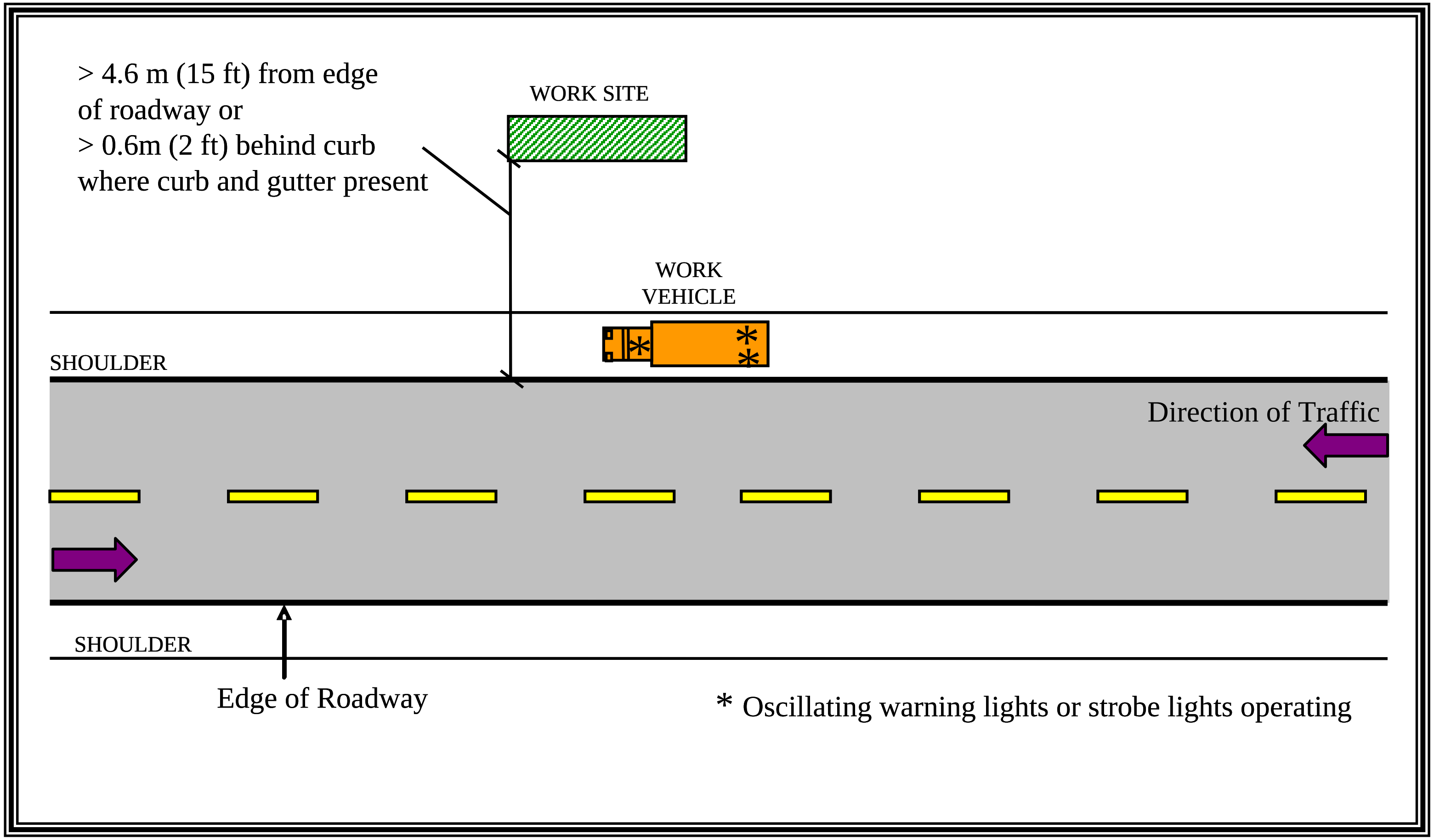
Direction of Traffic

SHOULDER

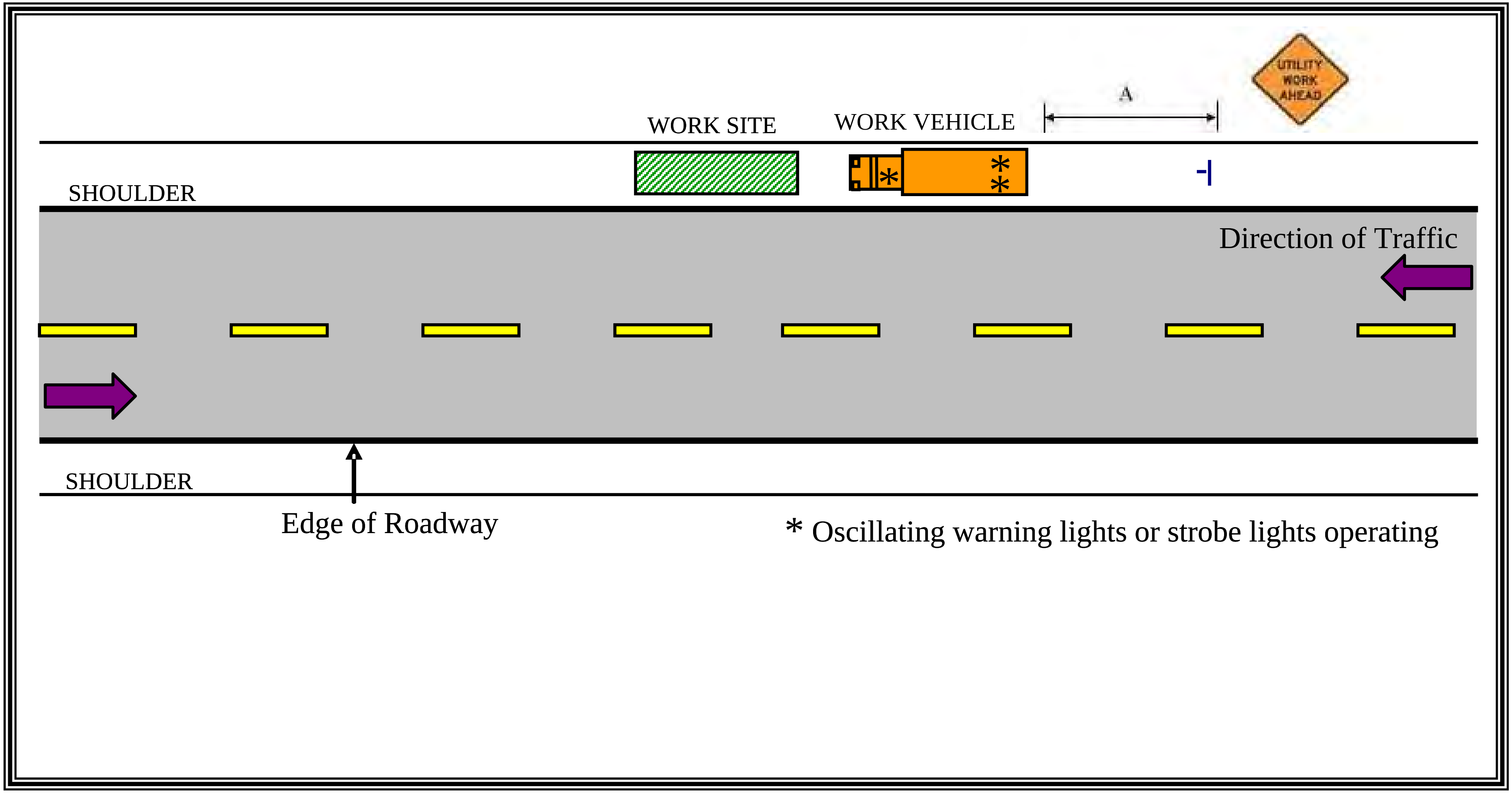
Edge of Roadway

* Oscillating warning lights or strobe lights operating

Utility Work Beyond Shoulder with Work Vehicle(s) Parked on Shoulder



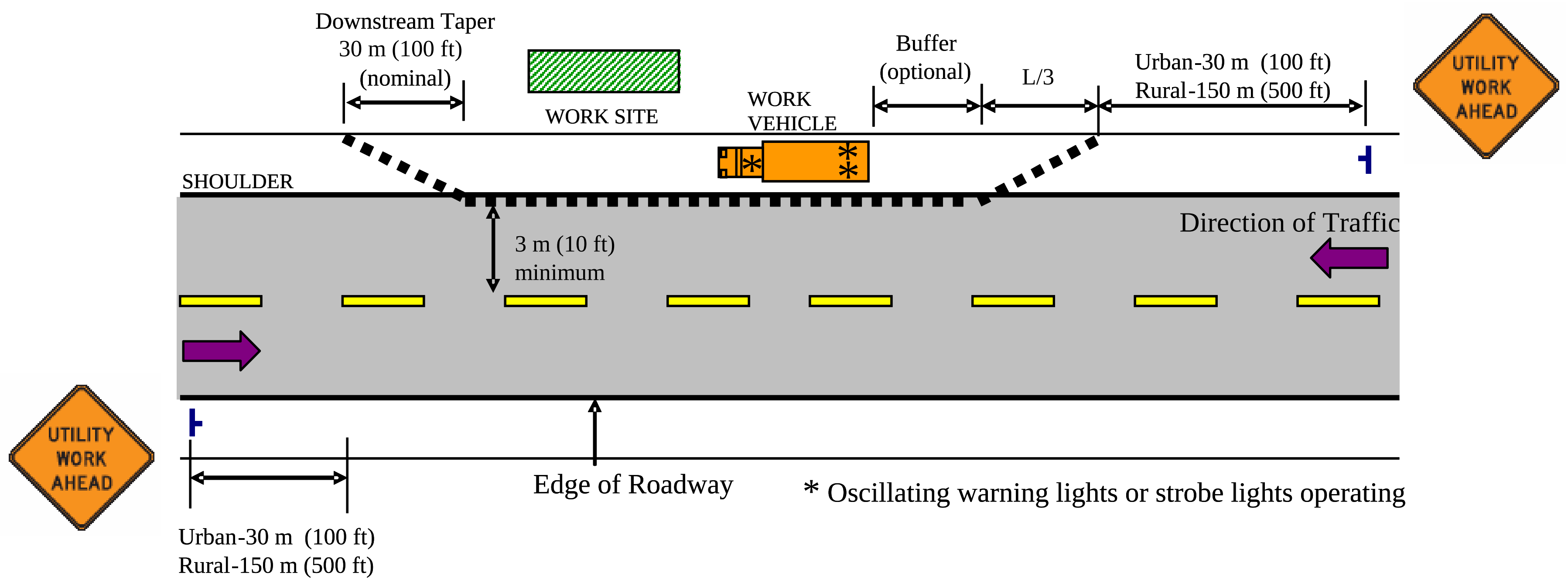
Utility Work on Shoulder
(Low Traffic Volume and Low Speed)



* Oscillating warning lights or strobe lights operating

Utility Work Beyond Shoulder with Work Vehicle Parked on Shoulder

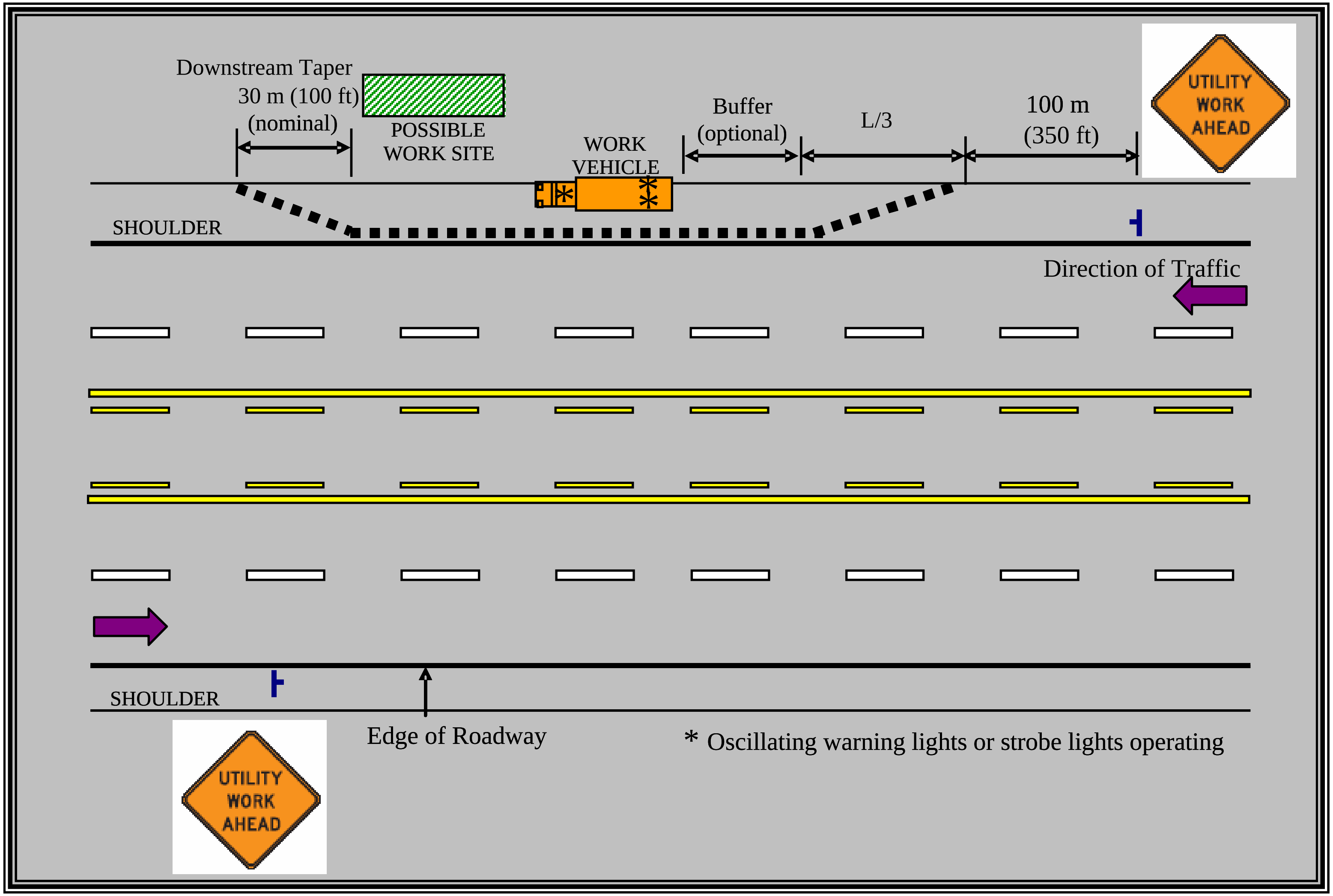
(High Traffic Volume and/or High Speed)



* Oscillating warning lights or strobe lights operating

Utility Work Beyond Shoulder with Work Vehicle(s) Parked on Shoulder

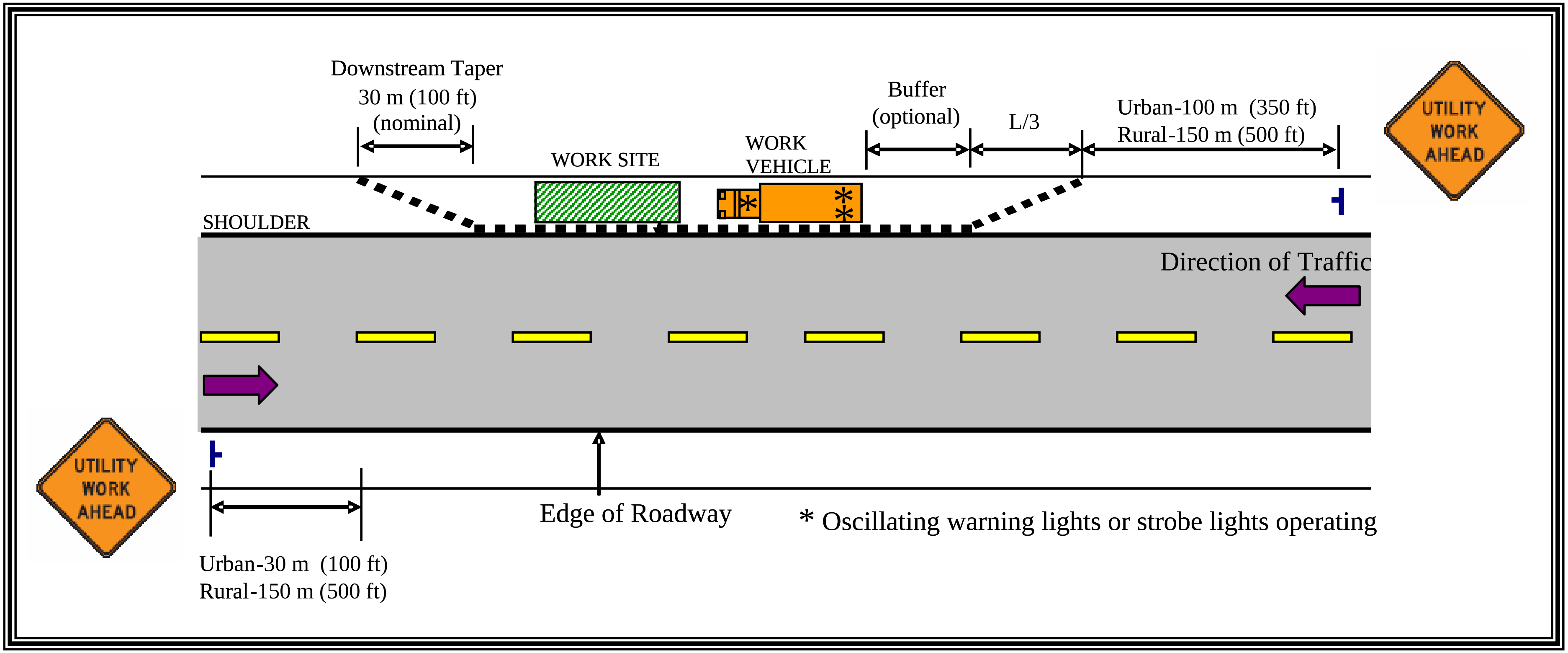
(High Traffic Volume and/or High Speed)



* Oscillating warning lights or strobe lights operating

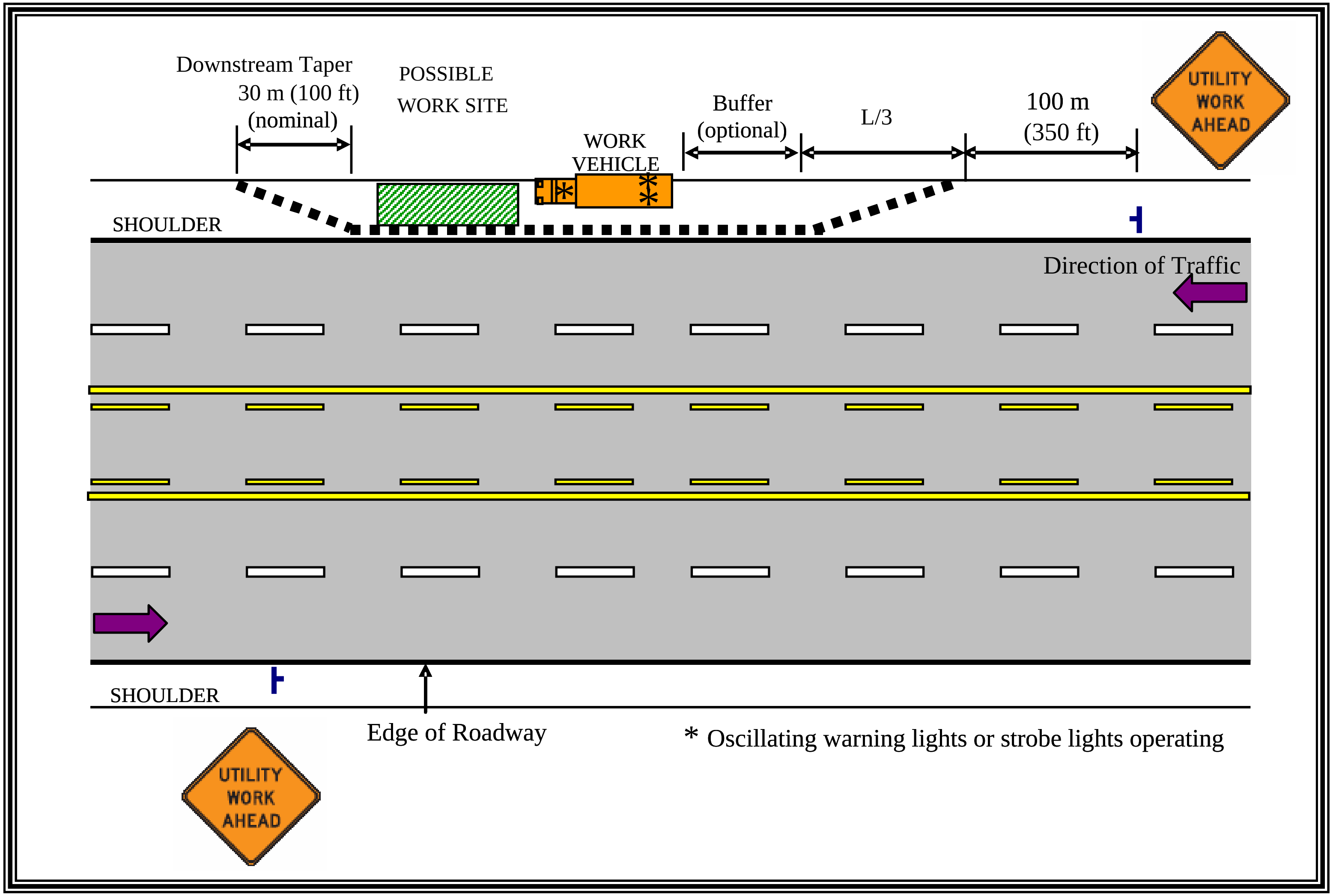
Utility Work on Shoulder with no Encroachment on Roadway

(High Traffic Volume and High Speed)



Utility Work on Shoulder with No Encroachment on Roadway

(High Traffic Volume and/or High Speed)

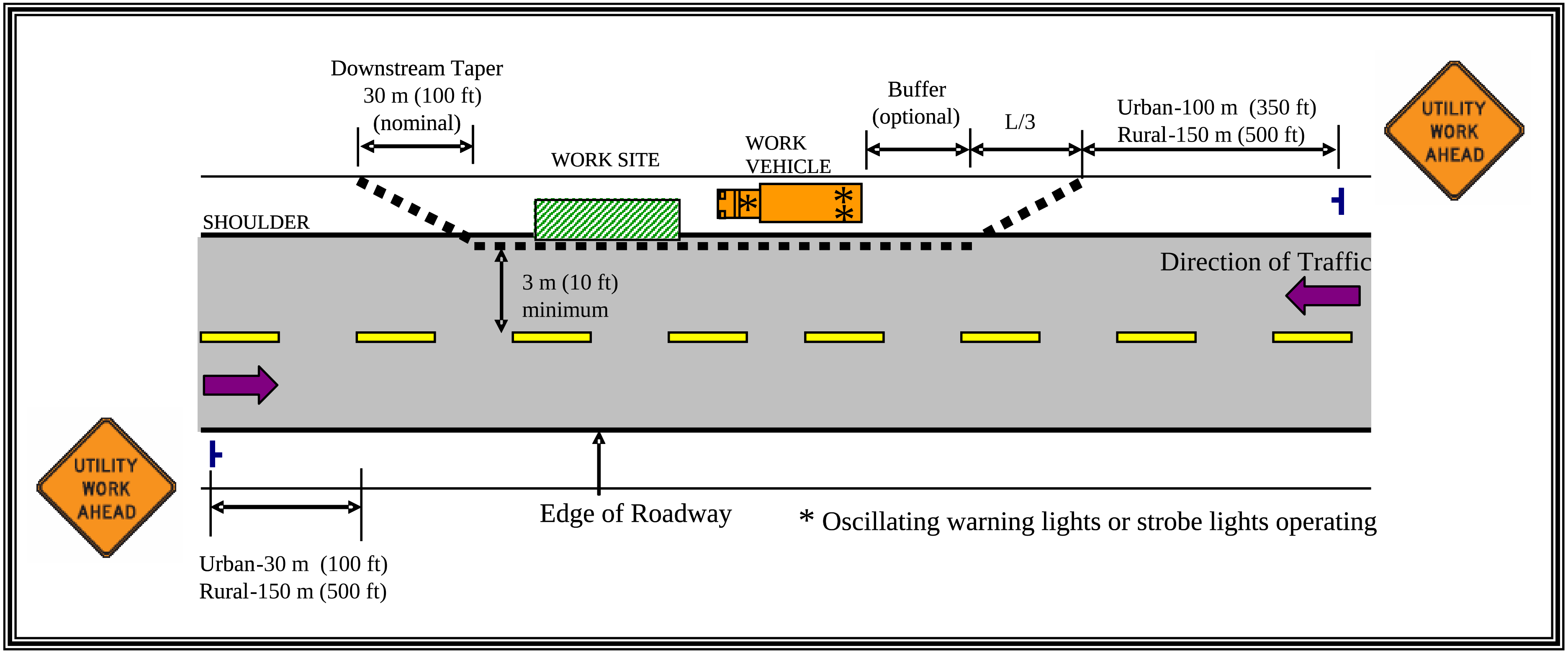


* Oscillating warning lights or strobe lights operating

TCP-D3

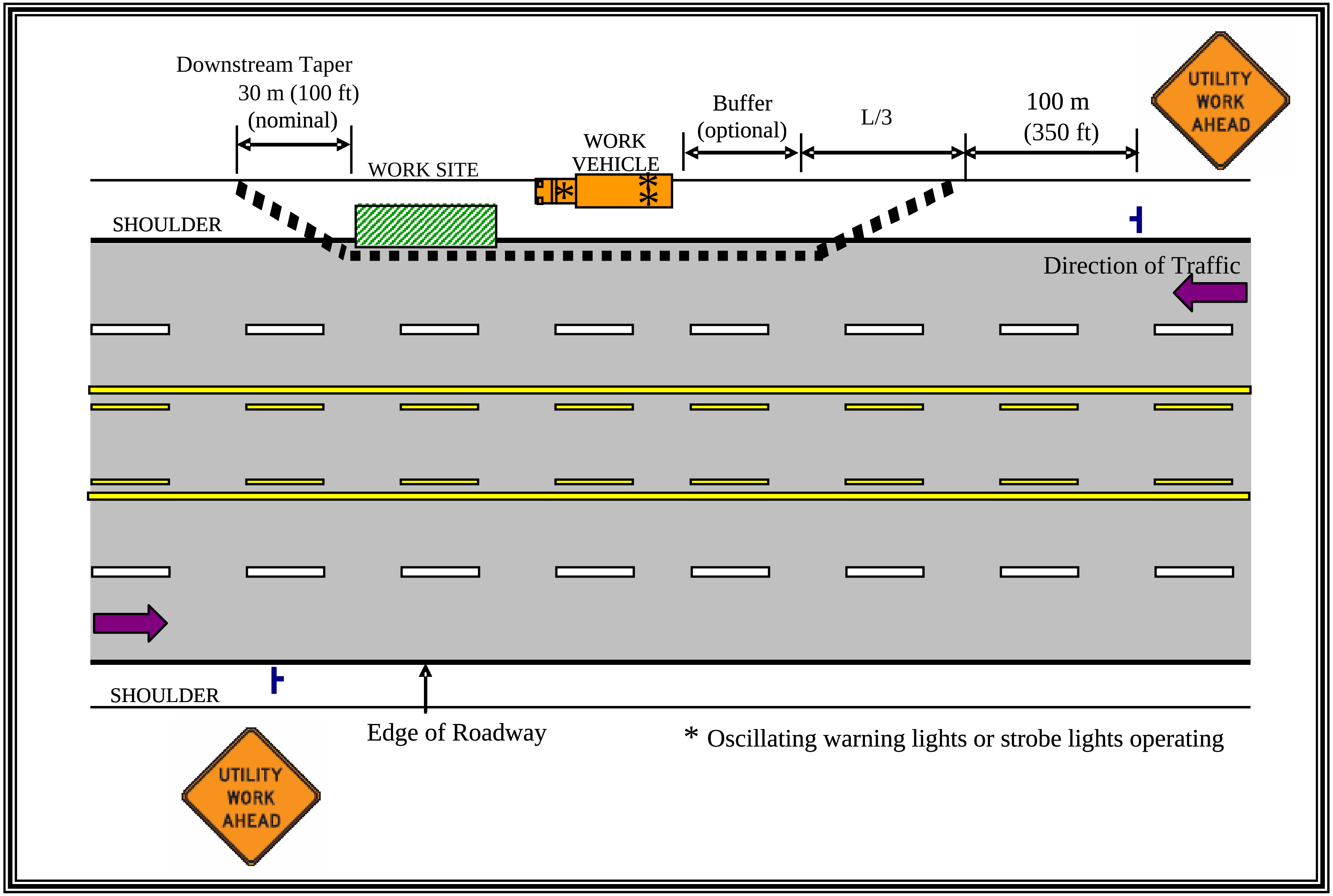
Utility Work on Shoulder with Minor Encroachment

(High Traffic Volume and High Speed)



Utility Work on Shoulder with Minor Encroachment on Roadway

(High Traffic Volume and/or High Speed)

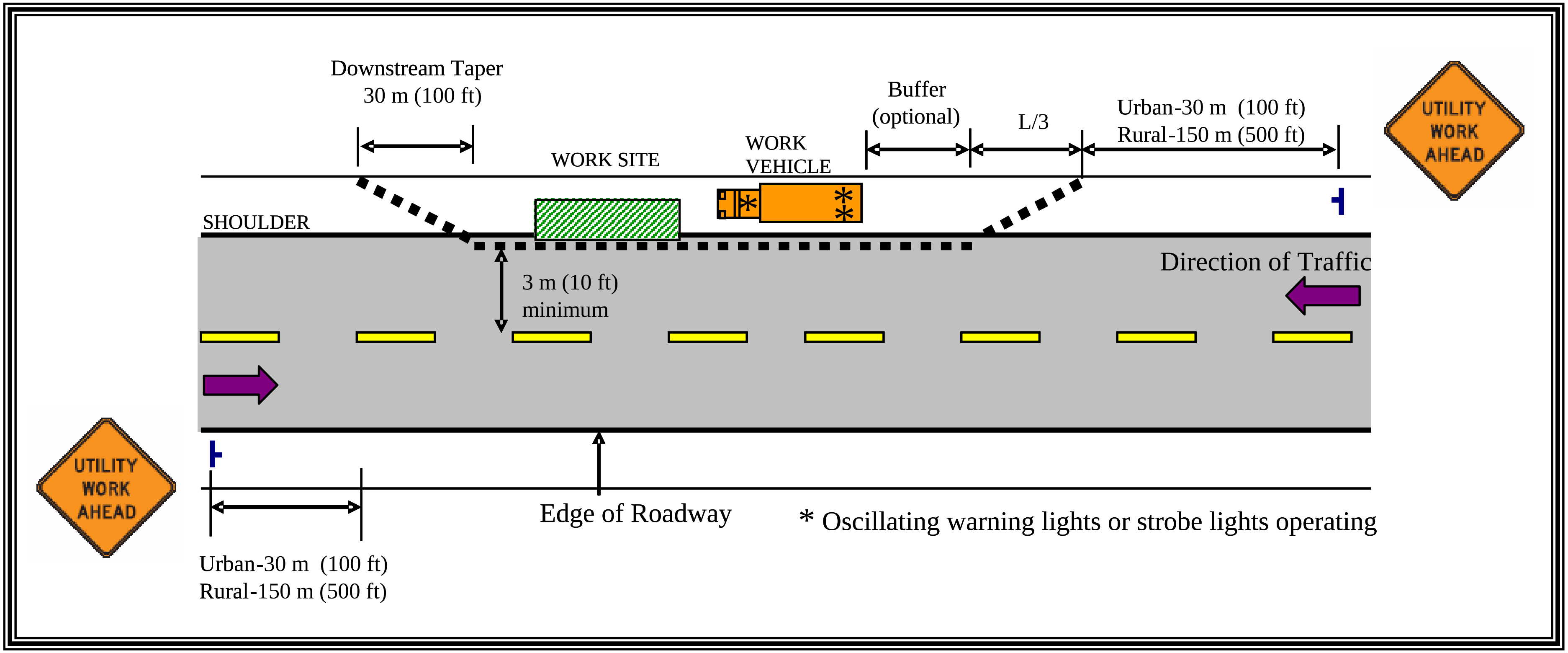


* Oscillating warning lights or strobe lights operating

TCP-D5

Utility Work on Shoulder with Minor Encroachment

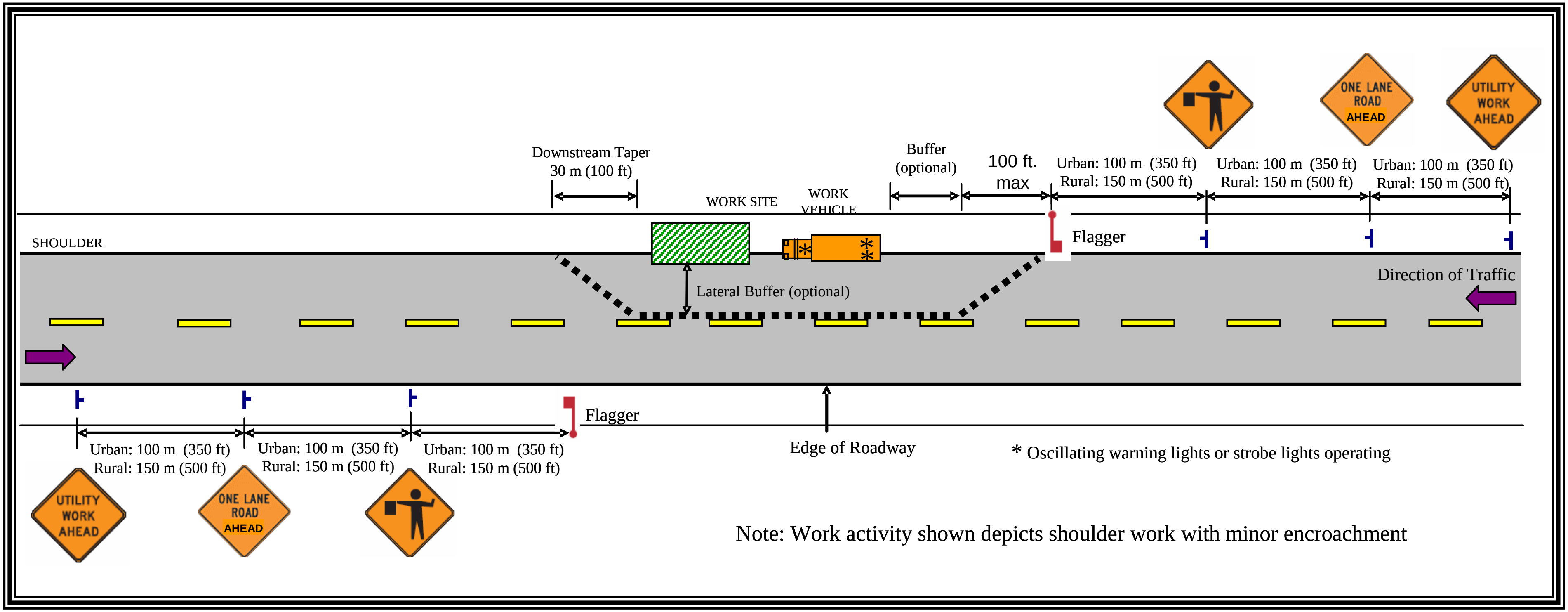
(Low Traffic Volume and Low Speed)



* Oscillating warning lights or strobe lights operating

Utility Work on Shoulder with Minor Encroachment or Lane Closure on Two-Lane Road

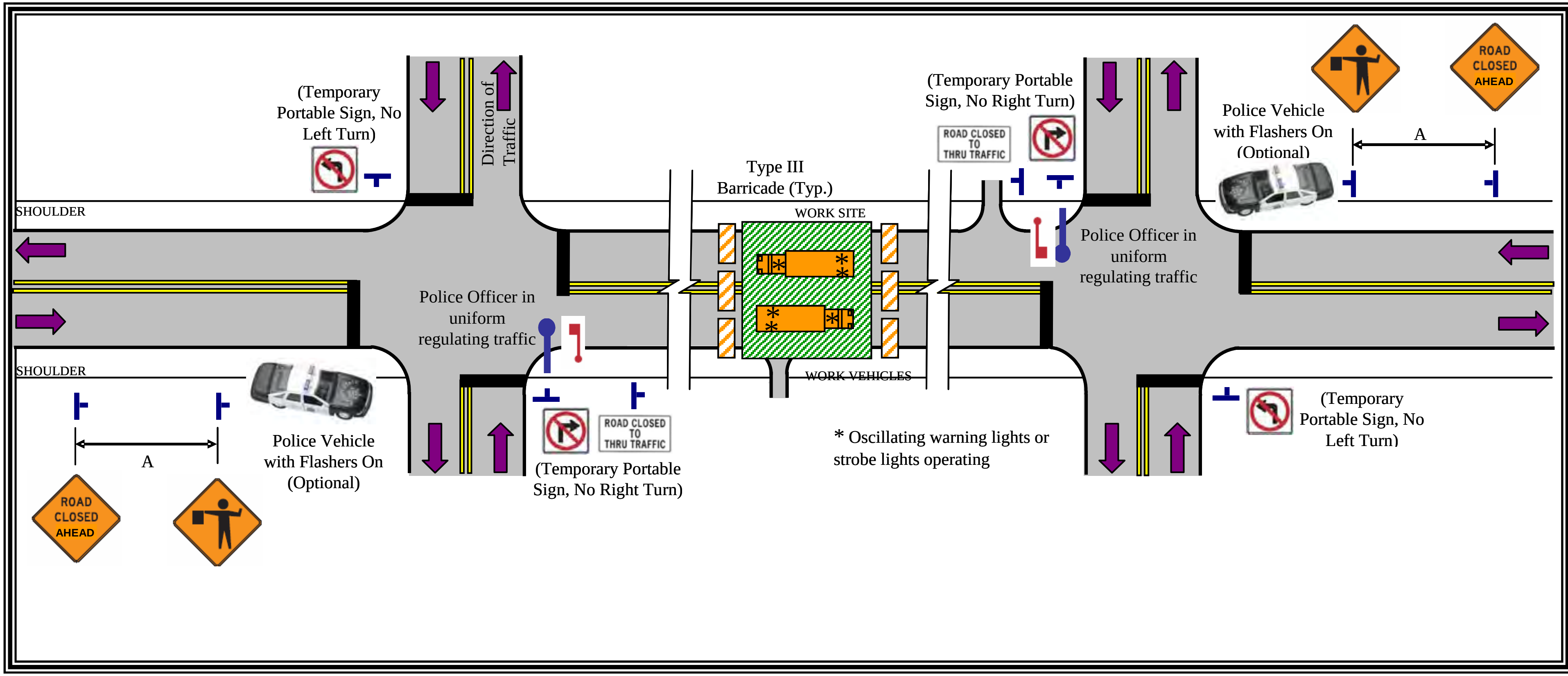
(High Traffic Volume and/or High Speed)



* Oscillating warning lights or strobe lights operating

Note: Work activity shown depicts shoulder work with minor encroachment

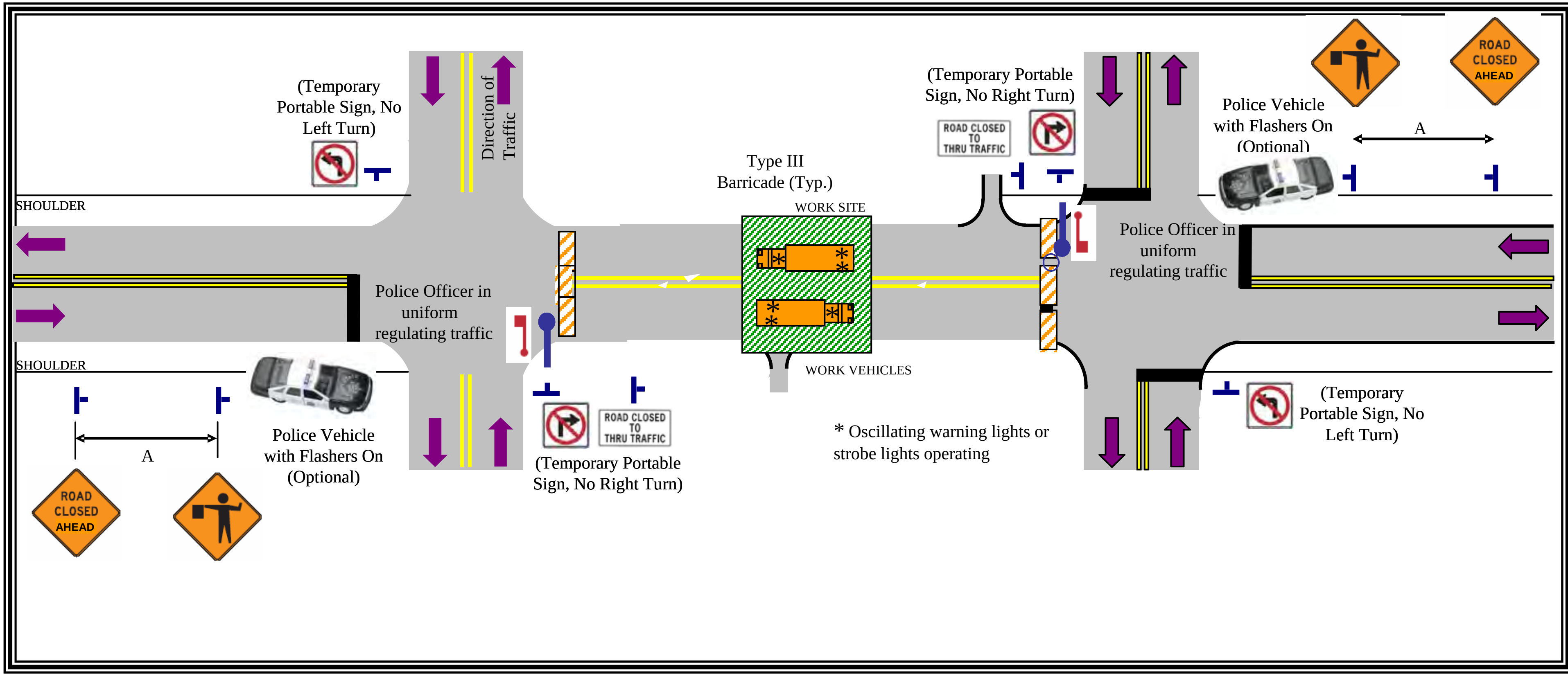
Temporary Road Closure
Mid Block



1. Planned Closure less than 20 minutes – Flagger or Police Vehicle Required
2. More than 20 minutes – Type III Barricades and appropriate traffic control signs shall be used – Use Flaggers where deemed appropriate.
3. White Road Closed Signs may have different wording such as Road Closed, Local Traffic Only

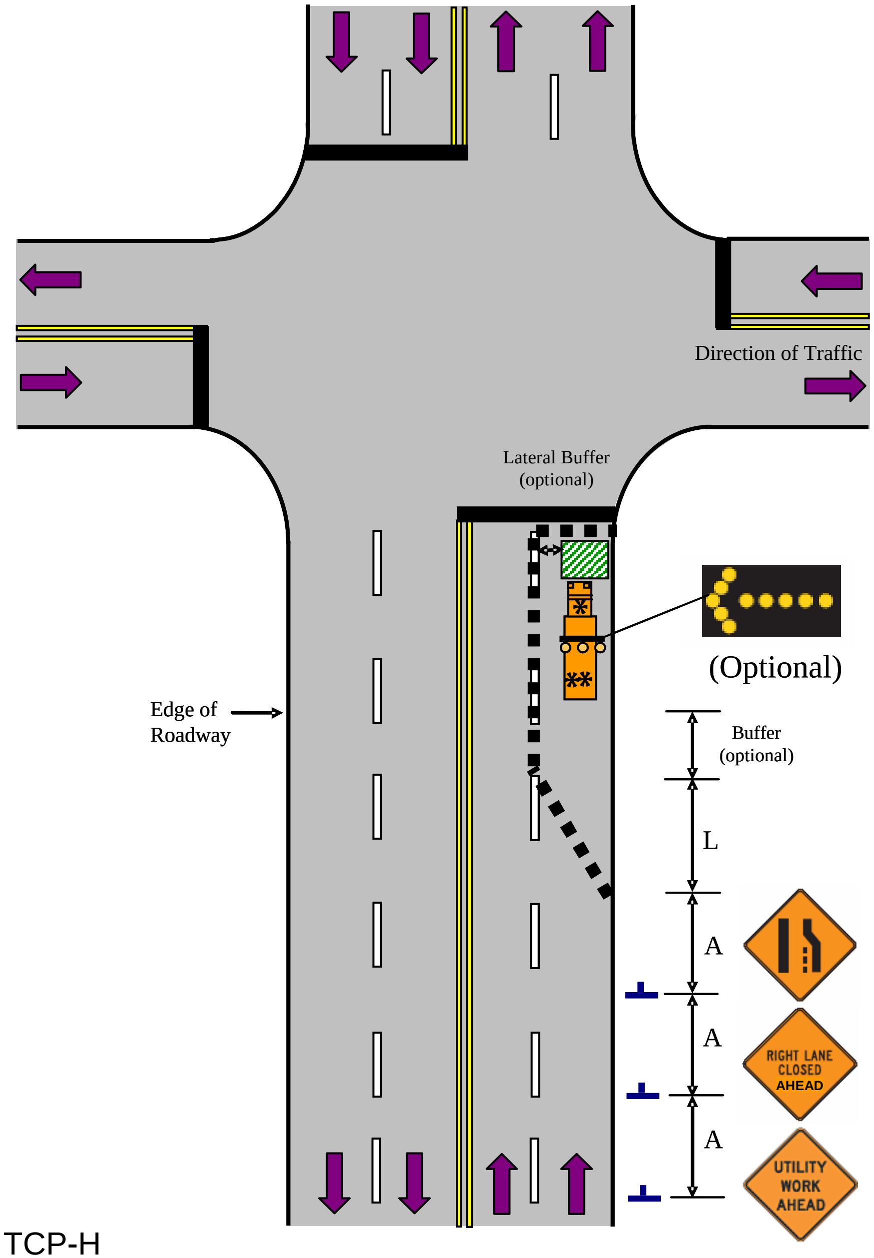
Temporary Road Closure

Full Block Closure



1. Planned Closure less than 20 minutes – Flagger or Police Vehicle Required
2. More than 20 minutes – Type III Barricades and appropriate traffic control signs shall be used – Use Flaggers where deemed appropriate.
3. White Road Closed Signs may have different wording such as Road Closed, Local Traffic Only

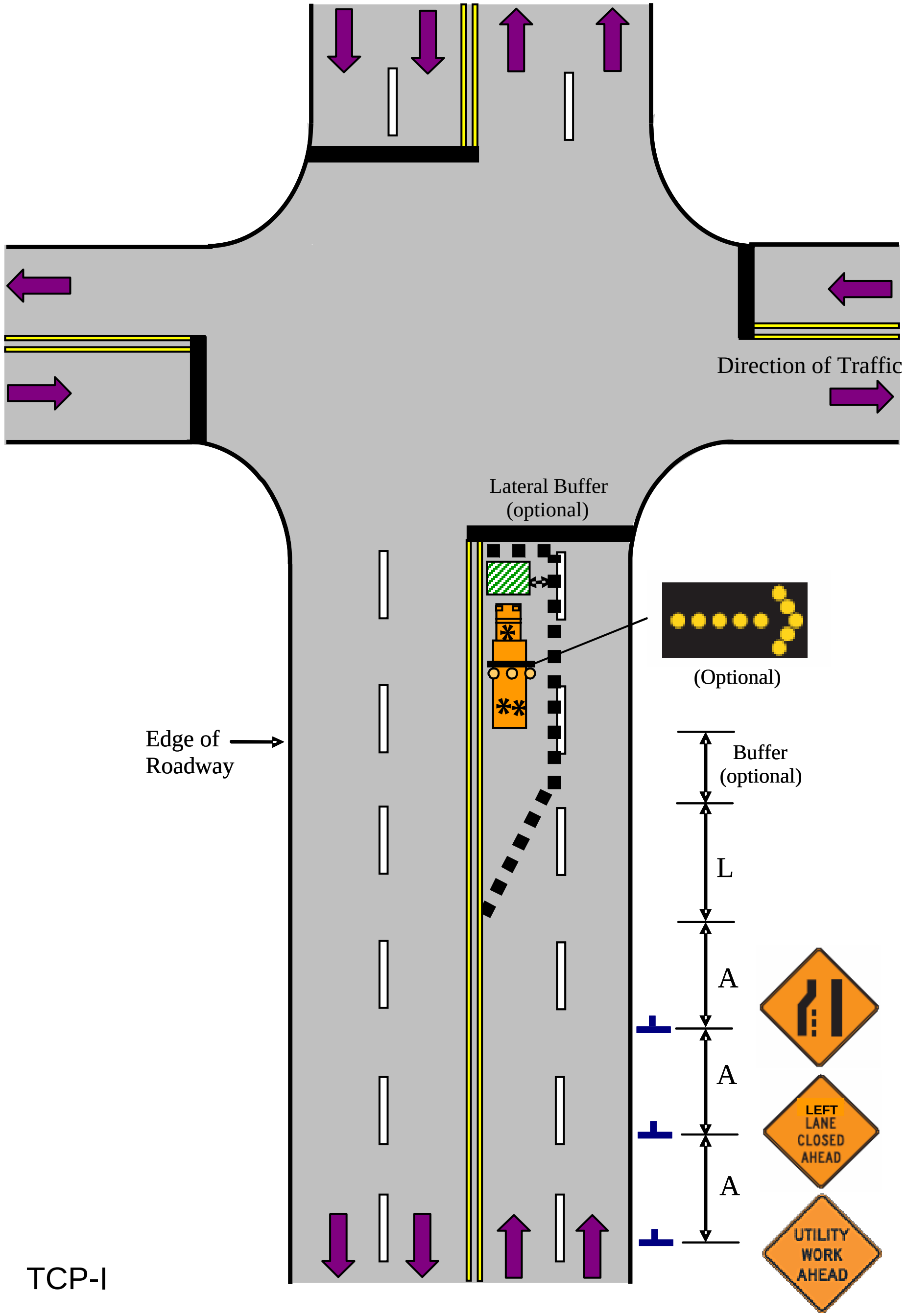
Right Lane Closure on Near Side of Intersection



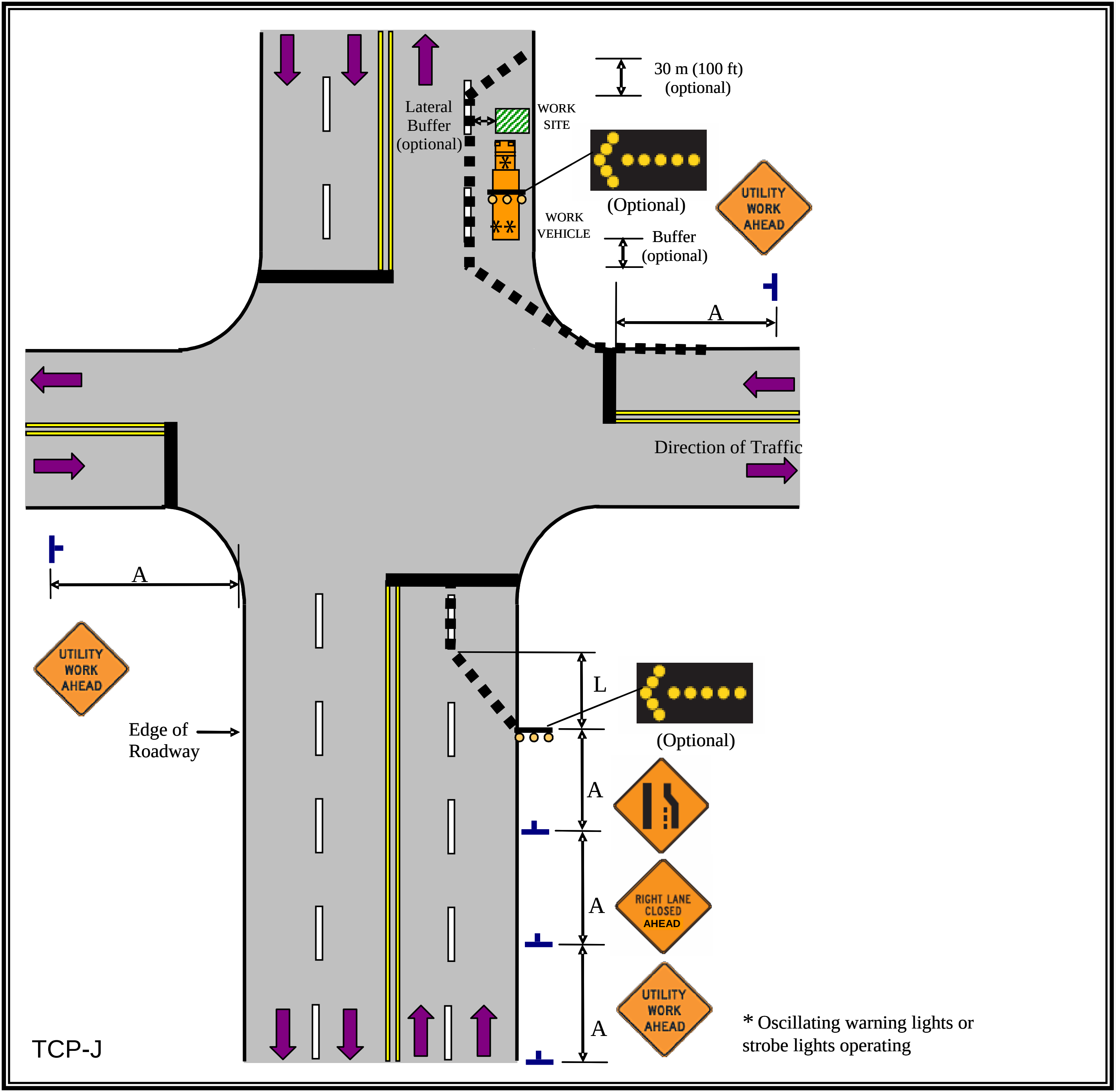
* Oscillating warning lights or strobe lights operating

TCP-H

Left Lane Closure on Near Side of Intersection



* Oscillating warning lights or strobe lights operating

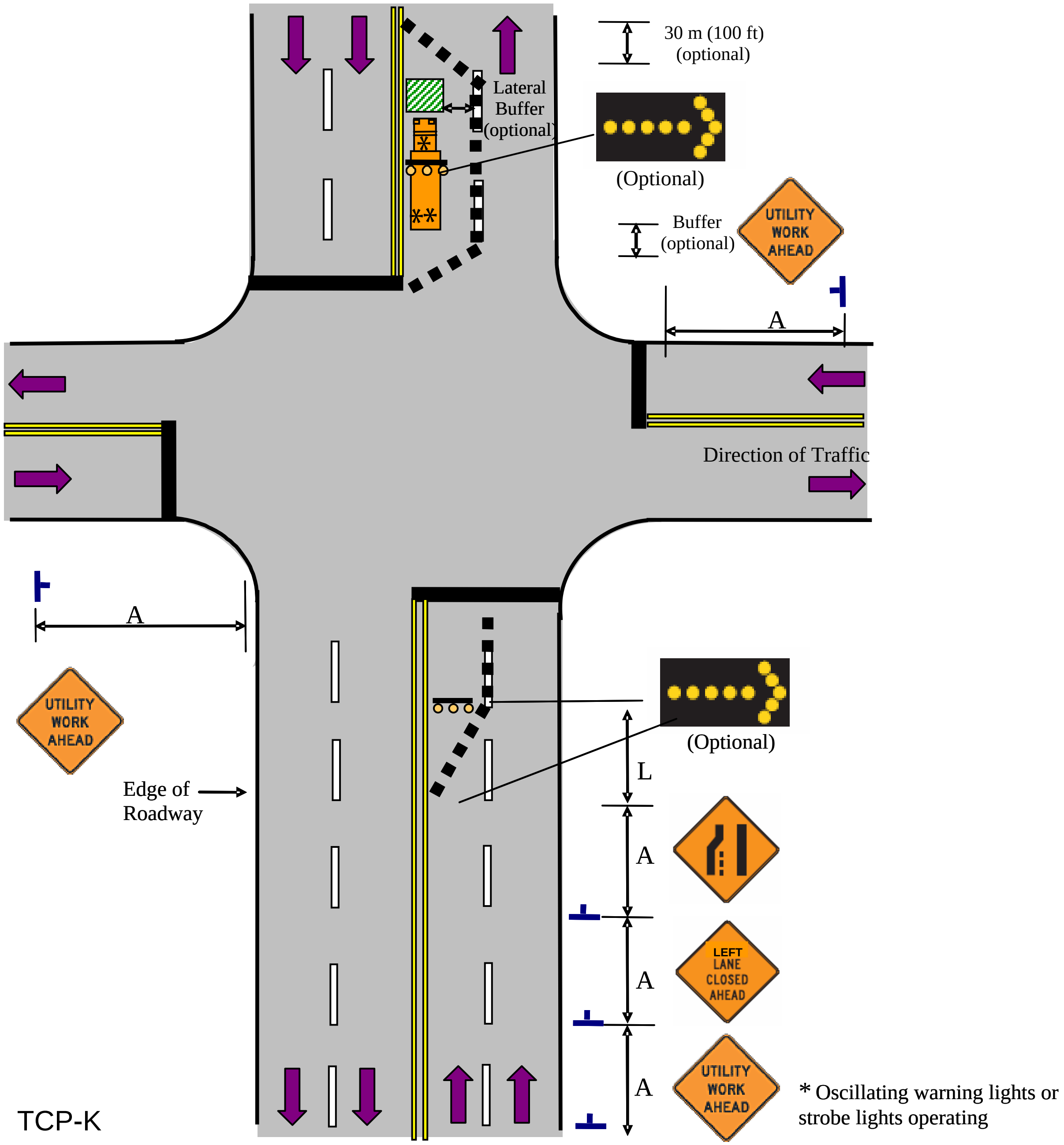


* Oscillating warning lights or strobe lights operating

TCP-J

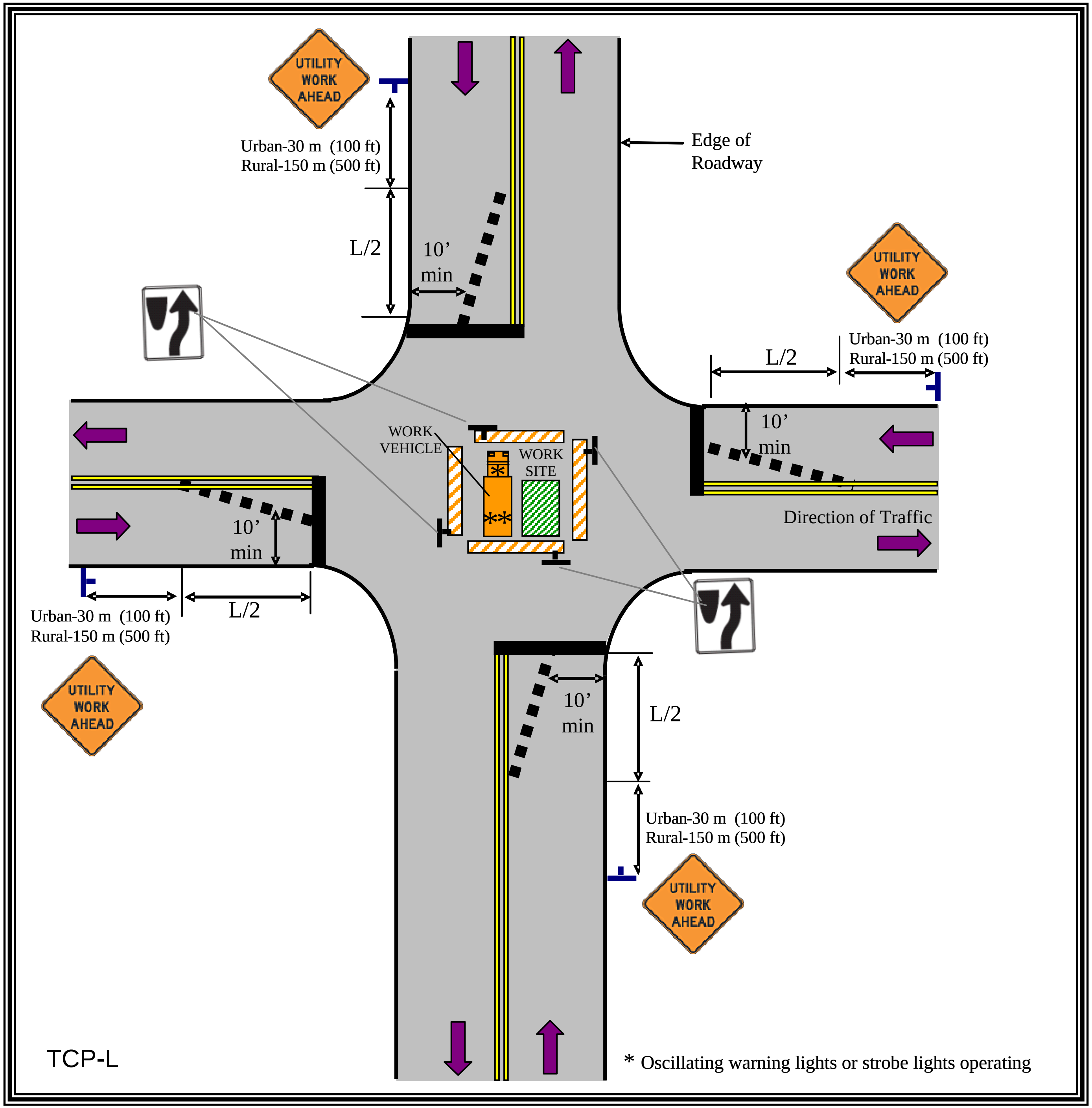
Right Lane Closure on Far Side of Intersection

Left Lane Closure on Far Side of Intersection



* Oscillating warning lights or strobe lights operating

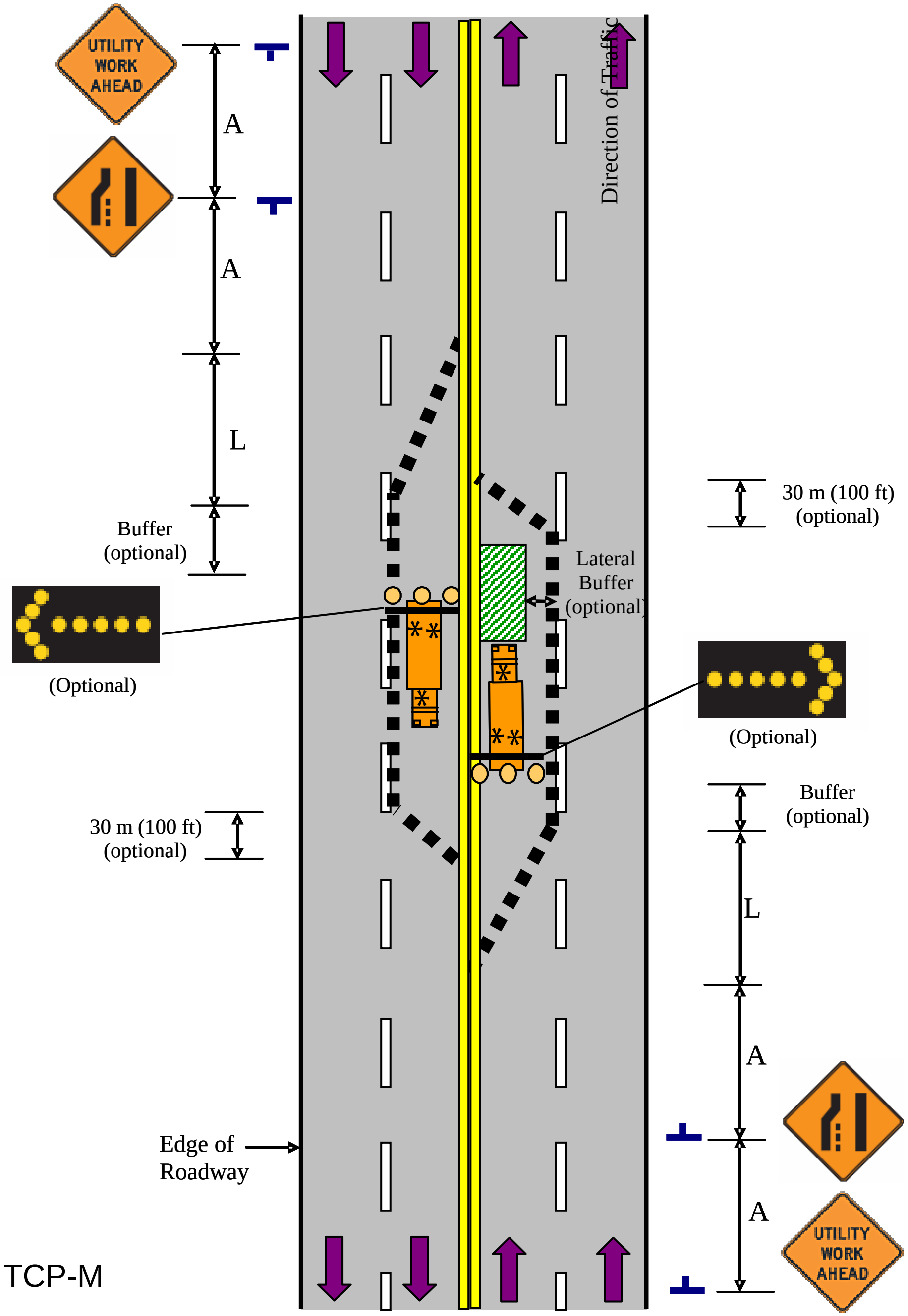
Closure in Center of Intersection



TCP-L

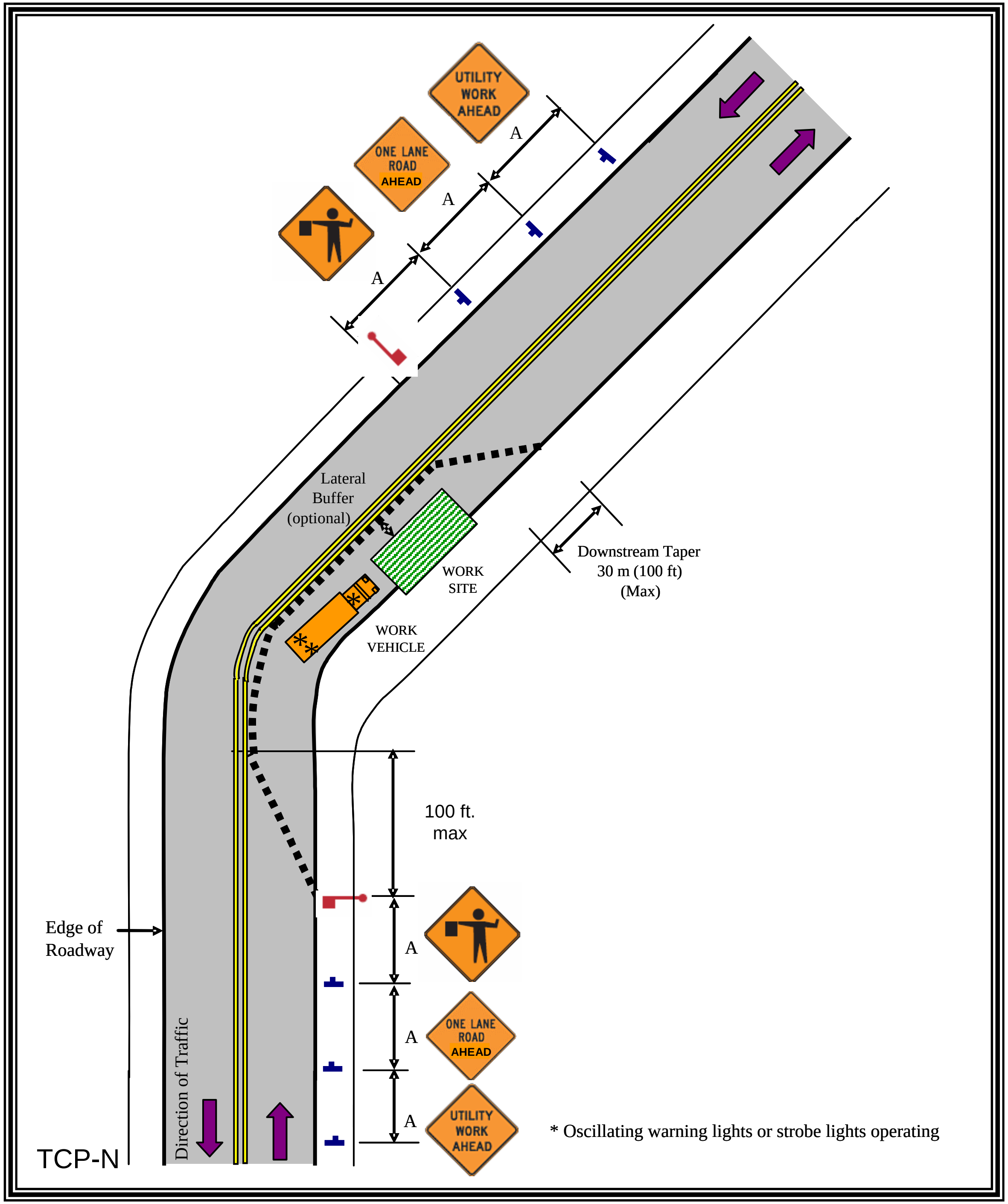
* Oscillating warning lights or strobe lights operating

Center Lane Closure on a Multi-Lane Road



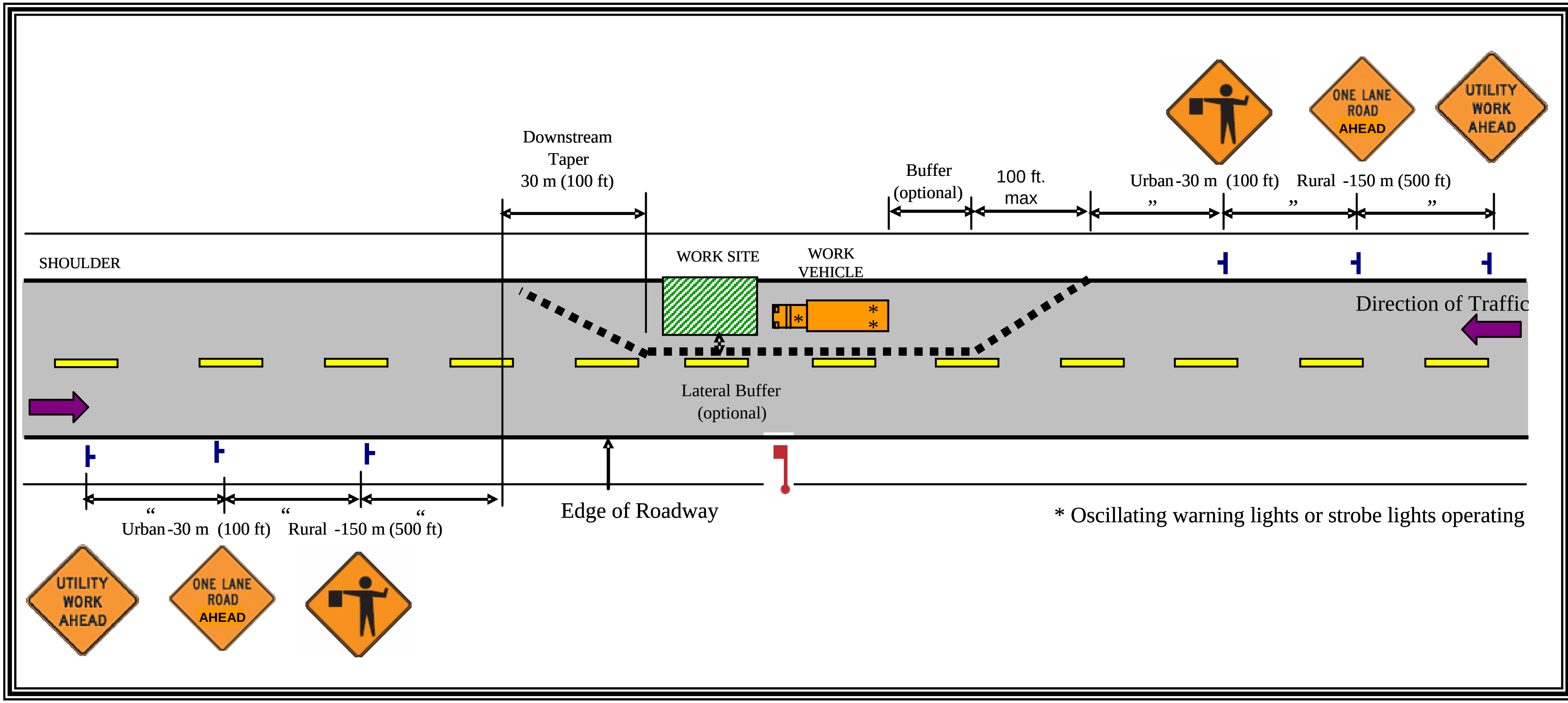
* Oscillating warning lights or strobe lights operating

Lane Closure On Two-Lane Road (Restricted Visibility)

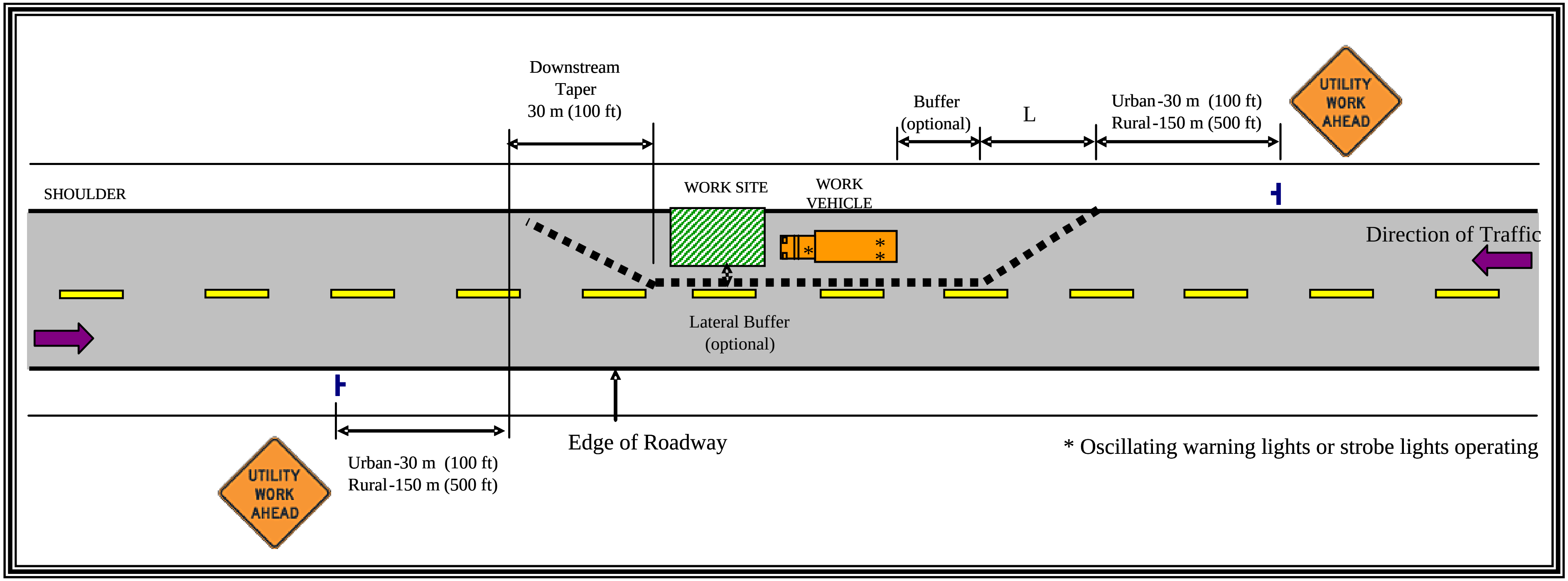


* Oscillating warning lights or strobe lights operating

Lane Closure on Two-Lane Road with Unrestricted Visibility
(Low Traffic Volume, Low Speed where Traffic cannot self-regulate without the use of Flaggers)

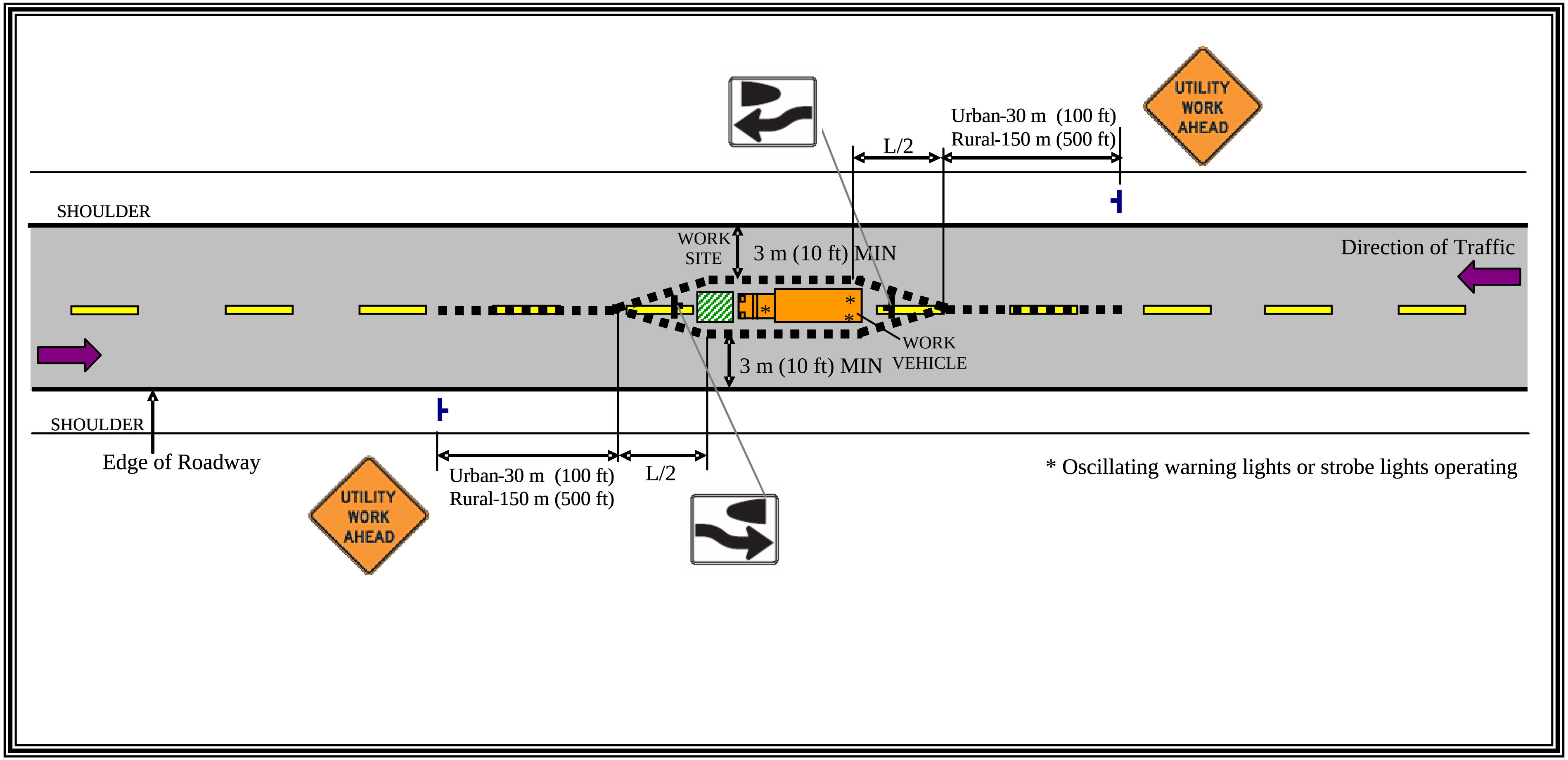


Lane Closure on Two-Lane Road with Unrestricted Visibility
(Low Traffic Volume, Low Speed where Traffic can self-regulate without the use of Flaggers)

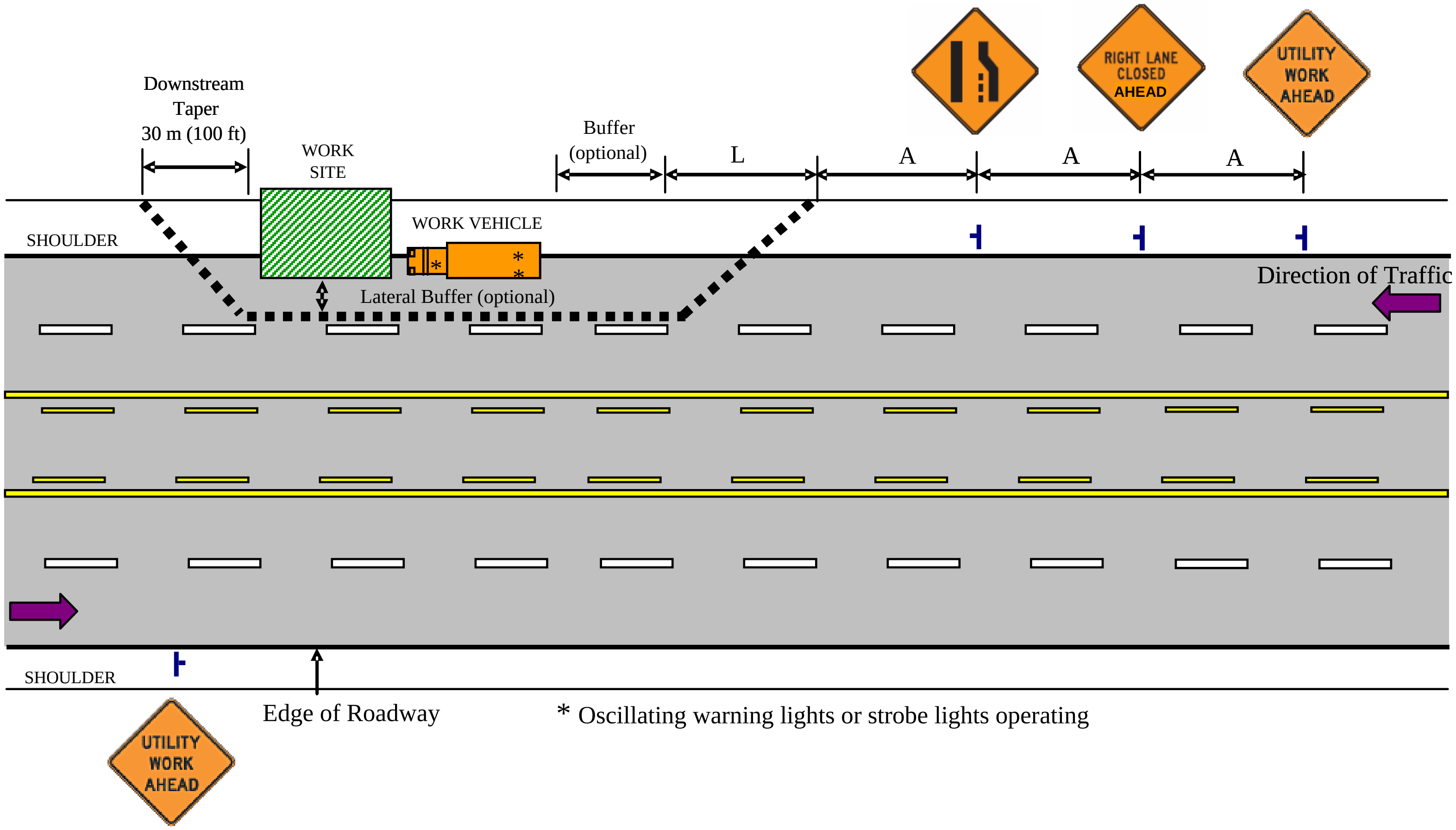


* Oscillating warning lights or strobe lights operating

Utility Work in Center of Road
(Low Traffic Volumes)



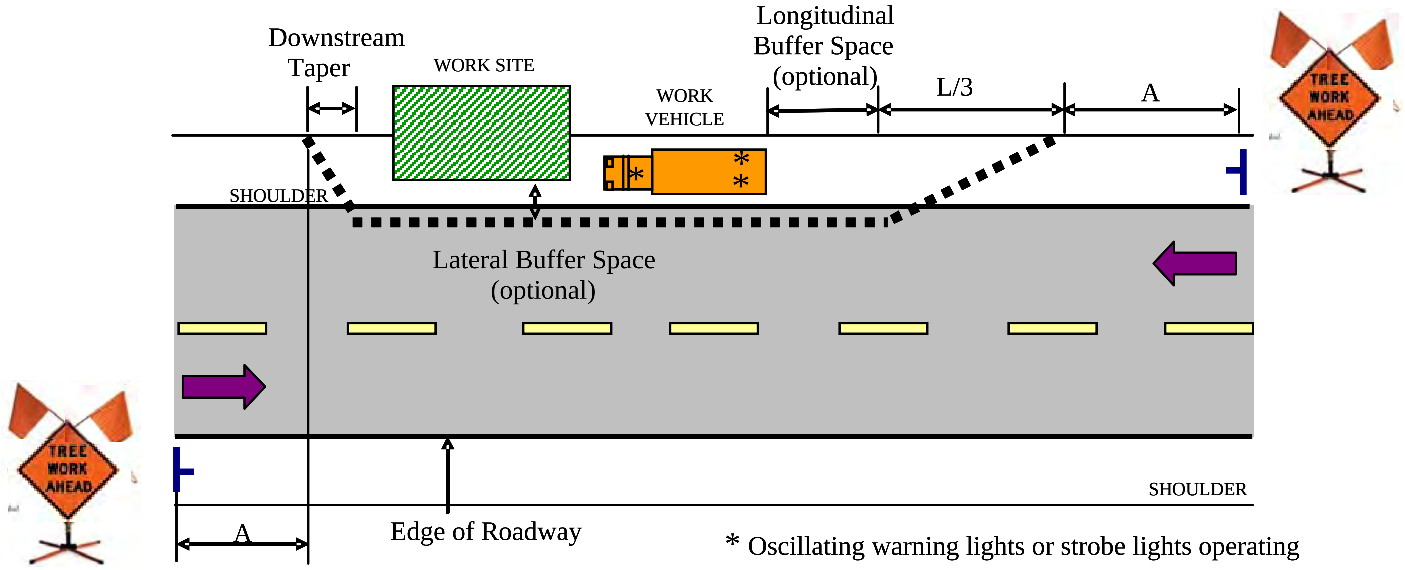
Outside Lane Closure on Multi-Lane Road



* Oscillating warning lights or strobe lights operating

TCP-R

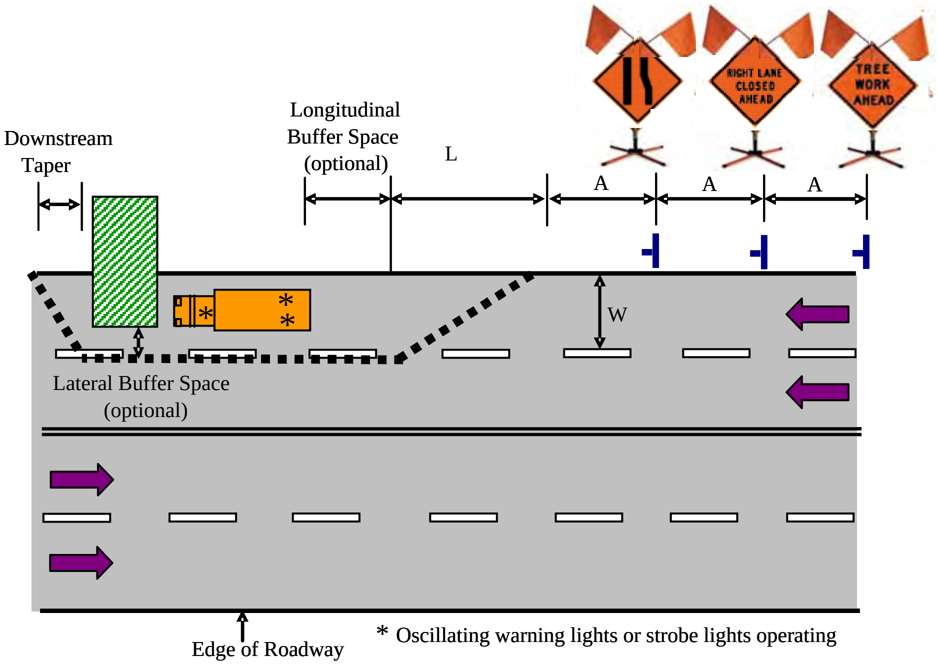
Tree Cutting/Trimming Shoulder Closure on a Two-Lane Road



* Oscillating warning lights or strobe lights operating

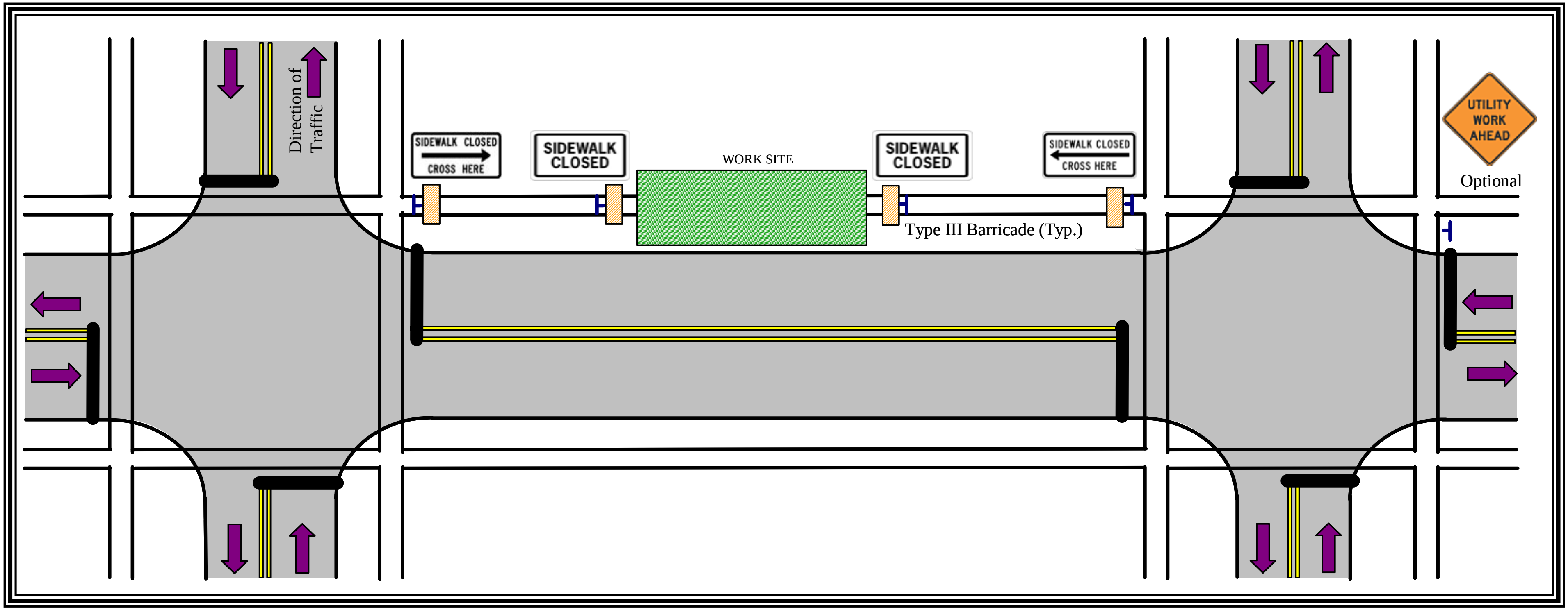
Note: Road Work Ahead, Utility Work Ahead, Worker Symbol sign may be substituted for Tree Work Ahead Sign

Tree Cutting/Trimming Lane Closure on a Multi-Lane Road



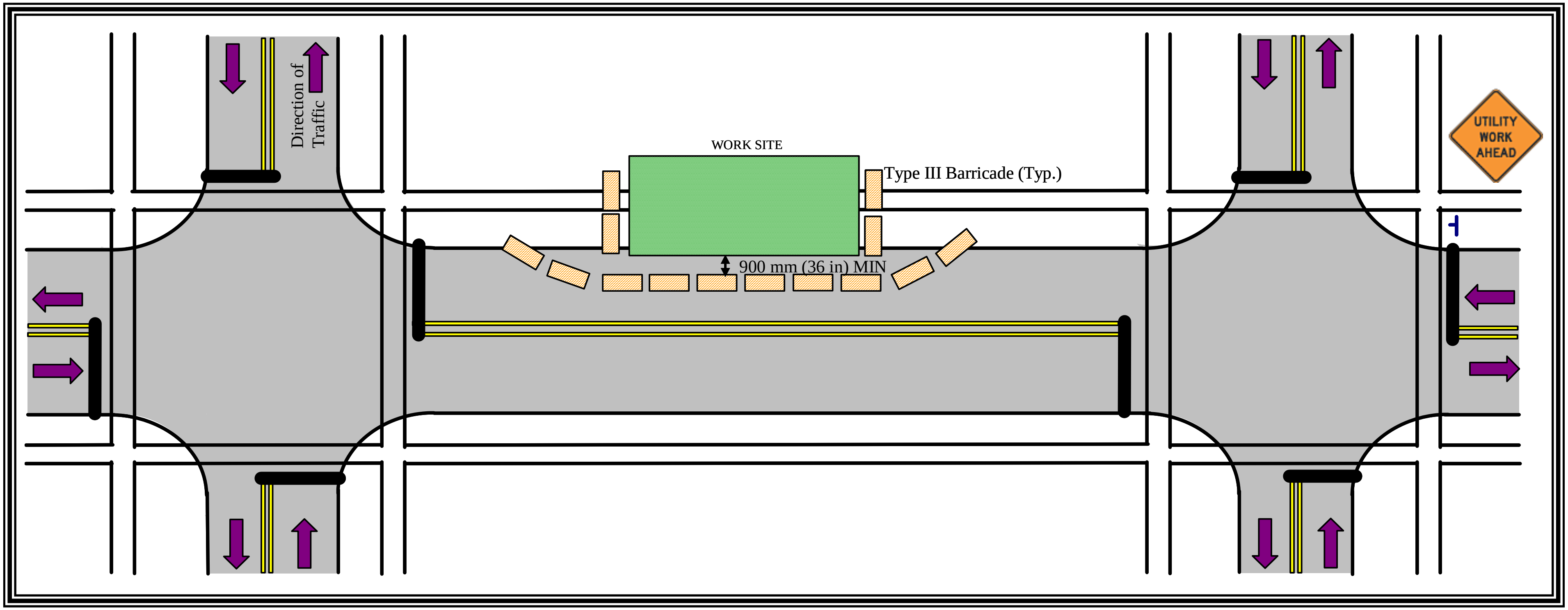
Note: Road Work Ahead, Utility Work Ahead, Worker Symbol sign may be substituted for Tree Work Ahead Sign

Sidewalk Detour for Pedestrians



Note: Sidewalk Closed signs are representative of several wording and direction options available

Sidewalk Diversion for Pedestrians



FOREWORD

National Grid's vision is to be a world-class safety organization, with zero injuries every day. A critical component of achieving this vision is the careful development, implementation and maintenance of safety procedures. This document, **Work Zone Traffic Control**, provides the minimum standards and specifications for work zone traffic control associated with the utility maintenance, repair and construction on or near roadways or on construction sites.

The procedure is designed to promote uniform and consistent application of these basic principals here at National Grid.

By following this guidelines set forth in Work Zone Traffic Control personnel can reduce their risk of injury and comply with applicable laws and regulations.

Questions regarding this procedure should be referred to National Grid's Safety Department.

Record Of Change

Date of Review/ Revision:

Revision	Date	Description
1	06/01/09	Response to audit item

1.0 INTRODUCTION

1.1 Purpose

This procedure will provide the minimum standards and specifications for work zone traffic control associated with the utility maintenance, repair and construction on or near roadways or on construction sites. The procedure is designed to promote uniform and consistent application of these basic principals.

The purpose of traffic control devices and reasons for their use is to help ensure roadway safety by providing for the orderly and predictable movement of all traffic and provide safety to both the public and employees.

1.2 Applicability

Equally as important as the safety of road users traveling through temporary traffic work zones is the safety of workers. This procedure applies to National Grid employees whose work exposes them to the risks of moving roadway traffic or construction equipment or interfere with the orderly flow of traffic. This includes maintenance or construction work performed within the highway boundary or on construction sites, either public or private.

Minimum standards of application are prescribed for typical situations. A number of typical scenarios are illustrated in the Utility Work Zone Traffic Control Field Guide, showing proper application of these standards and principles.

1.3 Reviews and Revisions

This procedure shall be reviewed periodically and revised as required. Revisions of this procedure should be made as a result of regulatory changes, management review, change in safety management guidance, or company policies. The dates of reviews and revisions will appear on the front of the page of the procedure titled “Record of Change”.

The Safety Programs and Regulatory Compliance Group shall have primary responsibility for maintaining this document, soliciting comment from stakeholders, and revising as necessary. The requirements of this procedure or any future revision thereof, shall be effective the date of its issue unless otherwise noted.

1.4 Documentation

Documentation related to this procedure and subsequent reviews and revisions will be maintained in the Safety Department. This procedure will be accessible to field operations both in paper and electronic formats. The paper versions of the procedure will not be document controlled. The official, current version of this procedure and all other procedures prepared under this guidance will be on the National Grid internal intranet website.

1.5 Quality Assurance and Audit

Internal self-assessment and quality assurance activities are performed at several levels. Local management is responsible for complying with this procedure and with associated work methods that may be developed. The Safety Department shall be responsible for reviewing and revising this procedure based on feedback from these stakeholders.

The use of this procedure is subject to audit and it is anticipated that the Company' Legal Department and/or Internal Audit will periodically review its implementation.

2.0 RESPONSIBILITIES

2.1 Line of Business (LOB)

- Ensure that all employees are trained in Work Zone Traffic Control
- Monitor compliance with this procedure and note conditions where application of this procedure does not provide adequate worker protection.

2.2 Safety Department

- Provide on-going technical assistance to LOB as requested

2.3 Learning and Development

- Develop Work Zone Traffic Control training for LOB's.
- Conduct training for all workers exposed to the risks of moving roadway traffic or construction equipment.
- Conduct refresher training as needed to address needs and changes in regulatory requirements.
- Maintain training records in training database

2.4 Employees

- Adhere to the requirements of this procedure
- Attend all required training
- Request additional information when necessary

3.0 APPLICATION

It is not possible to prescribe detailed standards of the application for all situations that may conceivably arise. Therefore, typical illustrations are presented in the *Utility Work Zone Traffic Control Field Guide* for the most common situations with the understanding that additional protection may be required where special complexities and hazards prevail. Although each situation must be dealt with individually, conformity with the provisions established herein is required. The protection described for each situation shall be based on the **speed and volume of traffic, duration of work, and exposure to hazards**.

These standards are basically applicable to both rural and urban situations. High speed highways and streets require more thorough treatment than the minimum requirements, whereas low speed may be treated satisfactorily with a minimum of devices.

3.1 Standardization

3.1.1 All traffic control devices used on maintenance and construction projects shall conform to the applicable specifications of this manual.

3.1.2 Signs shall be kept in proper position, clean and legible at all times. Damaged, defaced or dirty signs shall be cleaned, repaired or replaced.

3.1.3 Barricades and signs supports shall be neatly constructed and shall not appear makeshift. They shall be repaired, cleaned or replaced as needed to keep up their appearance.

4.0 FUNDAMENTAL PRINCIPLES OF WORKZONE TRAFFIC CONTROL

4.1 Plan for Safety

Workers should plan ahead for the safety of the motorist, pedestrian and worker.

4.2 Keep it Moving

Normal traffic movement should be disrupted as little as possible.

4.3 Communicate

Motorists and pedestrians should be warned, informed and guided in a clear and positive manner while approaching and traveling through the work zone.

4.4 Plan for the Worst

Workers should plan for the possibility of errant vehicles leaving the roadway and impacting the work zone.

4.5 Train

Each person whose actions affect temporary traffic control zone safety should receive training appropriate to the job decisions each is required to make. Only those who are trained in safe traffic control practices and have a basic understanding of the principles and National Grid’s procedures should supervise the selection, placement and maintenance of traffic control devices in work zones.

5.0 THE WORK AREA MUST BE PLANNED

Traffic congestion makes it necessary to plan protection for our work areas. Planned protection is necessary to avoid vehicle and pedestrian traffic hazards for the safety of the public and our own employees.

The vital nature of our services makes it necessary to provide them with a minimum of interruption. We must gain access, to our facilities and equipment, as repair and maintenance is required, providing a work area that is safe for all concerned.

It is National Grid's goal to maintain good relations with the general public. Employees in the field can create public goodwill by the way they conduct themselves and the way they arrange and maintain the traffic work zone.

You can help to maintain a reputation as a good neighbor by making it your standard work practice to use these principles of work zone traffic control.

5.1 Planning Considerations

5.1.1 Maintain street work areas for only as long as is absolutely necessary to quickly and safely move in, do the job, and move out, minimizing obstructions to traffic and exposure to accidents.

5.1.2 Plan according to the work area and duration of work.

5.1.3 Consider the character of the area around the work zone.

5.1.4 Install and securely anchor approved bridging over excavations where pedestrian and vehicular traffic must be maintained during the job.

5.1.5 Take special care to provide suitable boundary definitions and/or barricades to make pedestrians and drivers of vehicles aware of work area boundaries.

5.1.6 Plan in advance for:

- Speed of traffic
- Volume of traffic
- Any changes in the above which may occur during the work operation
- Duration of work
- Traffic approaches
- Pedestrian traffic
- Work vehicle movements above work zone

5.1.7 Maintain the smallest work area consistent with safe operations being guided by the following limitations:

a. Width of work area. The width of a work area, generally, should not exceed the width of one traffic lane. The job should be worked in steps; or in congested areas with unusual traffic conditions, notify appropriate police agency and/or DOT officials.

b. Length of work area. Whenever possible, place tools, equipment, vehicle, or other suitable barriers between the working point and oncoming traffic. Additional area required for essential equipment may be obtained by increasing the work area in the direction of the flow of traffic.

5.1.8 Day or night, warning lights on vehicles and barricades should be operating before moving out into traffic lanes.

5.1.9 Planned consideration should be given for a flagger when the work area extends into traffic lanes. The flagger shall be equipped with a stop and slow paddle and Class 2 or higher high visibility/reflective outer clothing. Channelization is preferred to flagging operations, when two-way traffic can be maintained.

5.1.10 Determine in advance the need for specific traffic control devices including additional special equipment which may be necessary. Consider who will install, maintain and remove the devices. For proper procedure concerning installation and removal of these devices, refer to Section 7.0.

5.1.11 Plan where work material and equipment will be stored.

5.1.12 Consideration should be given to preparation of an emergency traffic plan for unexpected incidents which cause complete closure of a roadway.

5.1.13 Refer to the Typical Control Plan diagrams (TCP’s) in the Utility Work Zone Traffic Control Field Guide and select the setup which most closely meets your requirements, adapting it where necessary to meet local conditions.

5.1.14 For night operations or work areas left with traffic restrictions at night, illumination may be required in addition to flashing and steady lights on warning and guide devices.

6.0 SELECTING THE TYPICAL APPLICATION

Selecting the most appropriate typical application for a temporary traffic control zone requires knowledge and understanding of that zone. Three factors are used to characterize the typical applications: speed and volume (roadway type), duration of work and exposure to hazards.

Work duration is a major factor in determining the number or types of devices used in temporary traffic control zones. The five categories of work duration and their time at a location are as follows:

6.1 Duration of Work

6.1.1 Long-Term Stationary

Work that occupies a location more than three days.

At long-term stationary temporary traffic control zones, there is ample time to install and realize benefits from the full range of traffic control procedures and devices that are available for use. Generally, larger channelizing devices are used, as they have more retro- reflective material and offer better nighttime visibility. The larger devices are also less likely to be displaced or tipped over-an important consideration during those periods when the work crew is not present. Furthermore, as long-term operations extend into nighttime, retro-reflective and/or illuminated devices are required.

6.1.2 Intermediate-Term Stationary

Work that occupies a work location for more than one daylight period up to three days, or nighttime lasting more than one hour.

Typically, the work zone is occupied by excavations, materials, and/or equipment at times when workers are not present. At least one advance warning sign should face each direction of traffic approaching a long duration stationary work area. When such an area uses a portion of the roadway, channelizing devices should be used. For long duration work areas, larger signs and more conspicuous channelizing devices are usually warranted to control traffic. Conditions normally require attention by the person responsible for traffic control during work of long duration. Warning, delineation and channelization devices should be effective under varying conditions of light and weather. Devices should be kept current and flagger signs should be covered or turned from view when the flagger is not on duty.

6.1.3 Short-Term Stationary

Work that occupies a work location for more than 1 hour, within a single daylight period.

Most utility operations are short-term stationary work. The work crew is present to maintain and monitor the temporary traffic control zone. The use of a flagger is an option depending on road speed and volume. Lighting and/or retro-reflective devices should be chosen to accommodate varying seasonal, climatic, and visibility situations.

This would be work of a type that at the conclusion of the work day or emergency period, the area is returned to its original state in regard to traffic restrictions. It includes operations such as overhead utility repair, and work on underground utilities at manholes. At least one advance warning sign shall face each direction of traffic approaching the work area. When such an area occupies a portion of the roadway, channelizing devices should be used. As the size of a work area that occupies a travel lane increase, the number of traffic control devices should be increased. For short duration stationary work areas, portable signs, consistent with the need for advance warning and adequate notice, supplemented with cones and barricades are generally sufficient to control traffic.

6.1.4 Short Duration

Work that occupies a location up to one hour.

During short duration work, there are hazards involved for the crew in setting up and taking down the traffic controls. Also, since the work time is short, the time during which motorists are affected is significantly increased as the traffic control is expanded. Considering these factors, it is generally held that simplified control procedures may be warranted for short duration work. Such shortcomings may be offset by the use of other, more dominant devices such as special lighting units on work vehicles, such as arrow displays and flashing beacon lights.

It includes operations such as tree-trimming, overhead utility repairs and work at underground utilities at manholes lasting more than 15 minutes at one location.

6.1.5 Mobile Work

Work that moves intermittently or continuously.

Mobile operations often involve frequent short stops, each as much as 15 minutes long, for activities such as removal of debris from the roadway, operating a power distribution switch, changing a street light lamp, operating a gas valve, gas leak detection operations, surveying, inspections and other utility operations that are similar to stationary operations. Warning signs, flashing beacon lights, flags, and/or channelizing devices should be used. Each worker shall be highly visible to approaching traffic.

Mobile operations also include work activities in which workers and equipment move along the road without stopping, usually at slow speeds. The advance warning area moves with the work area. Traffic should be directed to pass safely. For some continuously moving operations-where volumes are light and visibility is good, a well marked and well signed vehicle may suffice. If volumes and/or speeds are higher, a shadow or backup vehicle equipped as a sign truck, preferable supplied with a flashing arrow display, should follow the work vehicle. Where feasible, warning signs should be placed along the roadway and moved periodically as the work progresses. In addition, vehicles may be equipped with such devices as flags, flashing vehicle lights, truck-mounted attenuators, and appropriate signs. These devices may be required individually or in various combinations, including all of them, as determined necessary.

Safety should not be compromised by using fewer devices simply because the operation will frequently change its location. Portable devices should be used. Flaggers may be used, but caution must be exercised so they are not exposed to unnecessary hazards. The control devices should be moved periodically to keep them near the work area. If mobile operations are in effect on a high-speed travel lane of a multilane divided highway, flashing arrow displays should be used.

6.2 Location of Work

The choice of traffic control needed for a temporary traffic control zone depends upon where the work is located. As a general rule, the closer the work is to traffic, the more control devices are needed.

6.2.1 Outside of the shoulder edge

Devices may not be needed if work is confined to an area 15 or more feet from the edge of the shoulder. Consideration should be given to roadway characteristics, roadway geometrics, and vehicle speed.

A general warning sign shall used if workers and equipment are within 15 feet or less of an uncurbed roadway or 2 feet or less of a curbed roadway.

6.2.2 On or near the shoulder edge

The shoulder should be signed as if work were on the road itself, since it is part of the driver's recovery area. Advance warning signs are needed. Channelizing devices are used to close the shoulder, direct traffic, and keep the work space visible to the motorist. Portable barriers may be needed to prevent encroachment of errant vehicles into the work space and to protect workers.

6.2.3 On the median of a divided highway

Work in the median may require traffic control for both directions of traffic, through the use of advance warning signs and channelization devices. If the median is narrow, with a significant chance for vehicle intrusion into long-term work sites and/or crossover accidents, portable barriers should be used.

6.2.4 On the traveled way

Work on the traveled way demands optimum protection for workers and maximum advance warning for drivers. Advance warning must provide a general message that work is taking place, information about specific hazards, and actions the driver must take to drive through the temporary traffic control zone.

6.3 Roadway Type

Roadway type is also a primary factor in the use of temporary traffic control zone traffic control devices.

6.3.1 Rural two lane roadways

Characterized by relatively low volumes and high speeds.

6.3.2 Urban arterial roads

Often have lower speeds, but they may require significant controls because of higher traffic volumes and closer spacing of such design features as intersections.

6.3.3 Other urban streets

Characterized with light traffic volumes will generally require fewer more closely spaced devices.

6.3.4 Rural or urban multilane divided and undivided highways

6.3.5 Intersections

6.3.6 Freeways

Major arterials and freeways need the highest type of traffic control, primarily because of high speeds and often high volumes of traffic.

7.0 SIGNS

7.1 Location of Signs

7.1.1 Signs shall be placed where they convey their messages effectively and placement must therefore be accommodated to highway characteristics. Signs shall be so placed that the driver will have adequate time for response.

7.1.2 As a general rule signs shall be located on the right side of the roadway. Where special emphasis is deemed necessary, dual installations may be made which consist of duplicate signs opposite each other on the left and right sides of the roadway. Within a construction or maintenance zone, however, it is often necessary and/or desirable to place signs on portable supports placed within the roadway itself. It is also permissible to mount appropriate signs on barricades.

7.1.3 All signs should be mounted at approximately right angles to the direction of, and facing, traffic which they are to serve. Signs mounted on barricades, or temporary supports may be at lower heights but the bottom of the sign shall be not less than one foot above the pavement elevation. However, higher mounting heights are desirable.

7.2 Regulatory Signs

Regulatory signs (for example, speed limit reductions) impose legal compulsions or restrictions on motorists. Therefore, their use must be officially authorized by the agency having responsible jurisdiction.

7.3 Warning Signs

Warning signs are the most important type of signs used in connection with the maintenance and construction operations. Motorists, properly alerted to the physical conditions ahead, should be able to adjust the operation of their vehicles to safely negotiate the maintenance, construction or detour zone.

Warning signs are normally placed in advance of the condition for which they are intended. The advance posting distance for these signs will vary with the approach speed of traffic, the type of maintenance or construction activity, the roadway conditions, and the number and type of signs and other devices used.

Visibility of each sign should be examined with respect to grade, alignment, road curvature and other possible obstructions on the approach to the sign.

For maximum mobility and safety on certain types of maintenance operations, a large sign may be effectively mounted on a vehicle stationed in advance of the work or moving along with it. This may be the working vehicle itself, as in the case of gas leak mobile and street light work, or a vehicle provided expressly for this purpose. These mobile sign displays may be mounted on a trailer, may be provided with self-contained electric power units for flashing beacons and lights, or may be mounted on a regular maintenance vehicle.

7.4 Guide Signs

Guide signs are used to direct traffic through and around maintenance and construction operations where temporary route changes are necessitated by highway closures and detours.

8.0 BARRIERS AND CHANNELIZATION

8.1 Function

Barriers and channelizing devices, when properly used, are often essential to properly control and direct the movement of traffic through or around maintenance and construction projects.

- 8.1.1These devices are used to mark a limited channel of traffic or to close off sections of highways.
- The work vehicles themselves may be used to protect the work area, particularly in low speed urban districts.
- Consideration should always be given to the need for lighting devices at night.

8.2 Channelization

A very important element, within the system of traffic control devices commonly used in construction or maintenance areas (where a reduction in pavement width is involved), is the taper that is provided for channelization.

8.3 Barricades

Barricades are used to physically block off all or part of a roadway.

- If barricades extend across a roadway and shoulder as a fence, availability of access for maintenance or construction forces must be considered.
- Roadways should be narrowed gradually. This gradual narrowing may be accomplished by means of the barricades themselves or by placing cones, drums, or vertical panels in advance of the barricades. An alternate method is to install the barricades at intervals with each successive barricade extending further into the roadway. At night, consideration should be given to the use of delineators or steady-burning lighting devices to indicate the path to be followed and/or of obstructions within the roadway.
- Barricades may also be used to confine traffic to certain lanes or paths of travel for certain distances. These may be placed longitudinally or transversely to the path of travel. Cones, drums, or vertical panels may be used longitudinally or diagonally.

8.4 Auxiliary Devices

When used to require a change in direction or reduction in the number of lanes available, the change should be made gradually.

8.4.1 Cones

a. Cones shall be predominantly orange in color and may be supplemented with warning flags.

b. Cones should be kept clean and bright for maximum target value.

c. For night time use, they shall be reflectorized or equipped with lighting devices for maximum visibility.

8.4.2 Drums

Drums are less portable than cones but provide greater emphasis. They may be used to surround a work area. Drums shall not be placed in the roadway without advance warning signs.

8.4.3 Warning Lights

Warning lights are used to illuminate and emphasize the existence of obstructions and hazards at night. They may be used as necessary as a supplement to reflectorized signs, barricades and other channelizing devices. Warning lights used in series to supplement channelizing devices should be steady-burning, except that the first two lights in series may flash.

Warning lights consist of steady-burning lights, flashing lights and flashing arrow boards.

a. Steady burning lights include all single-unit, steady-burning, low-intensity lamps which emit yellow light.

b. Flashing yellow lights. They are used for advance warning or for marking a severe or unexpected obstruction or hazard in or near the roadway.

c. Flashing arrow boards. A portable unit, consisting of flashing indications arranged to form an arrow symbol, may be used with standard warning devices on highway obstructing maintenance and construction projects.

    1. A unit may be trailer mounted or it may be mounted on a vehicle and arranged so that it can be displayed or turned from view as necessary.
    2. When these units are used on a moving vehicle, controls and pilot lights should be located so that the message display can be monitored and changed from within the driving compartment of the vehicle.

8.4.4 Work Zone Enhancement Devices

Includes; telescoping bars, portable crowd control barriers, such as Color-cade barriers and other protective devices are used to provide additional measures for keeping pedestrians, bicyclists, etc. from entering into the work area. Traffic control devices must meet the criteria for NCHRP Report 350 standards. However, common devices such as telescoping bars between cones and Color-cade barriers that are typically used within the work zone are not intended for vehicle protection but to prevent pedestrian incursion into the work zone.

9.0 INSTALLATION AND REMOVAL OF DEVICES

9.1 Protection

Installation and removal of devices, in itself, constitutes highway work that should be protected by means appropriate to the situation, such as hazard vehicle lights and vehicle emergency flashers. Establishing a work area within an intersection, or at a freeway interchange, may warrant greater protection.

9.2 Order of Work

1 Device installation normally proceeds from the beginning of the work zone to the far end. On a two-way road, the less affected direction should be set up before the more affected one. The work vehicle used should move in the same direction as traffic in the roadway half being set up.

2 On a one-way roadway, device removal is normally started at the downstream end with removal of the last work area protection device. Channelizing devices are then removed, from downstream to upstream, with those in advance of the workers continuing to provide protection, until the roadway is cleared. Removal of advance warning signs on the shoulder is normally accomplished with a work vehicle traveling in the direction of traffic flow.

10.0 EMPLOYEES EXPOSED TO VEHICULAR TRAFFIC

10.1 Clothing Requirements

a. High visibility safety apparel is required to maximize employee protection when exposed to the risks of moving roadway traffic or construction equipment.

b. Employees must wear high-visibility safety apparel meeting the requirements of ISEA “American National Standard for High-Visibility Safety Apparel” or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 exposure.

c. High-visibility safety apparel is defined as company approved:

1. Safety vests
2. Rain gear (jacket or jacket and pants ensemble), or
3. Garments worn over the outer layer of clothing

d. Flaggers - safety apparel meeting ANSI 107-2004 standard performance Class 3 risk exposure should be considered for:

- Flagging at night
- Flagging in inclement weather and similar lowlight conditions
- Flagging in high speed/volume traffic areas
- When determined by the competent person in charge

e. Any exception for not wearing high-visibility safety apparel must be valid and must be documented on the job brief by the individual exposed to the risks of moving roadway traffic or construction equipment and by the responsible person in charge.

11.0 FLAGGERS

11.1 Application

Consideration should always be given to the need for flaggers to control traffic on a maintenance or construction project where traffic is permitted to travel through or adjacent to the work area. However, the decision to use or not to use a flagger in a particular situation rests with the person in charge of the operation.

1 STOP/SLOW Paddles. Paddles are the preferred tool to use when performing flagging duties.

2 Flags. A 24” x 24” Red Flag may be used for flagging in emergencies when STOP/SLOW paddles are not available. Red Flags are also acceptable when flagging at four-way intersections.

11.2 Flagger Stations

11.2.1 Flagger stations should be located far enough from the work site so that vehicles will have sufficient distance to slow down before entering the project but not so far that vehicles will tend to speed up into the work site.

11.2.2 Normally the flagger will be positioned adjacent to the traffic lanes being controlled either on the shoulder or in the barricaded lane. At a spot obstruction the flagger should stand on the shoulder opposite the barricaded section.

11.2.3 The flagger should stand alone, never permitting a group of workers to congregate around him or her. The flagger should be stationed sufficiently in advance of the work area to warn workers of approaching danger, such as out-of-control vehicles.

11.2.4A flagger warning sign shall be used facing each direction of traffic. These advance warning signs are optional for very brief periods or emergency traffic control.

11.2.5 Flagger Stations at night time shall be illuminated, except in emergency situations.

11.3 One-Lane Control

Where traffic in both directions must, for a limited distance, use a single lane, provisions should be made for alternate one-way movement to pass traffic, through the constricted section. However, where the one-lane section is of any significant length, there should be some means of coordinating movements (for example, walkie-talkies, hand signals, etc.) at each end so that vehicles are not simultaneously moving in opposite directions in the section and so that delays are not excessive at either end. Control points at each end of the route should be chosen so as to permit easy passing of opposing lines of vehicles.

12.0 VEHICLES IN THE WORK AREA

1 All vehicles in the work area shall activate their vehicle hazard warning flashers in addition to their beacon/flashing lights for the duration of the work.

2 As vehicles approach the work area they should activate their vehicle hazard warning lights along with the beacon/flashing to indicate to traffic that they are slowing down and preparing to enter the work zone.

3 Drivers of vehicles with portable beacon lights shall not attempt to activate or affix the lights to the vehicle while driving.

4 Beacon/Flashing lights are intended as hazard warning lights. These lights are not considered “Emergency Response Lights” and should not be used as such. It is, however permissible to use the Beacon/Flashing light while performing patrol or shadow vehicle activities when the vehicle speed is below the normal speed limit creating a potential traffic hazard.

5 All vehicle lights shall be approved for use by Fleet and only used in accordance with manufacturers’ instructions, local, state and federal law.

13.0 REFERENCES

13.1 49 CFR, Manual of Uniform Traffic Control Devices. 2003, rev 1 & rev2

13.2 NYCRR, Title 17, Volume (b), Chapter V, Uniform Traffic Control Devices.

13.3 29 CFR 1926.201 - Signaling,

13.4 29 CFR 1926.202- Barricades,

13.5 29 CFR 1926.203- Definitions,

13.6 29 CFR 1910.269, Electrical Power Generation, Transmission and Distribution.

13.7 Utility Work Zone Traffic Control, Wayne State University, August 2008

13.8 ANSI 107-2004

Appendix G

HASP Annual Checklist

Glen Cove Former MGP Site **HASP Annual Checklist**	
Have all National Grid procedure revisions been incorporated into HASP?	
Are there any new procedures to be incorporated into the HASP?	
Is all contact information in the HASP current and correct?	
Has the scope of work changed? If so, are changes reflected in HASP?	
Is the O2 injection system present and operational?	
Does the Activity Hazard Analysis need to be revised?	
Have any attributes of LIPA property and associated procedures and regulations changed?	
Has GEI obtained the most recent as-built drawings of the transmission/distribution line layout from National Grid?	

Appendix H

Emergency Evaluation Plan and Map

Emergency Evacuation Plan

In the event of severe weather, a chemical emergency, a fire, or other hazard which warrants evacuation of the personnel on site or working within the Glen Cove community; the following procedures will be strictly adhered to:

1. **IF THE EMERGENCY IS SITE-WIDE (such as severe inclement weather), SOUND THE ALARM** All staff vehicles re equipped with an air horn. The emergency signal blast with the air horn should be a single blast lasting approximately **30 seconds**. If another horn blast happens to occur at the same time or during your blast, do not discontinue yours. Complete your emergency signal. Be aware that other emergency blasts may occur in the event of an emergency.

   IF THE EMERGENCY IS LOCALIZED (such as a fire in the trailer or an accident in the work zone) you do not need to sound the alarm with the air horn. You must yell **FIRE, FIRE, FIRE,** (or other emergency) repeatedly. Make sure that at least one other employee has heard and understood the alarm.

2. **NOTIFY/CALL 911 EMERGENCY OPERATOR.** The employee first observing the fire or other hazard will relocate outside of the immediate area of the hazard,

   DIAL 911 and
   Report the emergency situation indicating that
   THERE IS A FIRE OR OTHER TYPE OF AN EMERGENCY AT:

   [Name and location of emergency]
   The National Grid/LIPA Glen Cove Site
   Give Address

3. **EVACUATE!** Select the closest, safest route to exit the site or building and proceed in an orderly and expeditious manner to a prearranged meeting area outside. While in route to the exit, assist in the notification of other employees by re-sounding the alarm to evacuate**. FIRE, EVACUATE!!! FIRE, EVACUATE, FIRE, EVACUATE!!!** While in route from the building(s) or site, take the time to notify the other employees and occupants in the area of the emergency and the necessity for evacuation. For a site-wide evacuation, follow the designated path on the Emergency Evacuation Map.

4. **ASSEMBLE:** After you have heard the GEI air horn emergency signal or after you have been clearly notified by other personnel that you must vacate and/or evacuate your area, you must immediately relocate to the **DESIGNATED GEI ASSEMBLY AREA (on Emergency Evacuation Map)** if the emergency is site-wide. The DESIGNATED ASSEMBLY AREA for site-wide emergencies is the top of entrance road just outside the site entrance on Grove Street. If the emergency is localized, relocate to an area outside

your work zone that is a **safe distance from the emergency**. Secure your work area if necessary, and if possible**.** As you exit the building or job site, select the closest and safest route and proceed in an orderly manner to the **DESIGNATED ASSEMBLY AREA** where a head count will be taken to ensure that everyone has safely evacuated**. The first person to arrive will conduct the headcount. Use the sign-in sheet (if possible) to help determine who is present on site, but also be sure to determine from other employees who is on site at well (include sub-contractors). Sub-contractor crew chiefs must inform GEI of employee presence.** Be especially cautious as you cross traffic lanes for arriving emergency vehicles and other moving private vehicles.

5. Remain in the assembly area until released to return to work or instructed otherwise.

6. Random safety drills regarding the material in this emergency evacuation plan will be conducted to determine the efficacy of the plan and necessary changes.

    - Notify the GEI Project Manager, GEI Corporate Health and Safety Officer, and the National Grid Project Manager of the emergency and actions taken by site personnel.

Appendix E

Community Air Monitoring Plan

Geotechnical
Environmental and
Water Resources
Engineering

Community Air Monitoring Plan

Glen Cove Former Manufactured Gas Plant

City of Glen Cove
Nassau County, New York
AOC Index No. D1-0001-98-11
Site No. 1-30-089P

Submitted to:
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Submitted by:
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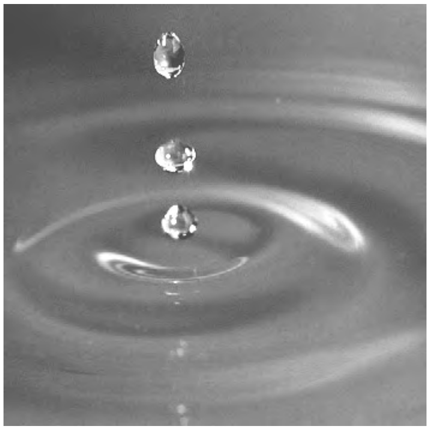
February 2015
093270



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Tables

Figures

Attachment 1

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Abbreviations and Acronyms

CAMP	Community Air Monitoring Plan
CM	Construction Manager
DUSR	Data Usability Summary Report
GEI	GEI Consultants, Inc., P.C.
MGP	Manufactured Gas Plant
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PM-10	Particulate Matter Less than 10 Micrometers in Size
TVOC	Total Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
MEASUREMENTS	
$\mu g/m^3$	micrograms per meter cubed
ppm	parts per million

Executive Summary

This Community Air Monitoring Plan (CAMP) Work Plan has been developed to provide procedures for measuring, documenting, and responding to potential airborne contaminants during intrusive activities below the clean soil cover associated with the Glen Cove Former Manufactured Gas Plant (Site) property. The procedures in this CAMP focus on air monitoring techniques and contingency measures designed to mitigate potential airborne contaminants. This CAMP Work Plan is based on the CAMP guidelines established by the New York State Department of Health (NYSDOH) in the New York State Department of Environmental Conservation (NYSDEC) *DER-10 Technical Guidance for Site Investigation and Remediation* (DER-10) (NYSDEC, 2010).

The CAMP provides Air Monitoring Procedures, Alert Levels, Response Levels, Action Levels, and Contingency Measures if Action Levels are approached. Alert Levels are National Grid internal established concentration levels for volatile organic compounds only and are not established by the NYSDOH or NYSDEC. Alert Levels are set below the levels established by the NYSDOH so that actions can be taken prior to exceeding a NYSDOH threshold. An Alert Level serves as a screening tool to trigger contingent measures if necessary, to assist in minimizing off-site transport of contaminants during remedial activities. A Response Level is a contaminant concentration level that triggers a temporary work stoppage, continued monitoring, and potential contingent measures. An Action Level is a contaminant concentration that triggers work stoppage and implementation of contingent measures to mitigate potential airborne contaminants prior to resuming work activities. Response Levels and Action Levels are NYSDOH threshold levels established in the May 2010 NYSDOH Generic CAMP presented in Appendix 1A of DER-10. Exceedances of either Response Levels or Actions Levels will be reported to NYSDEC and NYSDOH.

During times of potential related ground intrusive activities below the clean soil cover, perimeter air monitoring will be conducted using a combination of fixed-station, moveable tripod-mounted, and “walk-around” air monitoring equipment (as appropriate). Monitoring will be performed for total volatile organic compounds and dust along the Site perimeter 24 hours a day when fixed stations are used or during working hours if the movable tripod-mounted units are used. The Contingency Plan defines Alert Levels, Response Levels, Action Levels, and specific contingency measures to be implemented. The response actions, potentially including work stoppage and work area controls by various methods, are intended to prevent or significantly reduce the migration of airborne contaminants from the Site.

GEI Consultants, Inc., P.C. (GEI) will implement the CAMP and will report any exceedance of Response Levels and Action Levels to the Contractor, the Construction Manager, National Grid, NYSDOH, and NYSDEC. As specified in the DER-10, all 15-minute readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review. The contractor conducting intrusive activities below the clean soil cover will be responsible for enacting contingency measures to respond to Alert Levels, if necessary, and to the exceedances of Alert and Action Levels as they may occur. GEI will provide data summary reports to the Contractor, the Construction Manager, National Grid, and NYSDEC each week during ground intrusive activity below the clean soil cover.

1. Introduction

The New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP), as presented in New York State Department of Environmental Conservation's (NYSDEC) document *DER-10 Technical Guidance for Site Investigation and Remediation* (DER-10), recommends that real-time monitoring for total volatile organic compounds (TVOC) and particulates (i.e., dust) be conducted at the downwind perimeter of each designated work area during ground intrusive activities at contaminated sites. As such, this work plan describes the proposed air monitoring means and methods that will be implemented during intrusive activities below the clean soil cover at the Glen Cove Former Manufactured Gas Plant (MGP) Site (Site). A site location map is shown in Figure 1.

The purpose of the CAMP is to provide early detection in the field of potential short-term emissions and will be conducted in accordance with the generic NYSDOH CAMP.

The objectives of the CAMP are as follows:

- Provide an early warning system to alert the Contractor, the Construction Manager (CM), National Grid, and NYSDEC that concentrations of TVOC or dust in ambient air are approaching Action Levels due to Site activities.
- Provide potential contingency measures to be enacted by the contractor conducting intrusive activities below the clean soil cover and related contractors that are designed to reduce the off-site migration of contaminants if established Action Levels are approached or exceeded.
- Determine whether construction controls are effective in reducing ambient air concentrations to below Action Levels and make appropriate and necessary adjustments.
- Develop a permanent record that includes a database of perimeter air monitoring results, equipment maintenance, calibration records, and other pertinent information.

1.1 Roles and Responsibilities

GEI Consultants, Inc., P.C. (GEI) will implement the monitoring and reporting components of this CAMP under contract with National Grid. The contractor performing intrusive activities below the clean soil cover is responsible for the selection and implementation of appropriate contingency measures that will mitigate the off-site migration of contaminants in response to Action Levels being approached or exceeded. The remainder of this section specifies the roles and responsibilities of each entity relative to the CAMP. A communication flowchart is shown in Figure 2 with each entity and lines of communication for the CAMP.

1.1.1 GEI Consultants, Inc., P.C.

The scope of GEI's activities will be limited to CAMP monitoring and reporting used for the CAMP. GEI is responsible for the Health and Safety of their employees. GEI's CAMP roles and responsibilities are as follows:

- GEI will monitor and record total volatile organic compounds (TVOC) and dust at various locations around the Site as described in the following sections of this CAMP.
- On a daily basis, GEI will communicate to the following entities whether TVOC or dust exceeded Response Levels or Action Levels specified in Section 2.1, and suggest corrective actions required to address the situation. GEI will convey the CAMP results to the entities listed below and inform them if the Alert or Response Levels have been exceeded. GEI will direct contractors at the Site to take action if warranted.
    - **Contractor – TBD**

    - **New York State Department of Environmental Conservation**
      R. Scott Deyette
      Chief, Inspection Unit
      New York State Department of Environmental Conservation
      MGP Remedial Section, Division of Environmental Remediation
      Bureau of Western Remedial Action, 11th Floor
      625 Broadway
      Albany, New York 12233-7017
      518-461-3721

    - **National Grid**
      Theodore Leissing –Manager – Long Island Area
      Office: (516) 545-2563
      175 East Old Country Road
      Hicksville, NY 11801

    - **Construction Manager - TBD**

- GEI will provide, maintain, and operate the equipment used to implement the CAMP.

    - GEI will provide data summary reports to the Contractor, CM, National Grid, and NYSDEC each week during intrusive activity. The reports will identify Response Level and Action Level exceedances and will include data summary reports for all TVOC and dust data collected.

1.1.2 Contractor

The Contractor is the lead contractor responsible for site activities pertaining to the intrusive activities below the clean soil cover. The Contractor will be responsible for taking contingent actions in conjunction with National Grid in response to Response Level and Action Level exceedances. The Contractor will be responsible for taking contingent actions for Alert Levels, if required by GEI, CM, and/or National Grid. The Contractor is responsible for the Health and Safety of their employees.

1.1.3 National Grid

National Grid has the responsibility to provide mitigation services related to the release of MGP-related vapors in excess of CAMP Response Level and Action Levels. National Grid is also ultimately responsible for the remediation of the Site under an approved work plan with NYSDEC.

1.1.4 New York State Department of Environmental Protection

NYSDEC is responsible for the environmental regulatory enforcement for all activities conducted at the site including compliance with this CAMP, stormwater runoff mitigation (erosion and sediment control), and all environmental and remediation regulations, policies, and guidance applicable to the Site. NYSDEC may provide on-site oversight personnel for the work being conducted.

1.1.5 Construction Manager

The CM is National Grid’s representative on site and is responsible for day-to-day operations on the Site. The CM will be responsible for directing the Contractor to take contingent actions in conjunction with National Grid in response to Alert Level (TVOC only), Response Level, and/or Action Level exceedances. The CM is responsible for the Health and Safety of CM employees and subcontractors.

2. Sampling and Analytical Procedures

This section of the CAMP presents a detailed description of the air monitoring, air sampling, and analytical procedures, including data management that will be used during ground intrusive site activities. The intent of the real-time monitoring program is to provide early detection in the field of short-term emissions and off-site migration of site-related TVOC and dust.

Real-time monitoring methods will be utilized to measure ambient air concentrations during the project. Monitoring for TVOC and respirable particulate matter (particulate matter less than 10 micrometers in size [PM-10]) will occur at a minimum of two locations and wind direction will be monitored in real-time if an automated monitoring system is utilized. Supplemental monitoring for TVOC and PM-10 will occur along the perimeter of the project site on an as-needed basis. In the event of a possible exceedance of a Response Level or Action Level for TVOC or PM-10, GEI will compare upwind (background) concentrations to downwind concentrations within 60 minutes of the possible exceedance to determine if site activity is causing the Response Level or Action Level exceedance. The air monitoring procedures and equipment are detailed below.

2.1 Alert Level, Response Level, and Action Levels

Alert Levels are not established by the NYSDOH or NYSDEC. An Alert Level is a National Grid internally established concentration levels for TVOC only. An Alert Level is set below the levels established by the NYSDOH so that action can be taken prior to exceeding a NYSDOH threshold. An Alert Level serves as a preemptive screening tool for TVOC to trigger contingent measures if necessary, to assist in minimizing off-site transport of contaminants during remedial ground intrusive activities.

Response Levels are NYSDOH thresholds levels established in the May 2010 NYSDOH Generic CAMP presented in Appendix 1A of DER-10. A Response Level is a contaminant concentration that triggers a temporary work stoppage, continued monitoring, reporting, and/or potential contingent measures. A Response Level serves as a preemptive tool for PM-10 to trigger contingent measures if necessary, to assist in minimizing off-site transport of contaminants during remedial ground intrusive activities.

Action Levels are NYSDOH threshold levels established in the May 2010 NYSDOH Generic CAMP presented in Appendix 1A of DER-10. An Action Level is a contaminant concentration that triggers work stoppage, continued monitoring, reporting, and implementation of contingent measures to mitigate potential airborne contaminants prior to resuming ground intrusive activities.

For example, if high concentrations of dust are detected on the Site, contingent measures such as spraying water on dry soils may be required to reduce the concentrations and keep them below the Response Level.

The following target parameters and corresponding Alert Levels, Response Levels, and Action Levels were developed in accordance with the NYSDOH Generic CAMP.

Target Parameter	**Alert Level**
TVOC (15-minute average concentration)	3.7 ppm greater than background*
Target Parameter	**Response Level**
Respirable Particulate Matter (PM-10)	100 µg/m^3 greater than background*
Target Parameters	**Action Level (**)**
TVOC (15-minute average concentration)	5.0 ppm greater than background*
TVOC (1-minute average concentration)	25 ppm
Respirable Particulate Matter (PM-10)	150 µg/m^3 greater than background*

ppm - parts per million
µg/m^3 - micrograms per meter cubed
TVOC – total Volatile Organic Compounds
* Background is defined as the current upwind fifteen-minute average concentration.
** Action Level Exceedance Requires Work Stoppage and Mitigation of the condition causing the Exceedance

2.2 Air Monitoring Procedures

During times of intrusive activities below the clean soil cover, perimeter air monitoring will be conducted using a combination of fixed-station, moveable tripod-mounted, and/or hand-held air monitoring equipment. Monitoring will be performed for TVOC and PM-10 along the Site perimeter 24 hours a day when fixed station equipment is used or during working hours if movable tripod-mounted or hand-held air monitoring equipment is used.

Monitoring for TVOC and PM-10 will occur at a minimum of two locations using real-time monitoring equipment. Readings will be checked manually on a predetermined periodic basis if tripod-mounted equipment is used. Readings will be recorded once per minute and transmitted to a centralized data logger system if fixed-station equipment is used. Supplemental hand-held perimeter monitoring for TVOC and PM-10 will occur along the perimeter of the project site on an as-needed basis. Each approach is detailed below.

It is anticipated that tripod-mounted equipment will be used for minimally intrusive work such as installation of soil borings or monitoring wells and during shallow intrusive work during substation facility upgrades. It is anticipated that fixed station equipment will only be used in the event of significant excavation work below the clean soil cover at the Site. Supplemental hand-held equipment will be used on an as-needed basis. This may include monitoring directed by National Grid or NYSDEC, or to supplement fixed monitoring station data in response to visible dust.

2.2.1 Fixed-Station Monitoring Procedures

Real-time fixed-station monitoring equipment will be positioned at a minimum of two locations upwind and downwind of the designated work area. The real-time fixed air monitoring stations will be positioned between the work zone and the largest number of potential off-site receptors. Therefore, the placement of the fixed air monitoring stations is based on the need to document all potential off-site migration on the perimeter, but also recognizes the potential off-site receptors and the location of the proposed construction activities. Figure 3 displays a typical arrangement of fixed air monitoring stations around the site. Real-time monitors will continuously gather data 24 hours a day 7 days a week.

The air monitoring stations will be supplemented with a meteorological station and a system of transmitting the real-time data to a central data storage location accessible by the project team in the project trailer or similar work area.

Each real-time fixed-station air monitoring station contains the following:

1. Station enclosure
2. A photoionization detector
3. A particulate aerosol monitor equipped with a PM-10 impactor
4. A data telemetry device

Air monitoring equipment will be housed in a protective weather-tight enclosure. Each monitoring station will continuously measure and record TVOC and PM-10 at a rate of one sample per minute and record 15-minute averages. Figure 4A shows an example of a fixed air monitoring station.

In addition to the air monitoring stations, a meteorological monitoring station will be established on site to continuously monitor and record temperature, relative humidity, wind speed, and wind direction. Fifteen-minute averages for each meteorological parameter will be transmitted to the central data storage location to determine upwind and downwind stations for assessing Alert, Response, and Action Levels.

All TVOC, PM-10, and meteorological data will be stored in data loggers located within each monitoring/meteorological station. Stored analytical data along with system performance data from each station will be sent in real-time, via telemetry, to the Site central computer system for monitoring and analysis. In the event of severe weather or power loss at the site, data recording and/or recovery may be affected.

2.2.2 Tripod Mounted Monitoring Procedures

Tripod-mounted monitoring equipment will be positioned along the Site perimeter to monitor the air based on a particular day's ground intrusive activities. At a minimum, one tripod-mounted station will be positioned upwind and one tripod-mounted station will be positioned downwind of the designated work area. Real-time monitors will continuously gather data during periods of ground intrusive activity during working hours. The equipment will be manually read on a predetermined periodic basis during the work activities.

The readings will be collected at a minimum of 15-minute intervals during periods of intrusive activities. Wind direction will be determined by using a wind sock or flagging placed on a pole at the Site.

Each tripod-mounted air monitoring station would include the following:

1. Station enclosure and Tripod
2. A photoionization detector
3. A particulate aerosol monitor equipped with a PM-10 impactor

Air monitoring equipment will be housed in a protective weather-tight enclosure. Each monitoring station will continuously measure and record TVOC and PM-10 at a rate of one sample per minute and record 15-minute averages. Figure 4B shows an example of a typical tripod-mounted air monitoring station.

All TVOC and PM-10 will be stored in data loggers located within each monitoring station. Data from each piece of equipment will be downloaded daily and stored on a central storage location. The location of each station, the work zone, and the wind direction will be recorded daily.

2.2.3 Supplemental Hand-held Monitoring

Supplemental hand-held monitoring equipment will be recorded downwind of the designated work area on an as-needed basis. Specific site conditions that may trigger supplemental hand-held monitoring include:

- Visible dust
- Detection of TVOC and/or PM-10 at an air monitoring station at concentrations exceeding an Alert Level, Response Level, and Action Levels
- Direction by the construction manager, National Grid, or NYSDEC

Fifteen-minute average TVOC and PM-10 readings will be recorded at a downwind location between the work area and the nearest receptors.

When a triggering condition is observed during ground intrusive activity, the supplemental downwind perimeter monitoring will occur until the conditions that triggered the monitoring have subsided. TVOC concentrations will be monitored and recorded using a photoionization detector. PM-10 will be measured and recorded using a particulate aerosol monitor equipped with a PM-10 impactor.

At each monitoring point, the 15-minute average value of TVOC and PM-10, sample time, and sample location will be collected and recorded. Additional temporary monitoring points may be established due to changing site or meteorological conditions.

2.2.4 Equipment Calibration

Equipment calibration will be performed according to manufacturer’s instructions. Each photoionization detector will be calibrated once daily using an isobutylene gas mixture. Particulate monitors will be purged and zeroed daily. Other hand-held portable equipment will be calibrated before each use, or a minimum of once per week when not in use.

2.3 Volatile Organic Compound (VOC) Analytical Sampling

During significant excavation below the clean soil cover when fixed station monitoring is employed, verification VOC samples will be collected once per week at two air-monitoring stations (one upwind and one downwind). A duplicate sample will be collected once every twenty samples. The samples will be collected to demonstrate that the real-time monitoring stations are effective in measuring the concentration of the VOC target compounds. VOC samples will be collected using 6-liter Summa® canisters (or equivalent vacuum canisters) and analyzed using United States Environmental Protection Agency (USEPA) Method TO-15 modified to include naphthalene. An accredited laboratory will perform the analytical testing on the canisters and will provide Category B deliverables as required by the New York Analytical Services Protocol. The results will be validated according to USEPA National Functional Guidelines and New York State Requirements, and a Data Usability Summary Report (DUSR) will be produced. The results will be submitted electronically to the NYSDEC's Environmental Information Management System.

2.4 Pre-Construction Baseline Sampling

For significant excavation below the clean soil cover, pre-construction monitoring will be completed to establish baseline ambient air concentrations prior to the start of excavation activities. Baseline conditions will be developed for TVOC and PM-10 in ambient air using real-time fixed station sampling methods. Monitoring methods will follow those described in subsection 2.2.1. TVOC and PM-10 data will be recorded 24 hours per day for a minimum of three days. In addition, air samples will be collected for time-weighted average VOC analysis.

2.5 Data Management Procedures

This section of the Plan discusses the data management procedures that will be used during the remedy. Data may be generated from a variety of sources, including real-time fixed station analytical monitoring, supplemental walk-around monitoring, tripod-mounted monitoring stations, and meteorological monitoring.

These data must be reduced, evaluated, verified, and presented to related parties in a timely manner to facilitate decision-making. The data management process for each source of data is discussed below.

Analytical data generated at each fixed-station are sent to the central computer system via radio telemetry or will be manually downloaded daily. The monitoring data will also be downloaded to the project database for data evaluation. The following daily charts, tables, or figures will be prepared:

- Instantaneous and averaged TVOC concentrations compared to the TVOC Action Level
- Instantaneous and averaged PM-10 concentrations compared to the PM-10 Action Level
- Supplemental Hand-Held PM-10 concentrations compared to the Action Level (if any)
- Supplemental Hand-Held TVOC concentrations compared to the TVOC Action Level (if any)
- Air monitoring station locations

The following weekly charts, tables, or figures will be prepared:

- Maximum 15-minute average concentrations of TVOC and PM-10

- Upwind and downwind comparison of Response Level and Action Levels reached during the week if the daily maximum 15-minute average concentrations of TVOC and PM-10 exceeded a Response Level or Action Levels
- Summary of site activities
- Air monitoring station locations

GEI will review all real-time data in a timely manner following collection and prepare a final summary report for National Grid.

3. Response Plan

The purpose of this section is to identify the procedures to be followed in response to elevated levels of target compounds measured during intrusive activities below the clean soil cover. Response actions will be enacted by the Contractor, CM, and National Grid. GEI will report any occurrences where a Response Level or Action Level is exceeded, which would require response measures to be enacted. The NYSDEC will be notified of any occurrence where a Response Level and/or Action Level (NYSDOH threshold) is exceeded. If there is a verified exceedance, GEI will inform the CM, National Grid, and NYSDEC within 60 minutes of the exceedance via e-mail at a minimum. In general, a tiered approach to site conditions with corresponding response actions will be implemented during the air monitoring program. The four tiers of site conditions are defined as follows.

- **Site Condition 1.** Normal or ambient air-conditions where TVOC and PM-10 are less than the Alert and Response Levels.
- **Preliminary Site Condition 2.** Concentration of TVOC only is equal to or greater than the Alert Level, but less than the Action Level.
- **Site Condition 2.** Concentration of PM-10 is equal to or greater than Response Level, but less than the Action Level.
- **Site Condition 3.** Concentration of TVOC or PM-10 is equal to or greater than the Action Level.

The response plan will rely on real-time data generated from the fixed-station equipment and tripod-mounted equipment, and meteorological equipment. These data sources will be evaluated together in order to make appropriate decisions concerning site conditions and potential control measures.

An explanation of the notification system, specific conditions, and response actions for TVOC and PM-10 is presented below.

TVOC and PM-10 concentrations in air will be measured and recorded by station monitors. PM-10 may be temporarily suspended during periods of rain. Figure 5 presents the TVOC decision diagram that will be used to determine the appropriate site condition based on contaminant concentrations. Figure 6 presents the PM-10 decision diagram.

Specific TVOC target concentrations for Site Condition 1, Preliminary Site Condition 2, Site Condition 2, and Site Condition 3 are summarized in Table 1.

3.1 Site Condition 1

Site Condition 1 represents normal site conditions and will be in effect when the TVOC concentration is less than the Alert Level of 3.7 ppm and PM-10 is less than the Response Level of 100 $\mu g/m^3$. Under a Site Condition 1, each photoionization detector and particulate monitor located at the monitoring stations will collect and analyze TVOC and PM-10 at a frequency of one sample per minute.

3.2 Preliminary Site Condition 2

Preliminary Site Condition 2 will be in effect if the TVOC concentration is greater than or equal to the Alert Level of 3.7 ppm but less than the Action Level of 5.0 ppm.

At this time, the upwind and downwind concentrations will be compared to determine if the Preliminary Site Condition 2 is due to site activities. If downwind TVOC concentrations are greater than upwind concentrations, then it will be assumed that the Preliminary Site Condition 2 is due to site activities.

If the above condition is true, then a Preliminary Site Condition 2 will be verified. Under a verified Preliminary Site Condition 2, GEI will inform the CM, if applicable, National Grid and the Contractor. The contractor will implement mitigation control measures to abate the emissions and reduce levels back below the Alert Level. Possible Preliminary Site Condition 2 response actions are listed in Table 2. The site will remain in Preliminary Site Condition 2 as long as the TVOC concentration is between 3.7 ppm (Alert Level) and 5.0 ppm (Action Level), based on 15-minute averages.

The site will return to Site Condition 1 if the 15-minute average concentration of TVOC is less than the Alert Level of 3.7 ppm.

3.3 Site Condition 2

Site Condition 2 will be in effect if the average 15-minute PM-10 concentration at a station is greater than 100 $\mu g/m^3$ and related to site activities.

The upwind and downwind PM-10 concentrations will be compared to determine if the elevated PM-10 concentrations are due to site activities. If downwind PM-10 concentrations are 100 $\mu g/m^3$ greater than upwind concentrations (Response Level), then it will be assumed that the Site Condition 2 is due to site activities.

Under Site Condition 2, GEI will inform the CM, if applicable, and National Grid. GEI or the CM, if applicable, will notify the Contractor, NYSDEC, and NYSDOH. The Site Condition 2 will remain in effect as long as the average PM-10 concentration is greater than or equal to 100 μg/m^3 above upwind conditions (Response Level), and less than or equal to 150 μg/m^3(Action Level). Under a verified Site Condition 2, dust suppression techniques must be implemented by the Contractor. At this point, routine monitoring continues and 15-minute averages continue to be evaluated. Work may continue with dust suppression techniques if downwind PM-10 levels do not exceed 150 μg/m^3 above the upwind level (Action Level) and if no visible dust is migrating off site from the work area.

A contingency meeting/conference call attended by GEI, the Contractor, CM, National Grid, and NYSDEC will be held within 60 minutes of the verified Site Condition 2 if the condition is not mitigated by dust suppression techniques. Possible response actions for dust control are listed in Table 2.

3.4 Site Condition 3

Site Condition 3 will be in effect if the TVOC concentrations increase to greater than the Action Level of 25.0 ppm or the average 15-minute PM-10 concentration exceeds 150 μg/m^3 above the current average upwind concentration (Action Level). Site Condition 3 will remain in effect if one of the following conditions is true.

- The TVOC concentration is greater than 25 ppm (Action Level).
- The average 15-minute PM-10 concentration exceeds 150 μg/m^3 above the current average upwind concentration (Action Level)

Under Site Condition 3, GEI will inform the CM, if applicable, and National Grid. GEI or the CM, if applicable, will notify the Contractor, NYSDEC, and NYSDOH. All construction activities will be halted. The contractor will implement mitigation control measures to abate the emissions and reduce levels back below the Action Levels. Possible Site Condition 3 corrective measures/actions are listed in Table 2. After appropriate corrective measures/actions are taken, work activities may resume if the following conditions are met:

- TVOC concentration at the Site perimeter is no more than 5.0 ppm above background for the 15-minute average; and
- Dust suppression measures and other controls are successful in reducing the downwind PM-10 concentration to within 150 μg/m^3 of the upwind level and in preventing visible dust migration.

3.5 Visible Dust

In addition to measured PM-10 levels, the CAMP requires monitoring of visible dust conditions. If visible airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques if downwind PM-10 levels do not exceed the Action Level concentration of 150 $\mu g/m^3$ above the upwind level and if no visible dust is migrating from the work area.

4. Reporting

GEI will prepare and submit weekly reports to the Contractor, CM, National Grid, and NYSDEC summarizing the CAMP monitoring data. Each report will consist of a letter-style report and charts/tables summarizing the following:

- Maximum 15-minute average concentrations of TVOC, and PM-10
- Upwind and downwind comparison of Response Levels and Action Level reached during the weekly period
- Summary of site activities
- Air monitoring station locations
- Meteorological conditions

Following the completion of all work, a report will be developed summarizing the intrusive activities. As part of the report, the CAMP activities will be documented.

References

New York State Department of Environmental Conservation. 2010. DER-10 / Technical Guidance for Site Investigation and Remediation. Division of Environmental Remediation. May 3, 2010. Appendix 1A. pp. 204-206.

Tables

Table 1
Target Concentrations for Site Conditions
Community Air Monitoring Plan
Glen Cove Former MGP Site
Glen Cove, New York

Target Parameter	National Grid requirement[1]	DER-10 generic CAMP requirements[2]	
	Alert Level	Response Level	Action Level
TVOC (15-minute Average Concentration)	3.7 ppm	NA	5.0 ppm
TVOC (1-minute Measured Concentration)	NA	NA	25 ppm
PM-10 (15-minute Average Concentration)	NA	100 $\mu g/m^3$	150 $\mu g/m^3$

Site Condition	TVOC	PM-10	Notification Required
Site Condition 1	Less than Alert Level (<3.7 ppm)	Less than Response Level (<100 $\mu g/m^3$)	NA
Preliminary Site Condition 2	Greater than or equal to Alert Level less than Action Level (≥3.7 ppm and <5 ppm)	NA	National Grid, Construction manager (if applicable), Contractor
Site Condition 2	NA	Greater than or equal to Response Level and less than Action Level (≥100 $\mu g/m^3$ and <150 $\mu g/m^3$)	National Grid, Construction manager (if applicable), Contractor, NYSDEC, and NYSDOH
Site Condition 3	Greater than or equal to Action Level (≥5 ppm or ≥25 ppm)	Greater than or equal to Action Level (≥150 $\mu g/m^3$)	

Notes:

[1] Alert Levels are not established by the NYSDOH or NYSDEC and are National Grid internally established concentration levels for total volatile organic compounds. Alert Levels are set below the levels established by the NYSDOH so that actions can be taken prior to exceeding a NYSDOH threshold. An Alert Level serves as a preemptive tool to trigger contingent measures, if necessary, to assist in minimizing off-site transport of contaminants during remedial activities.

[2] Response Levels and Action Levels are defined in Appendix 1A of the New York State Department of Environmental Conservation *DER-10 / Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2010).

$\mu g/m^3$ - micrograms per cubic meter

ppm - parts per million by volume

TVOC - total volatile organic compounds

PM-10 - particulate matter (i.e. dust) less than 10 microns in diameter

NA - not applicable

Table 2
Site Conditions and Response Actions
Community Air Monitoring Plan
Glen Cove Former MGP Site
Glen Cove, New York

Site Condition	Control Measure
Site Condition 1	Normal site activities - No control measures required
Site Condition 2	Establish trend of data and determine if evaluation/wait period is warranted Temporarily stop work Temporarily relocate work to an area with potentially lower emission levels Apply water to area of activity or haul roads to minimize dust levels Reschedule work activities Cover all or part of the excavation area Apply VOC emission suppressant foam over open excavation areas Slow the pace of construction activities Change construction process or equipment that minimize air emissions Install a perimeter barrier fence Apply water on haul roads* Wet equipment and excavation faces* Spray water on buckets during excavation and dumping* Haul materials in properly tarped or watertight containers* Restrict vehicle speeds to 10 mph* Cover excavated areas and material after excavation ceases* Reduce the excavation size and/or number of excavations*
Site Condition 3	Halt work Encapsulate construction area and treat air exhaust Perform work during cold weather Cease construction activities Re-evaluate air monitoring work plan

Notes:

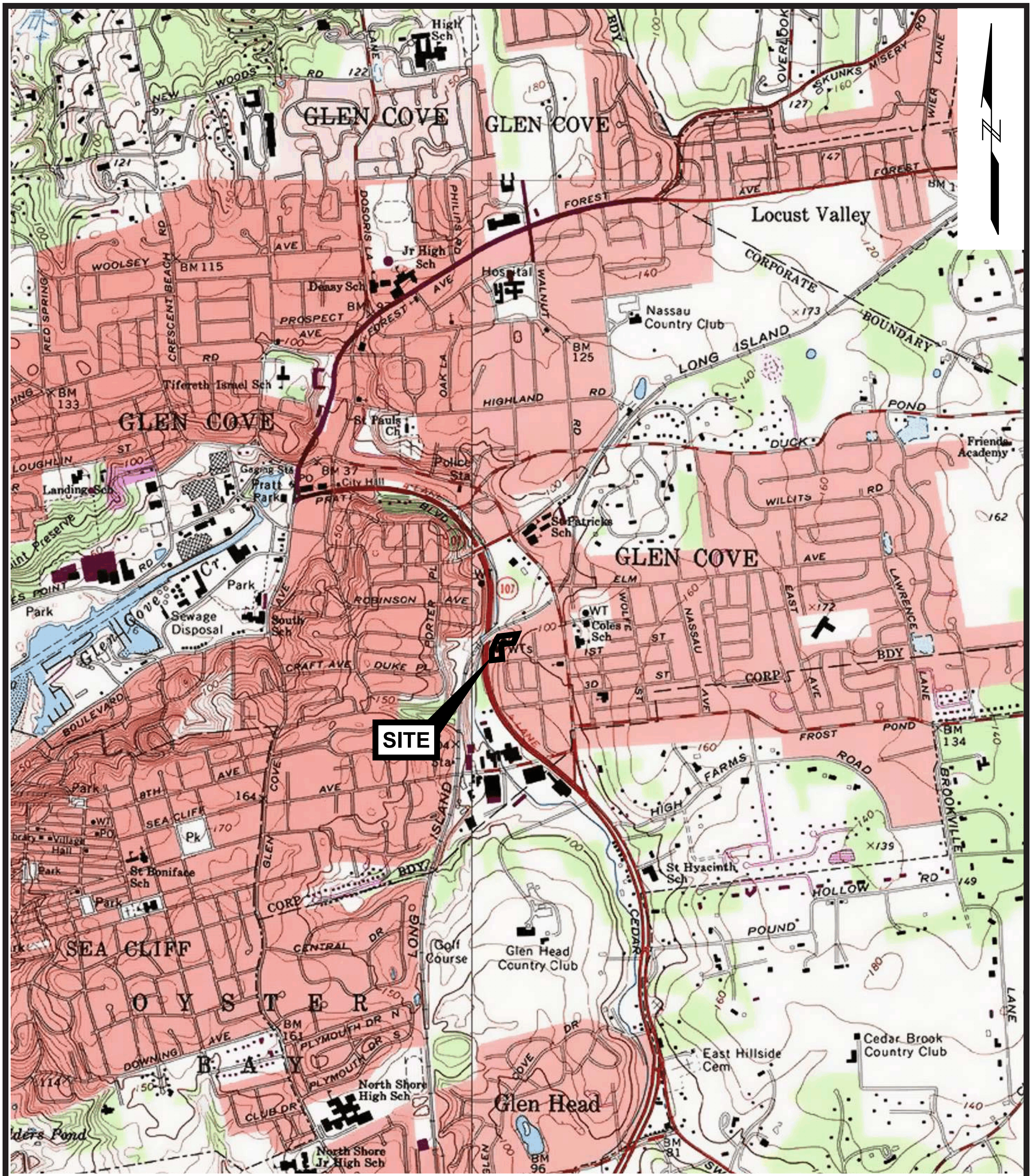
The control measures specified under each site condition can be implemented in any order that is most appropriate under the existing site conditions.

* Control measures suggested in the New York State Department of Environmental Conservation *DER-10 / Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2010)

VOC - volatile organic compound

mph - miles per hour

Figures



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0 2000 4000

SCALE, FEET

COMMUNITY AIR MONITORING PLAN
GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

nationalgrid

GEI Consultants

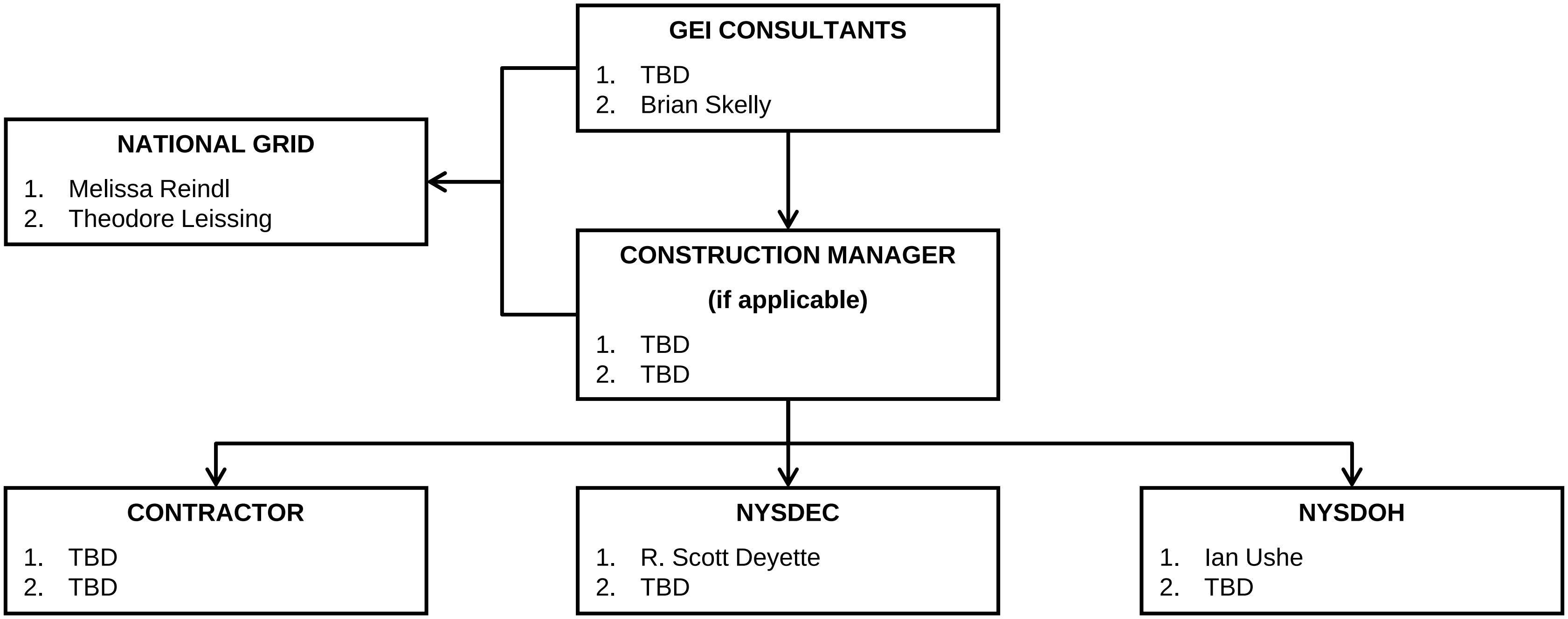
Project 093270

SITE LOCATION MAP

February 2015

Figure 1

I:\Project\National Grid\GLEN COVE\RAWP - PHASE II\RAWP Figures\CAMP\GLEN-CAMP Location.cdr



GEI CONSULTANTS

1. TBD
2. Brian Skelly

NATIONAL GRID

1. Melissa Reindl
2. Theodore Leissing

CONSTRUCTION MANAGER

(if applicable)

1. TBD
2. TBD

CONTRACTOR

1. TBD
2. TBD

NYSDEC

1. R. Scott Deyette
2. TBD

NYSDOH

1. Ian Ushe
2. TBD

If the primary contact is unavailable, contact alternatives in the order shown

All applicable parties will be notified within 60 minutes of an exceedance of a Response Level or Action Level at the site perimeter.

NOTE:

TBD = To Be Determined

COMMUNITY AIR MONITORING PLAN
GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

nationalgrid

GEI Consultants

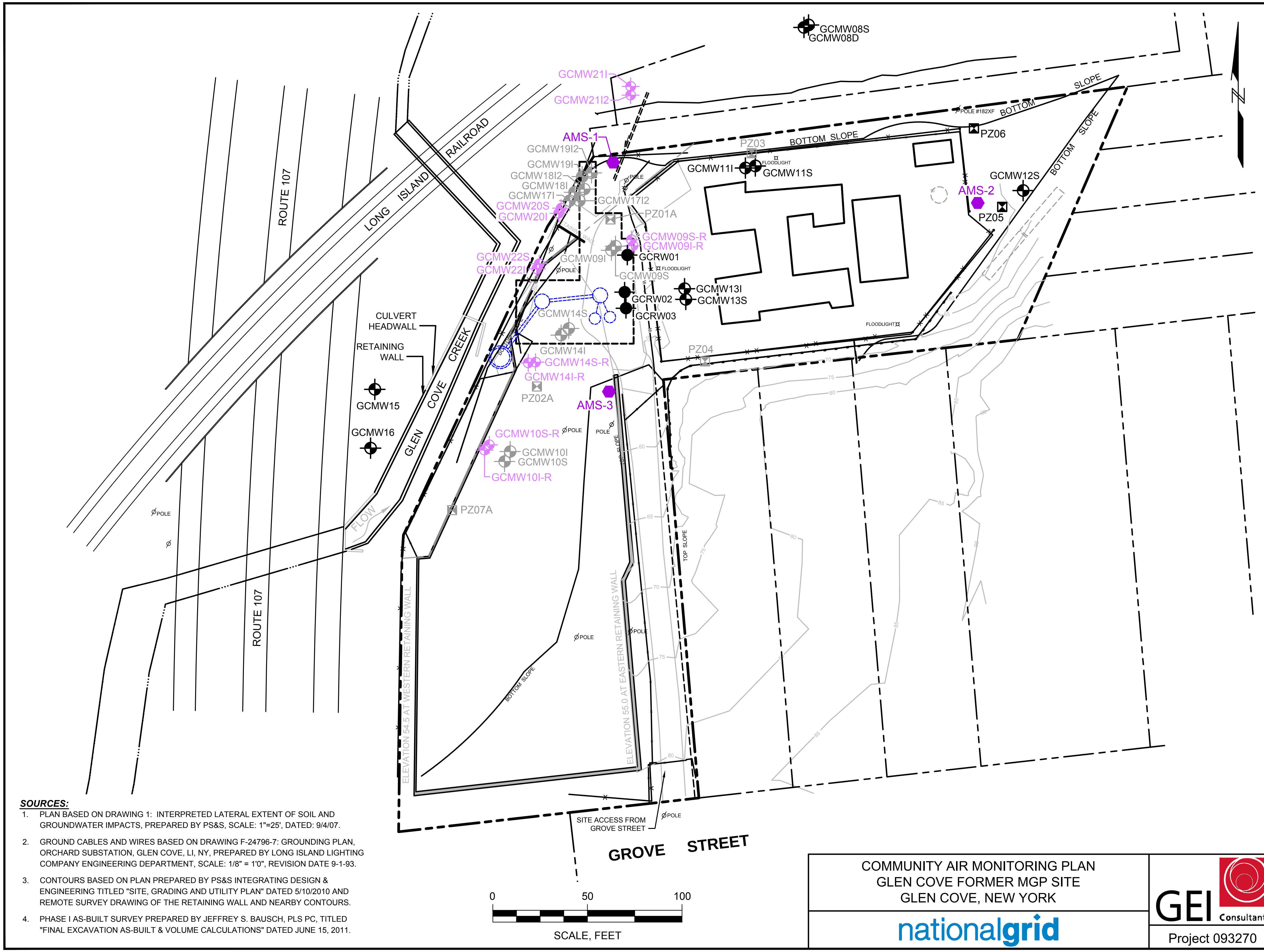
Project 093270

COMMUNICATION FLOWCHART

February 2015

Figure 2

I:\Project\National Grid\GLEN COVE\RAWP - PHASE II\RAWP Figures\CAMP\Glen Cove CAMP Fig 2-4-5-6.pptx



LEGEND:

— — —	PROPERTY BOUNDARY
▭	EXISTING STRUCTURE
—50—	SURFACE ELEVATION CONTOUR (5' INTERVAL)
— - —	EASEMENT BOUNDARY
—··—	CREEK
—×—	FENCE
ø	UTILITY POLE
¤	FLOODLIGHT
━━	RETAINING WALL H PILES
▬	RETAINING WALL
○	DRAINAGE STRUCTURES
⬚	PHASE I EXCAVATION LIMIT
⬢ AMS-1	TYPICAL AIR MONITORING STATION
⌖ GCMW22S	PROPOSED MONITORING WELL
⊕ GCMW09S	EXISTING MONITORING WELL
● GCRW01	EXISTING RECOVERY WELL
☒ PZ01A	EXISTING PIEZOMETER
☒ ⌖	ABANDONED/DESTROYED WELL OR PIEZOMETER

NOTE:

LOCATIONS OF AIR MONITORING STATIONS ARE EXAMPLES ONLY. ACTUAL LOCATIONS AND NUMBER OF STATIONS WILL BE BASED ON THE LOCATION OF INTRUSIVE WORK PERFORMED.

SOURCES:

1. PLAN BASED ON DRAWING 1: INTERPRETED LATERAL EXTENT OF SOIL AND GROUNDWATER IMPACTS, PREPARED BY PS&S, SCALE: 1"=25', DATED: 9/4/07.
2. GROUND CABLES AND WIRES BASED ON DRAWING F-24796-7: GROUNDING PLAN, ORCHARD SUBSTATION, GLEN COVE, LI, NY, PREPARED BY LONG ISLAND LIGHTING COMPANY ENGINEERING DEPARTMENT, SCALE: 1/8" = 1'0", REVISION DATE 9-1-93.
3. CONTOURS BASED ON PLAN PREPARED BY PS&S INTEGRATING DESIGN & ENGINEERING TITLED "SITE, GRADING AND UTILITY PLAN" DATED 5/10/2010 AND REMOTE SURVEY DRAWING OF THE RETAINING WALL AND NEARBY CONTOURS.
4. PHASE I AS-BUILT SURVEY PREPARED BY JEFFREY S. BAUSCH, PLS PC, TITLED "FINAL EXCAVATION AS-BUILT & VOLUME CALCULATIONS" DATED JUNE 15, 2011.

COMMUNITY AIR MONITORING PLAN
GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

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TYPICAL AIR MONITORING STATION LOCATION PLAN

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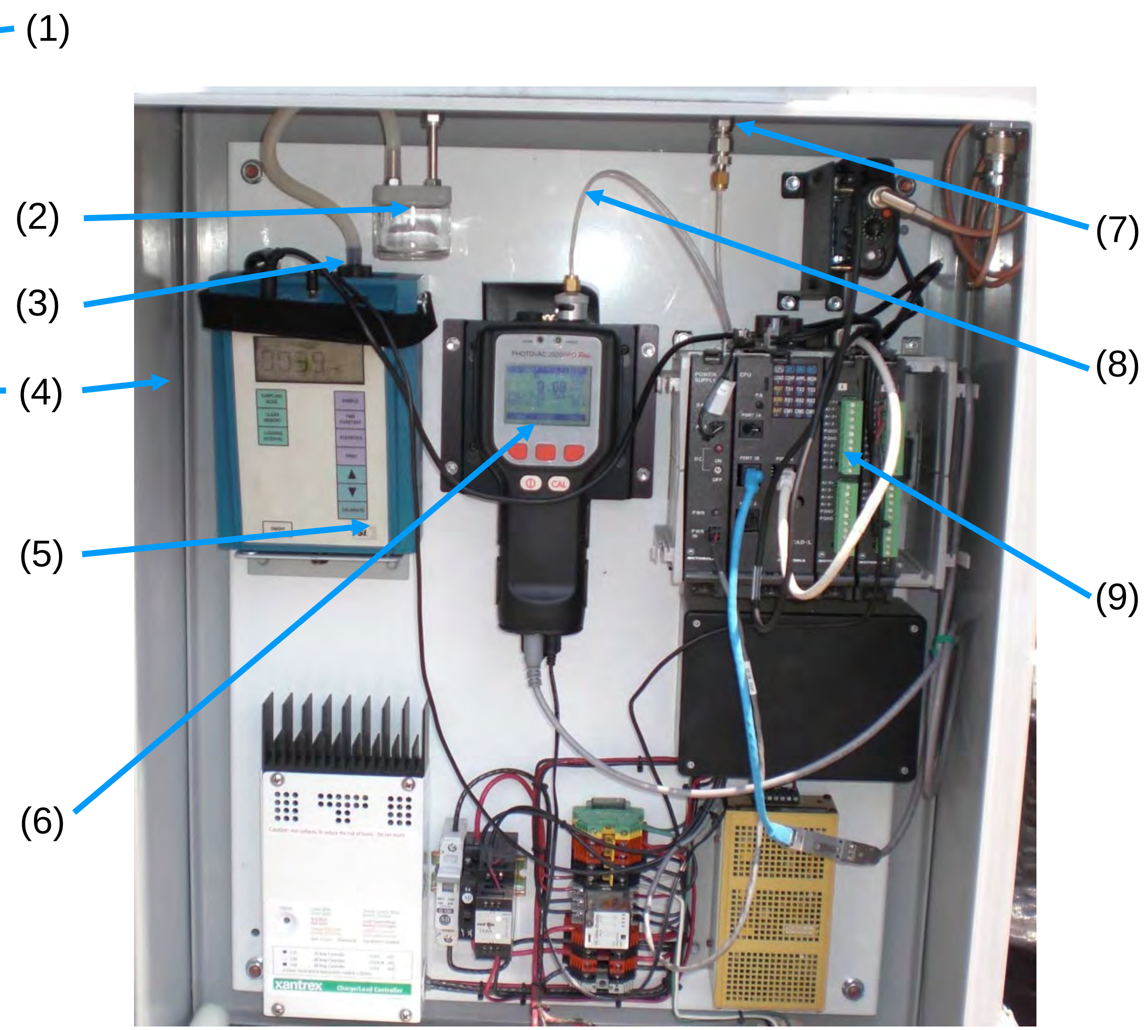
Figure 3

I:\Project\National Grid\GLEN COVE\RAWP - PHASE II\RAWP Figures\CAMP\Glen Cove - AMS Locations.dwg



1. Solar Panel
2. Particulate aerosol monitor sample tubing with in-line condenser
3. Particulate aerosol monitor sample inlet with PM-10 impactor
4. Station enclosure
5. Particulate Aerosol Monitor
6. Photoionization detector (PID)
7. PID sample inlet
8. PID sample inlet tubing
9. Data communications device

NOTE:
Figure depicts an AirLogics^{TM}, LLC Light air monitoring station as an example and may not be representative of the actual system or components that will be employed at the site

COMMUNITY AIR MONITORING PLAN
GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

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EXAMPLE FIXED STATION INTERNAL COMPONENTS

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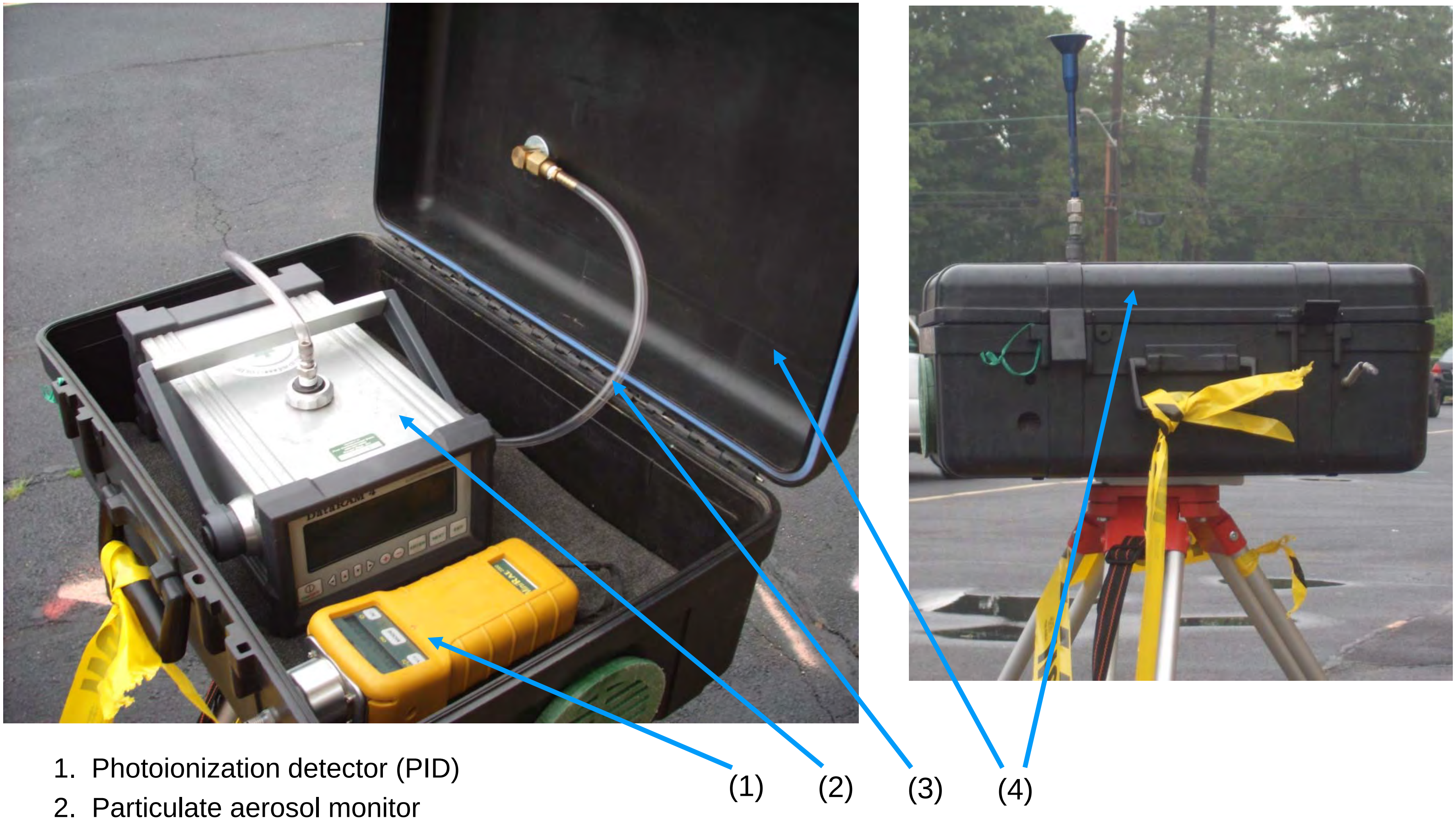
Figure 4A



1. Photoionization detector (PID)
2. Particulate aerosol monitor
3. Particulate aerosol monitor sample tubing
4. Station enclosure

NOTE:
Figure depicts a Pine Environmental air monitoring station as an example and may not be representative of the actual system or components that will be employed at the site

COMMUNITY AIR MONITORING PLAN
GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

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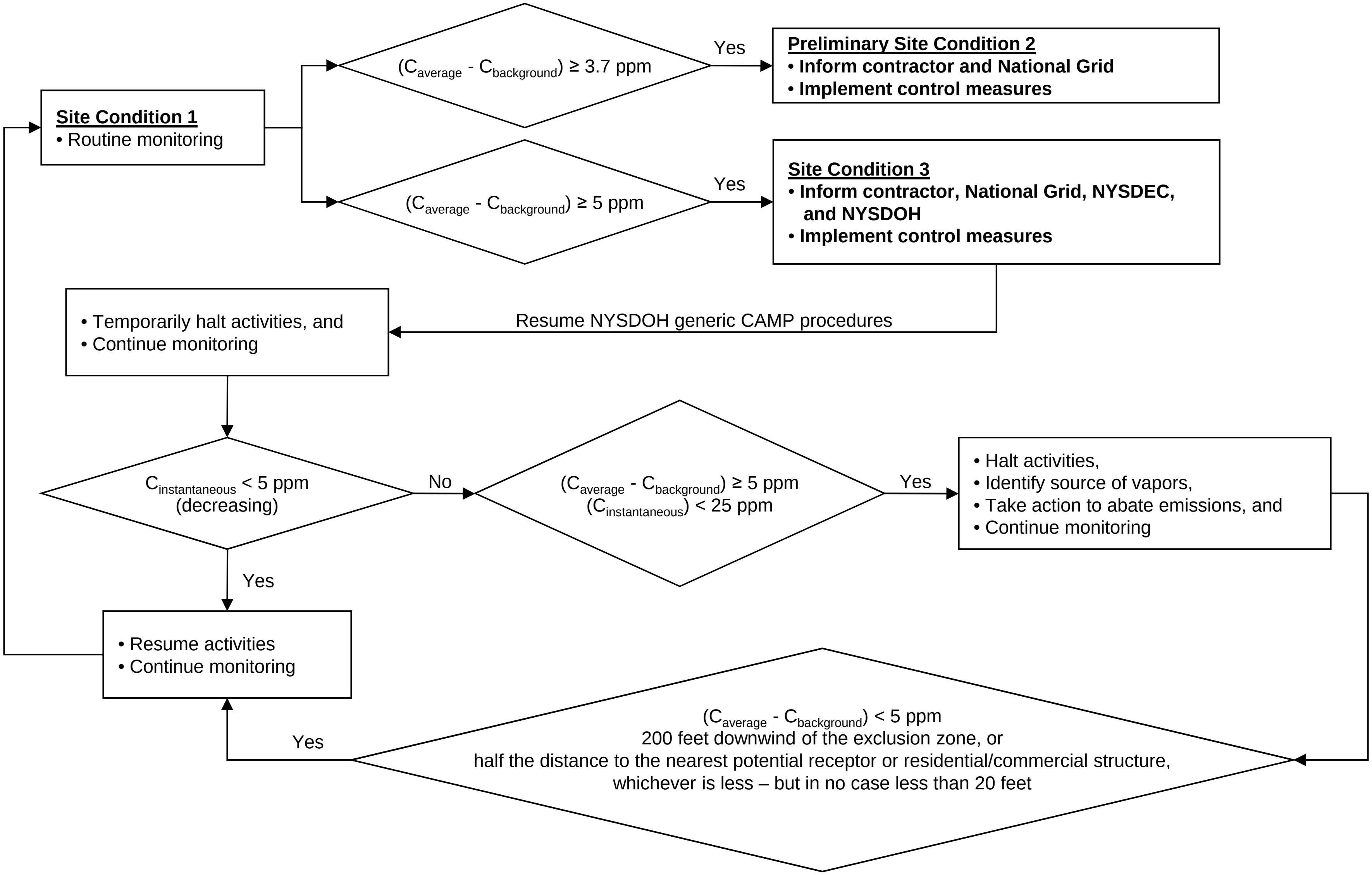
EXAMPLE TRIPOD MOUNTED STATION INTERNAL COMPONENTS

February 2015

Figure 4B

I:\Project\National Grid\GLEN COVE\RAWP - PHASE II\RAWP Figures\CAMP\Glen Cove CAMP Fig 2-4-5-6.pptx



NOTES:

1. TVOC – Total Volatile Organic Compound
2. ppm – parts per million
3. $C_{average}$ = 15-minute average concentration
4. $C_{background}$ = 15-minute average concentration upwind
5. $C_{instantaneous}$ = 1-minute measured concentration

COMMUNITY AIR MONITORING PLAN
GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

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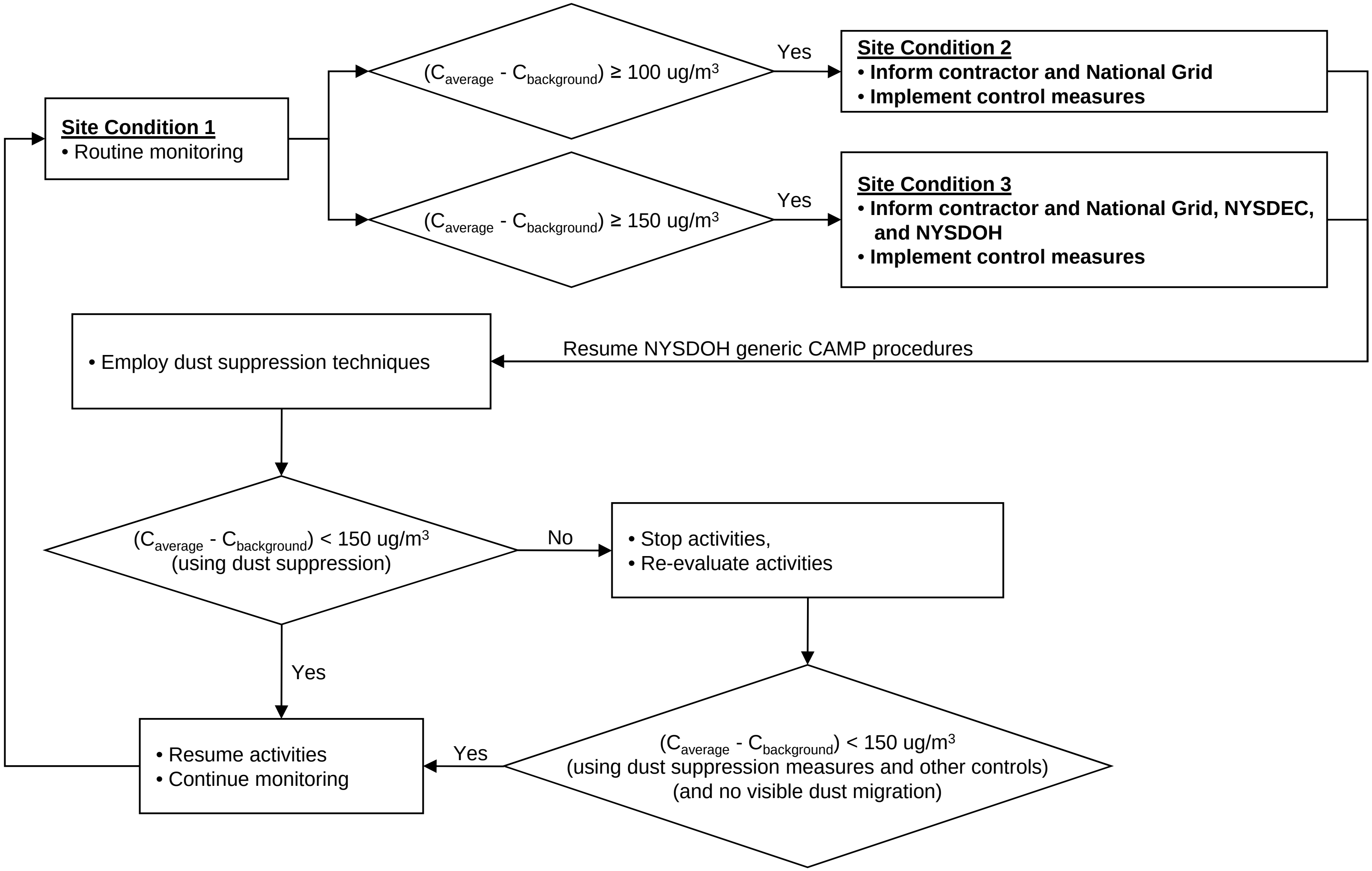
TVOC
DECISION DIAGRAM

Project 093270

February 2015

Figure 5

I:\Project\National Grid\GLEN COVE\RAWP - PHASE II\RAWP Figures\CAMP\Glen Cove CAMP Fig 2-4-5-6.pptx



NOTES:

1. PM-10 – particulate matter
2. $\mu g/m^3$ – micrograms per cubic meter
3. $C_{average}$ = 15-minute average concentration
4. $C_{background}$ = 15-minute average concentration upwind

COMMUNITY AIR MONITORING PLAN
GLEN COVE FORMER MGP SITE
GLEN COVE, NEW YORK

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PARTICULATE MATTER DECISION DIAGRAM

Project 093270

February 2015

Figure 6

I:\Project\National Grid\GLEN COVE\RAWP - PHASE II\RAWP Figures\CAMP\Glen Cove CAMP Fig 2-4-5-6.pptx

Appendix 1

NYSDOH Generic CAMP from DER-10 Appendix 1A

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. A periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ 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 PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York
February 2015

Appendix F

Site-wide Inspection Form

SITE INSPECTION FORM
Glen Cove Former MGP Site (Orchard Substation)

SITE INSPECTION DATE: ____________ **TIME OF ARRIVAL:** ____________

DEPARTURE: ____________

WEATHER: ____________

National Grid SIR Representative(s): ____________

INSPECTION TYPE: **Annual Inspection or Emergency Inspection**

(if emergency indicate event that required an inspection): ____________

Are the Institutional Controls in place, performing properly, and remain effective?

Site Signage in Place? Yes / No

Hazard Communication Documents Present? Yes / No

Has ownership of the property changed since the last inspection? Yes / No

(Verify with Real Estate and Survey Departments)

Are there any changes to LIPA GO-10421 Excavation within Substations which would effect the SMP or institutional controls? Yes / No

SITE INSPECTION FORM
Glen Cove Former MGP Site (Orchard Substation)

Are the Engineering Controls in place, performing properly, and remain effective?

Site Fencing in Place and in Good Condition? Yes / No

Surface Cover Intact (ie no evidence of erosion, excavations)? Yes / No

GENERAL SITE OBSERVATIONS:

Has there been any changes to the property since the last inspection? Yes / No

(i.e. new equipment or facilities, changes in site topography, erosion, etc.)

NOTE:

Inspections should be made a minimum once a year and within 5 days of an emergency, such as a natural disaster or an unforeseen failure or damage to the building occurs). Inspections will be conducted by National Grid SIR (or their agent) with assistance from LIPA.

COMPLETED BY:	**REVIEWED BY:**
SIGNATURE:	**SIGNATURE:**

nationalgrid

Appendix G

Monitoring Well Boring and Construction Logs

BORING SB-5

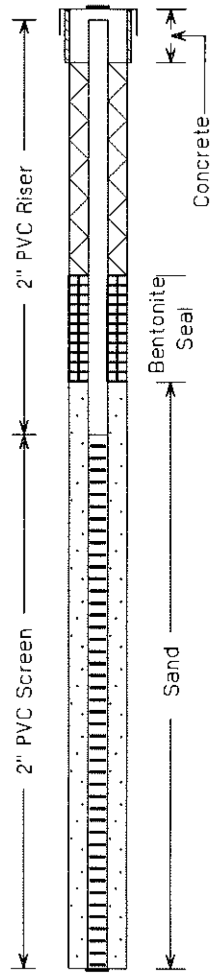
Page 1 of 1

PROJECT: Glen Cove MGP Site
PROJECT NO: 1691-08-02
CATION:
DATE STARTED: 11/09/95
DATE COMPLETED: 11/09/95
RILLING CONTRACTOR: Aquifer Drilling and Testing
DRILLER:

DRILLING METHOD: 4-1/4" Hollow Steam Auger
SAMPLING METHOD: 2-inch split spoon
GROUND ELEVATION: 59.34 ft MSL
WELL ELEVATION:
WATER TABLE ELEVATION:
DATUM:
INSPECTOR: Richard Mitchell

SPLIT SPOON SAMPLE DEPTH (ft)	BLOWS PER 6"	% RECOVERY	HNU (ppm)	SOIL DESCRIPTION color, density, SOIL, admixture, moisture, other notes, ORIGIN	VISUAL CONTAM. NONE	VISUAL CONTAM. STAIN	VISUAL CONTAM. SHEEN	VISUAL CONTAM. HEAVY	ODOR NONE	ODOR SLIGHT	ODOR MODERATE	ODOR HEAVY	SAMPLE ANALYSIS	LITHOLOGY	DEPTH (FT.)
				Augered through brown fine to coarse gravel and sand, little silt, little brick, FILL.	■				■						0
				Becomes very cobbly.	■				■						5
				Augered through fine to coarse SAND and GRAVEL, some silt, slight odor.	■				■						10
4-16	10,12 12,16	15	0.0	Brown fine to coarse GRAVEL and SAND, little silt, slight odor, groundwater interface at 14.0.	■					■				∴	15
3-18	6,7 7,11	50	0.0		■					■			■	∴	
				End of boring at 18.0 feet.											20

WELL CONSTRUCTION



ATLANTIC

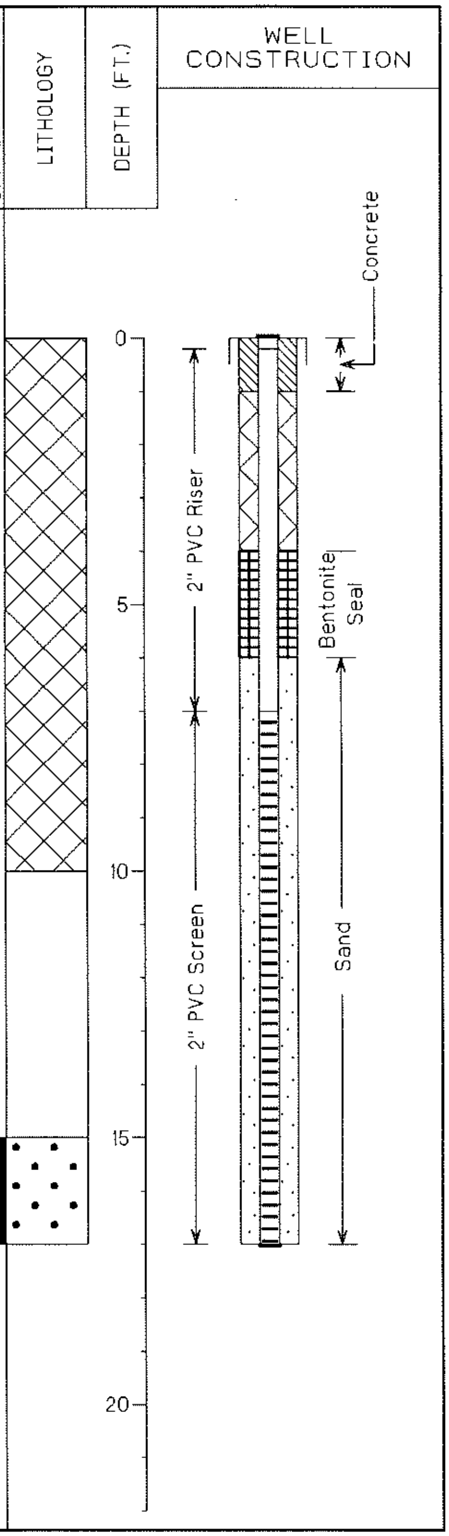
BORING SB-6

Page 1 of 1

PROJECT: Glen Cove MGP Site
PROJECT NO: 1691-08-02
CATION:
DATE STARTED: 11/10/95
DATE COMPLETED: 11/10/95
ILLING CONTRACTOR: Aquifer Drilling and Testing
DRILLER:

DRILLING METHOD: 4-1/4" Hollow Steam Auger
SAMPLING METHOD: 2-inch split spoon
GROUND ELEVATION: 58.52 ft MSL
WELL ELEVATION:
WATER TABLE ELEVATION:
DATUM:
INSPECTOR: Richard Mitchell

SPLIT SPOON SAMPLE DEPTH (ft)	BLOWS PER 6"	% RECOVERY	HNU (ppm)	SOIL DESCRIPTION color, density, SOIL,admixture, moisture, other notes, ORIGIN	VISUAL CONTAM. NONE	STAIN	SHEEN	HEAVY	ODOR NONE	SLIGHT	MODERATE	HEAVY	SAMPLE ANALYSIS
				(Hand augered to 5 feet). Brown fine to medium sand, some fine to coarse gravel, little silt, trace coal, FILL.	■								
				Black coal, some fine to coarse sand and gravel, little silt, FILL.	■								
3-10	10,4 4,5	50		Brown fine to coarse sand and gravel, little silt, FILL, saturated, no odor.	■								
				Gray/brown fine sand and silt, FILL, tight, groundwater interface at 9.0.	■								
				Augered to 15 feet.									
15-17	38,22 22,27	50	0.0	Brown fine to coarse GRAVEL and SAND, trace silt, saturated.	■				■				■
				End of boring at 17.0 feet.									



ATLANTIC

Paulus, Sokolowski, & Sartor

WELL CONSTRUCTION LOG

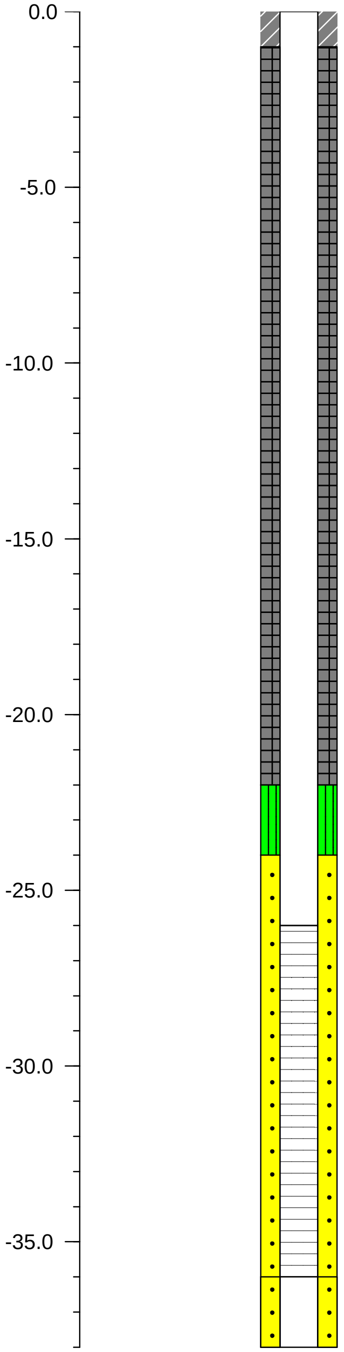
WELL NUMBER - GCMW - 08S

PROJECT NUMBER: **2522.012.024**
PROJECT NAME: **Glen Cove Former MGP Site**
LOCATION: **Glen Cove, Long Island, NY**
DRILLING CO: **Delta Well & Pump Co., Inc.**
DRILLING METHOD: **Hollow Stem Auger**
DRILLER/HELPER : **Michael Pellegrino/Pete Trembley**
ENVIRONMENTAL SCIENTIST: **Joseph Trocchio**

WEATHER : **Sunny**
TOTAL DEPTH: **38'**
GROUND SURFACE ELEVATION: **78.80**
DATE BEGUN: **7/14/04**
DATE COMPLETED: **7/14/04**

PVC CASING (DIA.) -	2"	MATERIAL 1 -	Schedule 40 PVC	LENGTH 1 -	26'
SCREEN (DIA.) -	2"	MATERIAL 2 -	Schedule 40 PVC	LENGTH 2 -	10'
PVC CASING (DIA.):	2"	MATERIAL 3 -	Steel Casing with Concrete Pad	LENGTH 3 -	1'x1'

DEPTH	WELL CONSTRUCTION	WELL SCHEMATICS



CEMENT SEAL 0-1'

SOLID PVC CASING 0-26'

CONCRETE AND BENTONITE GROUT 1'-22'

BENTONITE SEAL 22'-24'

SAND PACK 24'-38'

PVC 20 SLOT SCREEN 26'-36'

SOLID PVC CASING 36'-38'

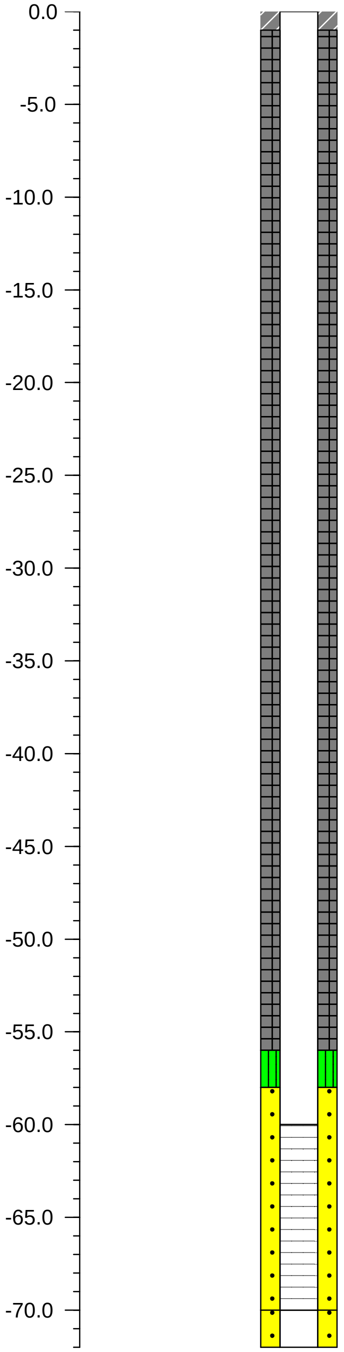
Paulus, Sokolowski, & Sartor	WELL CONSTRUCTION LOG	WELL NUMBER - GCMW-08D

PROJECT NUMBER: **2522.012.024**
PROJECT NAME: **Glen Cove Former MGP Site**
LOCATION: **Glen Cove, Long Island, NY**
DRILLING CO: **Delta Well & Pump Co., Inc.**
DRILLING METHOD: **Hollow Stem Auger**
DRILLER/HELPER : **Michael Pellegrino/Pete Trembley**
ENVIRONMENTAL SCIENTIST: **Joseph Trocchio**

WEATHER : **Sunny**
TOTAL DEPTH: **72'**
GROUND SURFACE ELEVATION: **78.83**
DATE BEGUN: **7/09/04**
DATE COMPLETED: **7/13/04**

PVC CASING (DIA.) -	2"	MATERIAL 1 -	Schedule 40 PVC	LENGTH 1 -	60'
SCREEN (DIA.) -	2"	MATERIAL 2 -	Schedule 40 PVC	LENGTH 2 -	10'
PVC CASING (DIA.):	2"	MATERIAL 3 -	Steel Casing with Concrete Pad	LENGTH 3 -	1'x1'

DEPTH	WELL CONSTRUCTION	WELL SCHEMATICS



CEMENT SEAL 0-1'

SOLID PVC CASING 0-60'

CONCRETE AND BENTONITE GROUT 0-56'

BENTONITE SEAL 56'-58'

SAND PACK 58'-70'

PVC 20 SLOT SCREEN 60'-70'

SOLID PVC CASING 70'-72'

Groundwater Well Installation Log

GCMW-09S-R

Project	Glen Cove Former Manufactured Gas Plant Site	**GEI Proj. No.**	093270-4-1405
City / Town	Glen Cove, New York	**Location**	
Client	National Grid	N	251678.90
Contractor	Island Pump & Tank	E	1088531.20
Driller	**GEI Rep.** C. Anastasiou	**Install Date**	5/28/2014

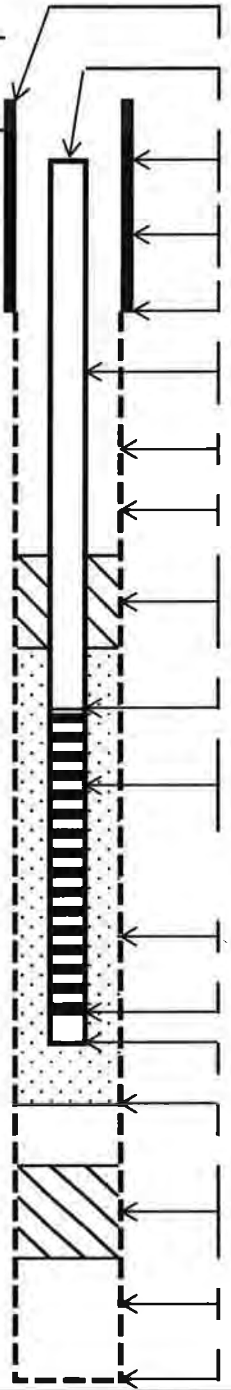
Survey Datum: NAVD 88

Ground Elevation: 55.2

General Soil Conditions (Not to Scale)

Soil was not logged.

Date	Time	Distance to ▼ below top of riser pipe



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	2 ft
Type of Seal	bentonite
Depth Bottom of Seal	4 ft
Depth Top of Screened Section	6 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	16 ft
Depth Bottom of Silt Trap	18 ft
Depth Bottom of Filter Material	18 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	18 ft

Notes:

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Groundwater Well Installation Log

GCMW-09I-R

Project	Glen Cove Former Manufactured Gas Plant Site
City / Town	Glen Cove, New York
Client	National Grid
Contractor	Island Pump & Tank
Driller	
GEI Rep.	C. Anastasiou

GEI Proj. No.	093270-4-1405
Location	
N	251677.40
E	1088530.50
Install Date	5/28/2014

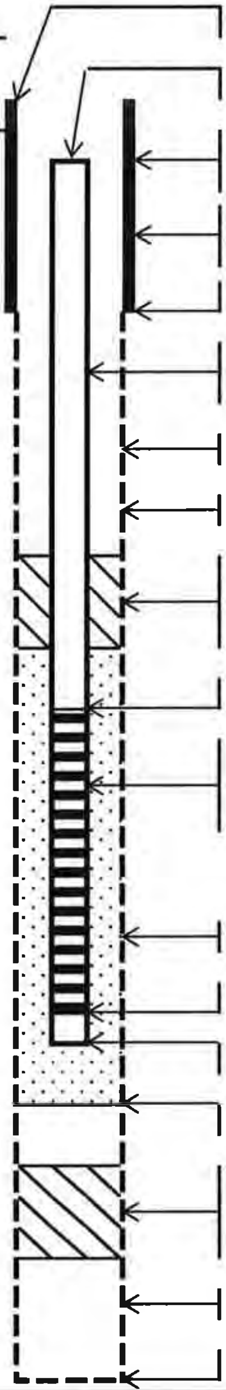
Survey Datum: NAVD 88

Ground Elevation: 55.2

Date	Time	Distance to ▼ below top of riser pipe

General Soil Conditions (Not to Scale)

Soil was not logged.



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	20 ft
Type of Seal	bentonite
Depth Bottom of Seal	22 ft
Depth Top of Screened Section	24 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	34 ft
Depth Bottom of Silt Trap	36 ft
Depth Bottom of Filter Material	36 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	36 ft

Notes:

GCMW-09I-R hit obstruction at 10' and was offset, then hit obstruction at 35' and was offset a second time to final surveyed location.

GEI Consultants

Groundwater Well Installation Log

GCMW-10S-R

Project	Glen Cove Former Manufactured Gas Plant Site	**GEI Proj. No.**	093270-4-1405
City / Town	Glen Cove, New York	**Location**	
Client	National Grid	N	251580.40
Contractor	Island Pump & Tank	E	1088459.40
Driller	**GEI Rep.** C. Anastasiou	**Install Date**	5/23/2014

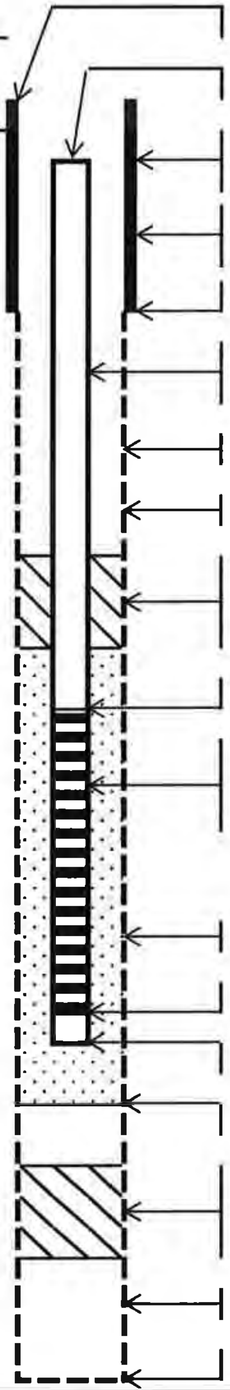
Survey Datum: NAVD 88

Ground Elevation: 54.22

Date	Time	Distance to ▼ below top of riser pipe

General Soil Conditions (Not to Scale)

Soil was not logged.



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	10 ft
Type of Seal	bentonite
Depth Bottom of Seal	13 ft
Depth Top of Screened Section	15 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	20 ft
Depth Bottom of Silt Trap	22 ft
Depth Bottom of Filter Material	22 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	22 ft

Notes:

GEI Consultants

Groundwater Well Installation Log

GCMW-10I-R

Project	Glen Cove Former Manufactured Gas Plant Site	**GEI Proj. No.**	093270-4-1405
City / Town	Glen Cove, New York	**Location**	
Client	National Grid	N	251576.50
Contractor	Island Pump & Tank	E	1088457.50
Driller	**GEI Rep.** C. Anastasiou	**Install Date**	5/27/2014

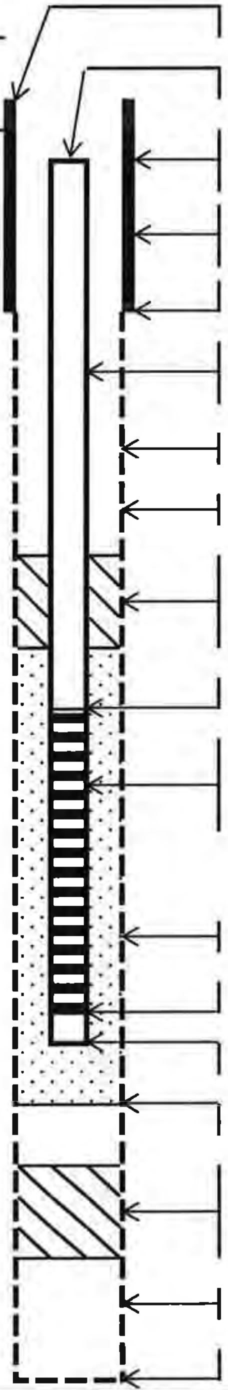
Survey Datum: NAVD 88

Ground Elevation: 54.17

General Soil Conditions (Not to Scale)

Soil was not logged.

Date	Time	Distance to ▼ below top of riser pipe



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	16 ft
Type of Seal	bentonite
Depth Bottom of Seal	18 ft
Depth Top of Screened Section	20 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	30 ft
Depth Bottom of Silt Trap	32 ft
Depth Bottom of Filter Material	32 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	32 ft

Notes:

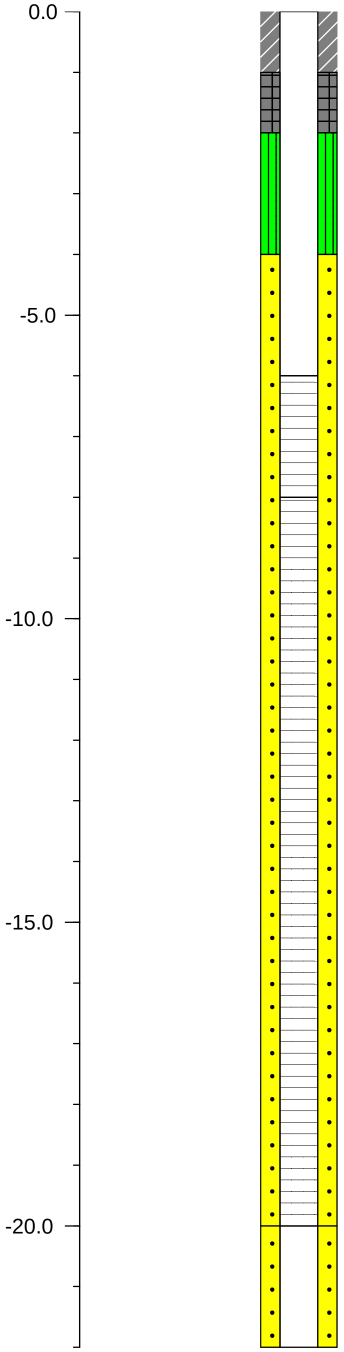
Paulus, Sokolowski, & Sartor	**WELL CONSTRUCTION LOG**	**WELL NUMBER - GCMW - 11S**

PROJECT NUMBER: **2522.012.024**
PROJECT NAME: **Glen Cove Former MGP Site**
LOCATION: **Glen Cove, Long Island, NY**
DRILLING CO: **Delta Well & Pump Co., Inc.**
DRILLING METHOD: **Hollow Stem Auger**
DRILLER/HELPER : **Pete Trembley/Pete Kaligeris**
ENVIRONMENTAL SCIENTIST: **Joseph Trocchio**

WEATHER : **Sunny**
TOTAL DEPTH: **22'**
GROUND SURFACE ELEVATION: **57.83**
DATE BEGUN: **4/16/04**
DATE COMPLETED: **4/16/04**

PVC CASING (DIA.) -	2"	MATERIAL 1 -	Schedule 40 PVC	LENGTH 1 -	8'
SCREEN (DIA.) -	2"	MATERIAL 2 -	Schedule 40 PVC	LENGTH 2 -	14'
PVC CASING (DIA.):	8"	MATERIAL 3 -	Steel	LENGTH 3 -	1'

DEPTH	**WELL CONSTRUCTION**	**WELL SCHEMATICS**



CEMENT SEAL 0-1'

CONCRETE AND BENTONITE GROUT 1'-2'
SOLID PVC CASING 0-6'
BENTONITE SEAL 2'-4'

SAND PACK 4'-22'

PVC 10 SLOT SCREEN 6'-8'

PVC 20 SLOT SCREEN 8'-20'

SOILD PVC CASING 20'-22'

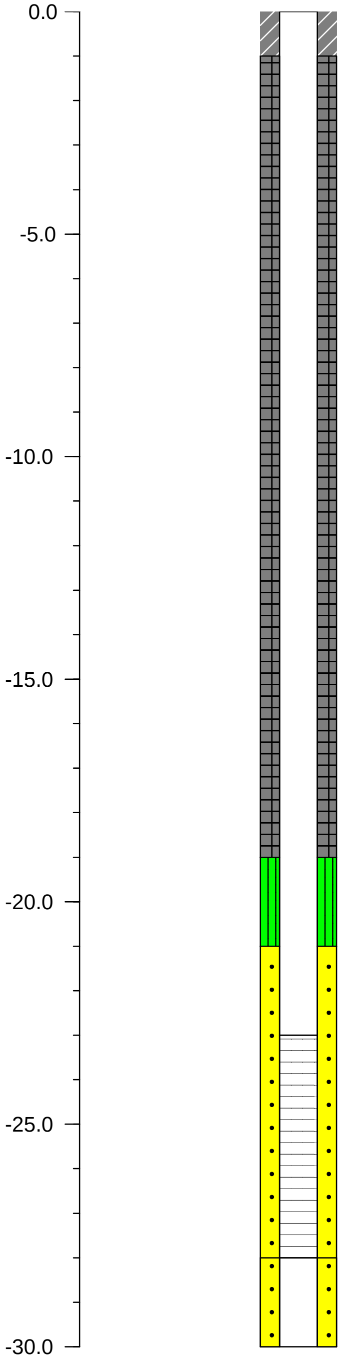
Paulus, Sokolowski, & Sartor	**WELL CONSTRUCTION LOG**	**WELL NUMBER - GCMW - 11I**

PROJECT NUMBER: **2522.012.024**
PROJECT NAME: **Glen Cove Former MGP Site**
LOCATION: **Glen Cove, Long Island, NY**
DRILLING CO: **Delta Well & Pump Co., Inc.**
DRILLING METHOD: **Hollow Stem Auger**
DRILLER/HELPER : **Pete Trembley/Pete Kaligeris**
ENVIRONMENTAL SCIENTIST: **Joseph Trocchio**

WEATHER : **Sunny**
TOTAL DEPTH: **30'**
GROUND SURFACE ELEVATION: **57.84**
DATE BEGUN: **4/19/04**
DATE COMPLETED: **4/19/04**

PVC CASING (DIA.) - 2"	MATERIAL 1 - Schedule 40 PVC	LENGTH 1 - 25'
SCREEN (DIA.) - 2"	MATERIAL 2 - Schedule 40 PVC	LENGTH 2 - 5'
PVC CASING (DIA.): 8"	MATERIAL 3 - Steel	LENGTH 3 - 1'

DEPTH	**WELL CONSTRUCTION**	**WELL SCHEMATICS**



CEMENT SEAL 0-1'

CONCRETE AND BENTONITE GROUT 1'-19'

SOLID PVC CASING 0-23'

BENTONITE SEAL 19'-21'

SAND PACK 21'-30'

PVC 20 SLOT SCREEN 23'-28'

SOLID PVC CASING 28'-30'

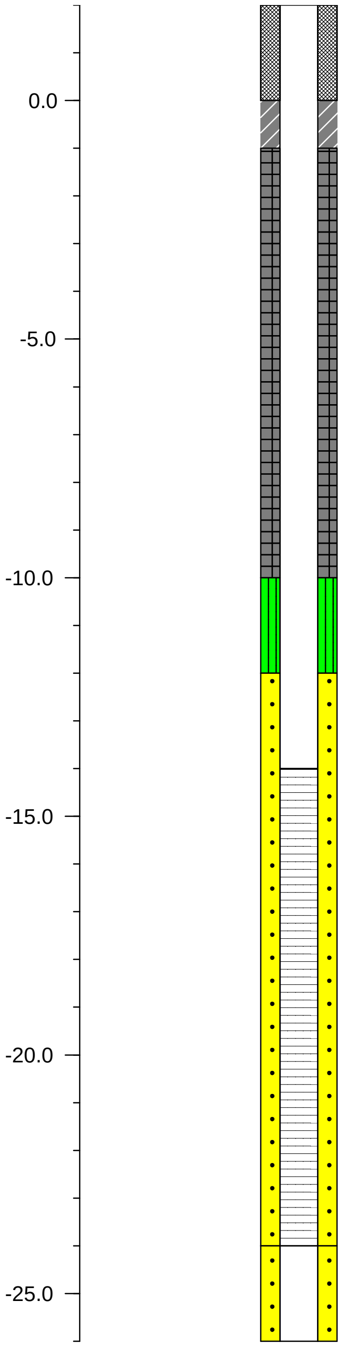
Paulus, Sokolowski, & Sartor	WELL CONSTRUCTION LOG	WELL NUMBER - GCMW - 12S

PROJECT NUMBER: 2522.012.024
PROJECT NAME: Glen Cove Former MGP Site
LOCATION: Glen Cove, Long Island, NY
DRILLING CO: Delta Well & Pump Co., Inc.
DRILLING METHOD: Hollow Stem Auger
DRILLER/HELPER : Pete Trembley/Pete Kaligeris
ENVIRONMENTAL SCIENTIST: Joseph Trocchio

WEATHER : Sunny
TOTAL DEPTH: 28'
GROUND SURFACE ELEVATION: 64.19
DATE BEGUN: 4/08/04
DATE COMPLETED: 4/12/04

PVC CASING (DIA.) -	2"	MATERIAL 1 -	Schedule 40 PVC	LENGTH 1 -	18'
SCREEN (DIA.) -	2"	MATERIAL 2 -	Schedule 40 PVC	LENGTH 2 -	10'
PVC CASING (DIA.):	4"	MATERIAL 3 -	Steel	LENGTH 3 -	4'

DEPTH	WELL CONSTRUCTION	WELL SCHEMATICS



CEMENT SEAL 0-1'

CONCRETE AND BENTONITE GROUT 1'-10'

SOLID PVC CASING +2'-14'

BENTONITE SEAL 10'-12'

SAND PACK 12'-26'

PVC 20 SLOT SCREEN 14'-24'

SOLID PVC CASING 24'-26'

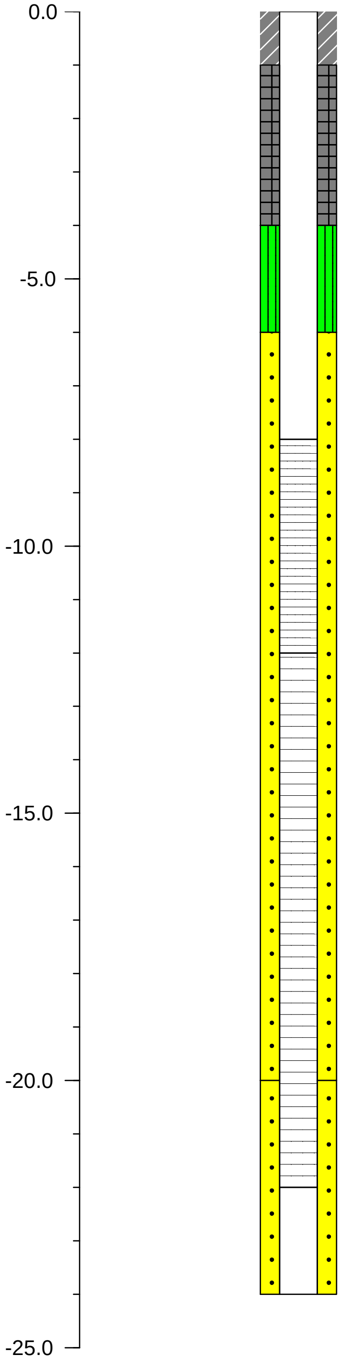
Paulus, Sokolowski, & Sartor	WELL CONSTRUCTION LOG	WELL NUMBER - GCMW - 13S

PROJECT NUMBER: **2522.012.024**
PROJECT NAME: **Glen Cove Former MGP Site**
LOCATION: **Glen Cove, Long Island, NY**
DRILLING CO: **Delta Well & Pump Co., Inc.**
DRILLING METHOD: **Hollow Stem Auger**
DRILLER/HELPER : **Pete Trembley/Pete Kaligeris**
ENVIRONMENTAL SCIENTIST: **Joseph Trocchio**

WEATHER : **Sunny**
TOTAL DEPTH: **22'**
GROUND SURFACE ELEVATION: **57.99**
DATE BEGUN: **4/22/04**
DATE COMPLETED: **4/23/04**

PVC CASING (DIA.) -	2"	MATERIAL 1 -	Schedule 40 PVC	LENGTH 1 -	10'
SCREEN (DIA.) -	2"	MATERIAL 2 -	Schedule 40 PVC	LENGTH 2 -	12'
PVC CASING (DIA.):	8"	MATERIAL 3 -	Steel	LENGTH 3 -	1'

DEPTH	WELL CONSTRUCTION	WELL SCHEMATICS



CEMENT SEAL 0-1'

CONCRETE AND BENTONITE GROUT 1'-4'

SOLID PVC CASING 0-8'

BENTONITE SEAL 4'-6'

SAND PACK 6'-24'

PVC 10 SLOT SCREEN 8'-12'

PVC 20 SLOT SCREEN 12'-22'

SOLID PVC CASING 22'-24'

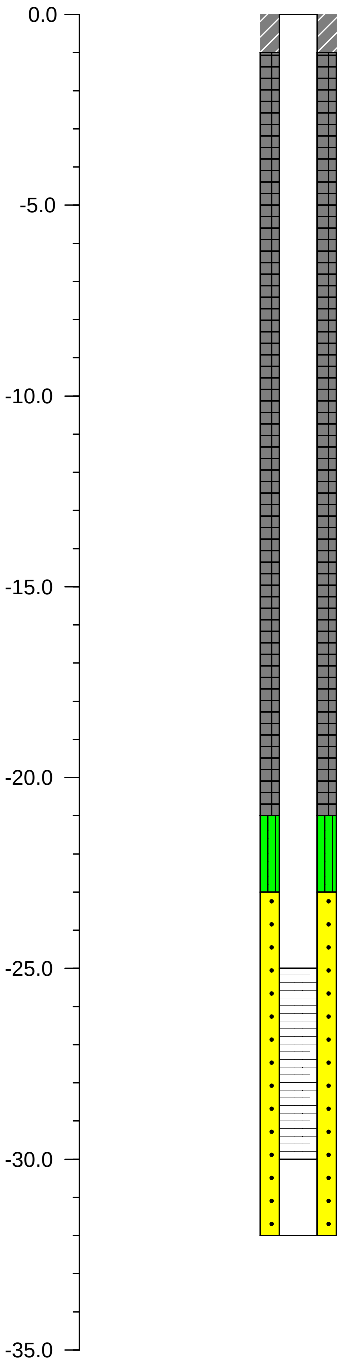
Paulus, Sokolowski, & Sartor	**WELL CONSTRUCTION LOG**	**WELL NUMBER - GCMW - 13I**

PROJECT NUMBER: **2522.012.024**
PROJECT NAME: **Glen Cove Former MGP Site**
LOCATION: **Glen Cove, Long Island, NY**
DRILLING CO: **Delta Well & Pump Co., Inc.**
DRILLING METHOD: **Hollow Stem Auger**
DRILLER/HELPER : **Pete Trembley/Pete Kaligeris**
ENVIRONMENTAL SCIENTIST: **Joseph Trocchio**

WEATHER : **Sunny**
TOTAL DEPTH: **32'**
GROUND SURFACE ELEVATION: **57.88**
DATE BEGUN: **4/21/04**
DATE COMPLETED: **4/23/04**

PVC CASING (DIA.) -	2"	MATERIAL 1 -	Schedule 40 PVC	LENGTH 1 -	27'
SCREEN (DIA.) -	2"	MATERIAL 2 -	Schedule 40 PVC	LENGTH 2 -	5'
PVC CASING (DIA.):	8"	MATERIAL 3 -	Steel Flushmount	LENGTH 3 -	1'

DEPTH	**WELL CONSTRUCTION**	**WELL SCHEMATICS**



CEMENT SEAL 0-1'

CONCRETE AND BENTONITE GROUT 1'-21'

SOLID PVC CASING 0-25'

BENTONITE SEAL 21'-23'

SAND PACK 23'- 32'

PVC 20 SLOT SCREEN 25'-30'

SOLID PVC CASING 30'- 32'

Groundwater Well Installation Log

GCMW-14S-R

Project	Glen Cove Former Manufactured Gas Plant Site
City / Town	Glen Cove, New York
Client	National Grid
Contractor	Island Pump & Tank
Driller	
GEI Rep.	C. Anastasiou

GEI Proj. No.	093270-4-1405
Location	
N	251639.30
E	1088477.70
Install Date	5/30/2014

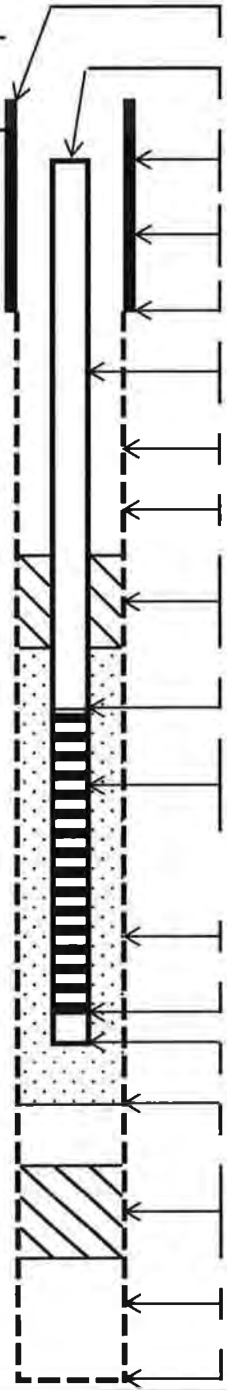
Survey Datum: NAVD 88

Ground Elevation: 54.83

General Soil Conditions (Not to Scale)

Soil was not logged.

Date	Time	Distance to ▼ below top of riser pipe



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	6 ft
Type of Seal	bentonite
Depth Bottom of Seal	8 ft
Depth Top of Screened Section	10 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	20 ft
Depth Bottom of Silt Trap	22 ft
Depth Bottom of Filter Material	22 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	22 ft

Notes:

GEI Consultants

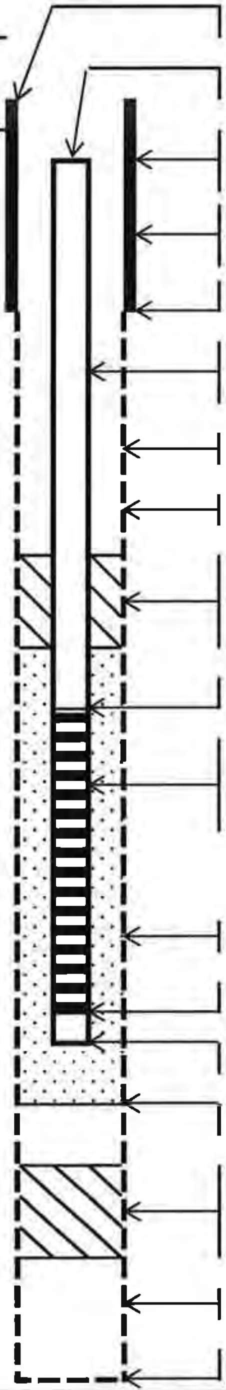
Groundwater Well Installation Log

GCMW-14I-R

Project	Glen Cove Former Manufactured Gas Plant Site
City / Town	Glen Cove, New York
Client	National Grid
Contractor	Island Pump & Tank
Driller	
GEI Rep.	C. Anastasiou
GEI Proj. No.	093270-4-1405
Location	
N	251640.70
E	1088480.10
Install Date	5/29/2014

Survey Datum: NAVD 88

Ground Elevation: 54.93



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	19 ft
Type of Seal	bentonite
Depth Bottom of Seal	21 ft
Depth Top of Screened Section	23 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	28 ft
Depth Bottom of Silt Trap	30 ft
Depth Bottom of Filter Material	30 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	30 ft

General Soil Conditions (Not to Scale)

Soil was not logged.

Date	Time	Distance to ▼ below top of riser pipe

Notes:

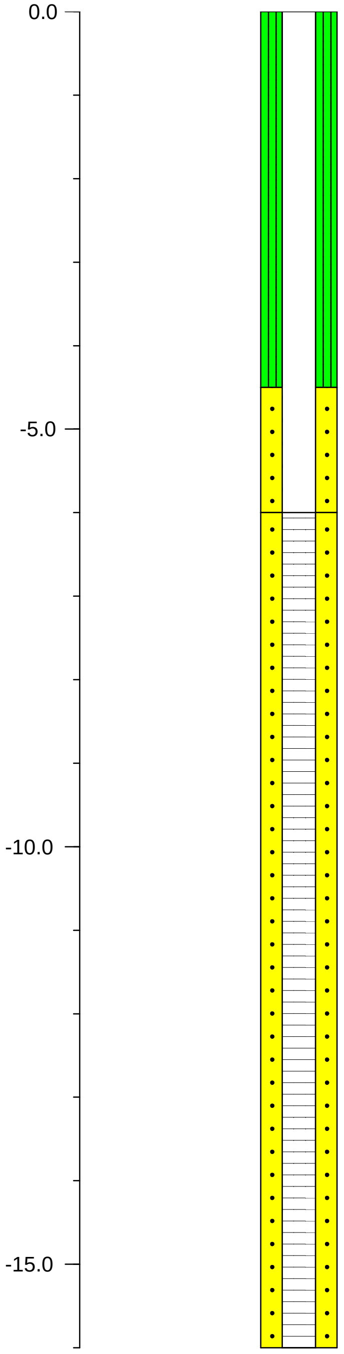
GEI Consultants

Paulus, Sokolowski, & Sartor	**WELL CONSTRUCTION LOG**	**WELL NUMBER - GCMW - 15**

PROJECT NUMBER:	**2522.012.024**	WEATHER :	**Sunny, 55 deg F**
PROJECT NAME:	**Glen Cove Former MGP Site**	TOTAL DEPTH:	**16'**
LOCATION:	**Glen Cove, Long Island, NY**	GROUND SURFACE ELEVATION:	**51.57**
DRILLING CO:	**Zebra Environmental Corporation**	DATE BEGUN:	**May 19, 2005**
DRILLING METHOD:	**GeoProbe**	DATE COMPLETED:	**May 19, 2005**
DRILLER/HELPER :	**Bob Burawa/Luke Russ**		
ENVIRONMENTAL SCIENTIST:	**Jeff Diamond**		

PVC CASING (DIA.) -	1.75'	MATERIAL 1 -	Schedule 40 PVC	LENGTH 1 -	6'
SCREEN (DIA.) -	1.75'	MATERIAL 2 -	Stainless Steel	LENGTH 2 -	10'
PVC CASING (DIA.):	2"	MATERIAL 3 -	Steel Casing with Concrete Pad	LENGTH 3 -	1'x1'

DEPTH	**WELL CONSTRUCTION**	**WELL SCHEMATICS**



BENTONITE SEAL 0 - 4.5'

SOLID PVC CASING 0 - 6'

SAND PACK (#00) 4.5' - 6'

PVC 20 SLOT SCREEN 6 '- 16'

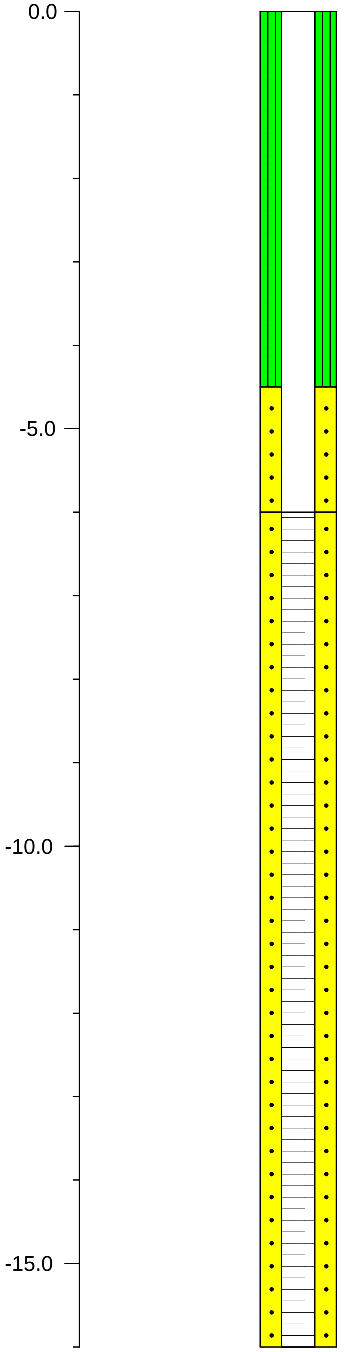
Paulus, Sokolowski, & Sartor	WELL CONSTRUCTION LOG	WELL NUMBER - GCMW - 16

PROJECT NUMBER: **2522.012.024**
PROJECT NAME: **Glen Cove Former MGP Site**
LOCATION: **Glen Cove, Long Island, NY**
DRILLING CO: **Zebra Environmental Corporation**
DRILLING METHOD: **GeoProbe**
DRILLER/HELPER : **Bob Burawa/Luke Russ**
ENVIRONMENTAL SCIENTIST: **Jeff Diamond**

WEATHER : **Sunny, 55 deg F**
TOTAL DEPTH: **16'**
GROUND SURFACE ELEVATION: **51.03**
DATE BEGUN: **May 19, 2005**
DATE COMPLETED: **May 19, 2005**

PVC CASING (DIA.) -	1.75'	MATERIAL 1 -	Schedule 40 PVC	LENGTH 1 -	6'
SCREEN (DIA.) -	1.75'	MATERIAL 2 -	Stainless Steel	LENGTH 2 -	10'
PVC CASING (DIA.):	2"	MATERIAL 3 -	Steel Casing with Concrete Pad	LENGTH 3 -	1'x1'

DEPTH	WELL CONSTRUCTION	WELL SCHEMATICS



BENTONITE SEAL 0 - 4.5'

SOLID PVC CASING 0 - 6'

SAND PACK (#00) 4.5' - 6'

PVC 20 SLOT SCREEN 6 '- 16'

Groundwater Well Installation Log

GCMW-20S

Project Glen Cove Former Manufactured Gas Plant Site
City / Town Glen Cove, New York
Client National Grid
Contractor Island Pump & Tank
Driller **GEI Rep.** C. Anastasiou

GEI Proj. No. 093270-4-1405
Location
N 251711.00
E 1088493.70
Install Date 6/6/2014

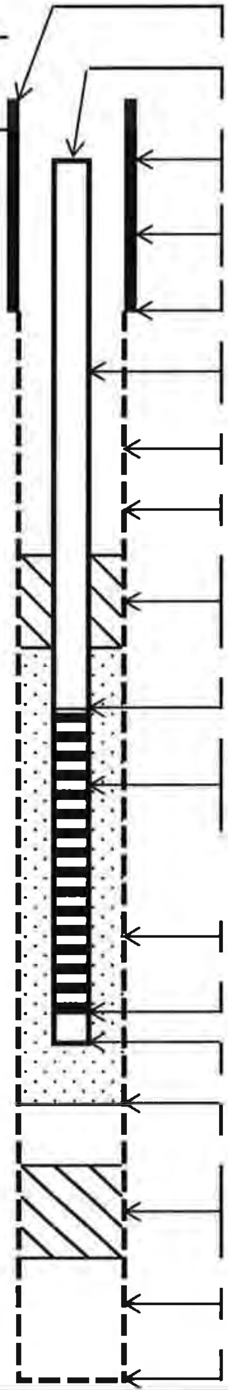
Survey Datum: NAVD 88

Ground Elevation: 54.83

Date	Time	Distance to ▼ below top of riser pipe

General Soil Conditions (Not to Scale)

Soil was not logged.



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	5 ft
Type of Seal	bentonite
Depth Bottom of Seal	7 ft
Depth Top of Screened Section	9 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	19 ft
Depth Bottom of Silt Trap	21 ft
Depth Bottom of Filter Material	21 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	21 ft

Notes:

GEI Consultants

Groundwater Well Installation Log

GCMW-20I

Project	Glen Cove Former Manufactured Gas Plant Site	**GEI Proj. No.**	093270-4-1405
City / Town	Glen Cove, New York	**Location**	
Client	National Grid	N	251710.00
Contractor	Island Pump & Tank	E	1088501.80
Driller	**GEI Rep.** C. Anastasiou	**Install Date**	6/5/2014

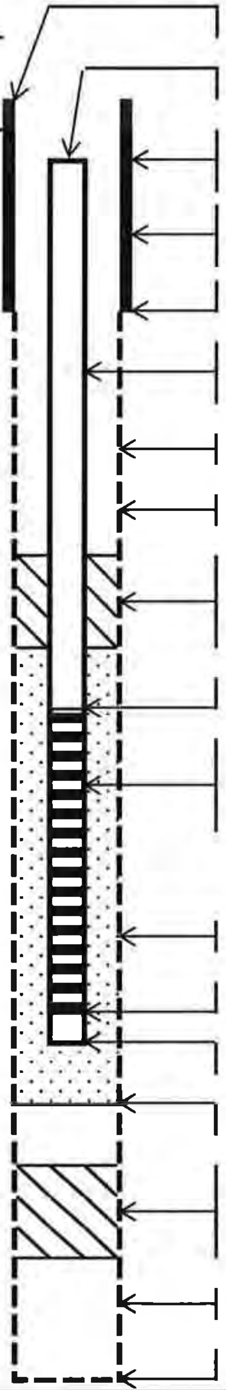
Survey Datum: NAVD 88

Ground Elevation: 54.8

Date	Time	Distance to ▼ below top of riser pipe

General Soil Conditions (Not to Scale)

Soil was not logged.



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	20 ft
Type of Seal	bentonite
Depth Bottom of Seal	23 ft
Depth Top of Screened Section	25 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	35 ft
Depth Bottom of Silt Trap	37 ft
Depth Bottom of Filter Material	37 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	37 ft

Notes:

GEI Consultants

Groundwater Well Installation Log

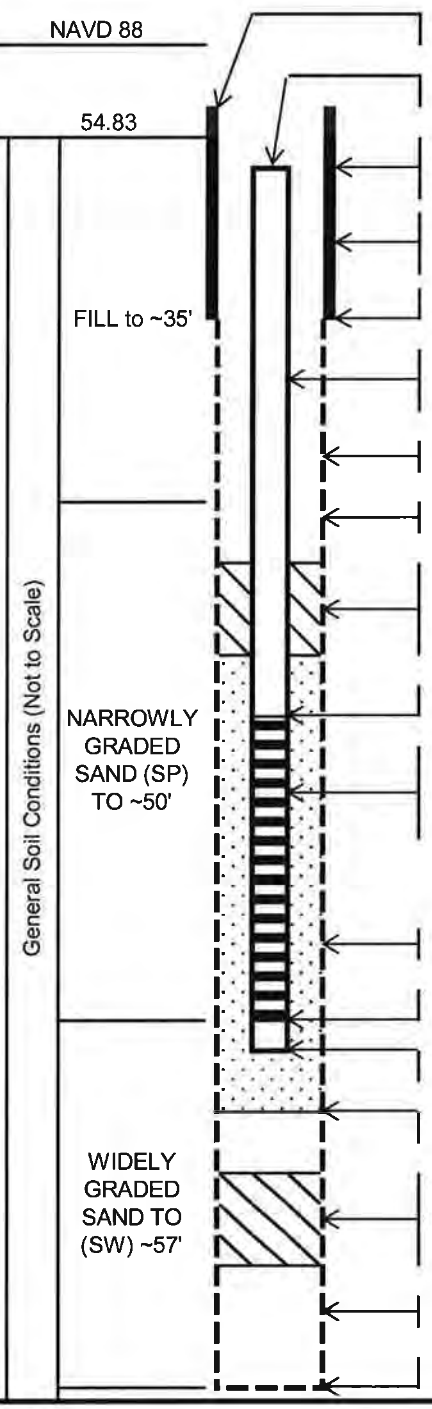
GCMW-20I2

Project	Glen Cove Former Manufactured Gas Plant Site
City / Town	Glen Cove, New York
Client	National Grid
Contractor	Island Pump & Tank
Driller	
GEI Rep.	C. Anastasiou

GEI Proj. No.	093270-4-1405
Location	
N	251711.70
E	1088498.60
Install Date	6/5/2014

Survey Datum: NAVD 88

Ground Elevation: 54.83



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	41 ft
Type of Seal	bentonite
Depth Bottom of Seal	43 ft
Depth Top of Screened Section	45 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	55 ft
Depth Bottom of Silt Trap	57 ft
Depth Bottom of Filter Material	57 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	57 ft

Date	Time	Distance to ▼ below top of riser pipe

Notes:

GEI Consultants

Groundwater Well Installation Log

GCMW-21I

Project	Glen Cove Former Manufactured Gas Plant Site	**GEI Proj. No.**	093270-4-1405
City / Town	Glen Cove, New York	**Location**	
Client	National Grid	N	251792.00
Contractor	Island Pump & Tank	E	1088574.90
Driller	**GEI Rep.** C. Anastasiou	**Install Date**	5/22/2014

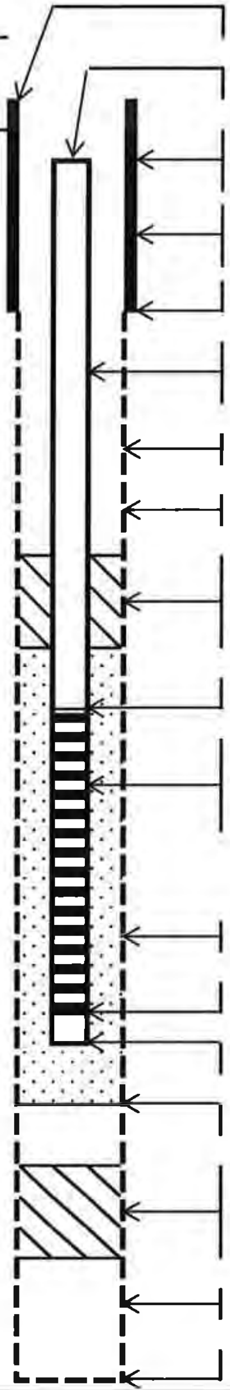
Survey Datum: NAVD 88

Ground Elevation: 77.1

Date	Time	Distance to ▼ below top of riser pipe

General Soil Conditions (Not to Scale)

Soil was not logged.



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	40 ft
Type of Seal	bentonite
Depth Bottom of Seal	43 ft
Depth Top of Screened Section	45 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	55 ft
Depth Bottom of Silt Trap	57 ft
Depth Bottom of Filter Material	57 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	37 ft

Notes:

GEI Consultants

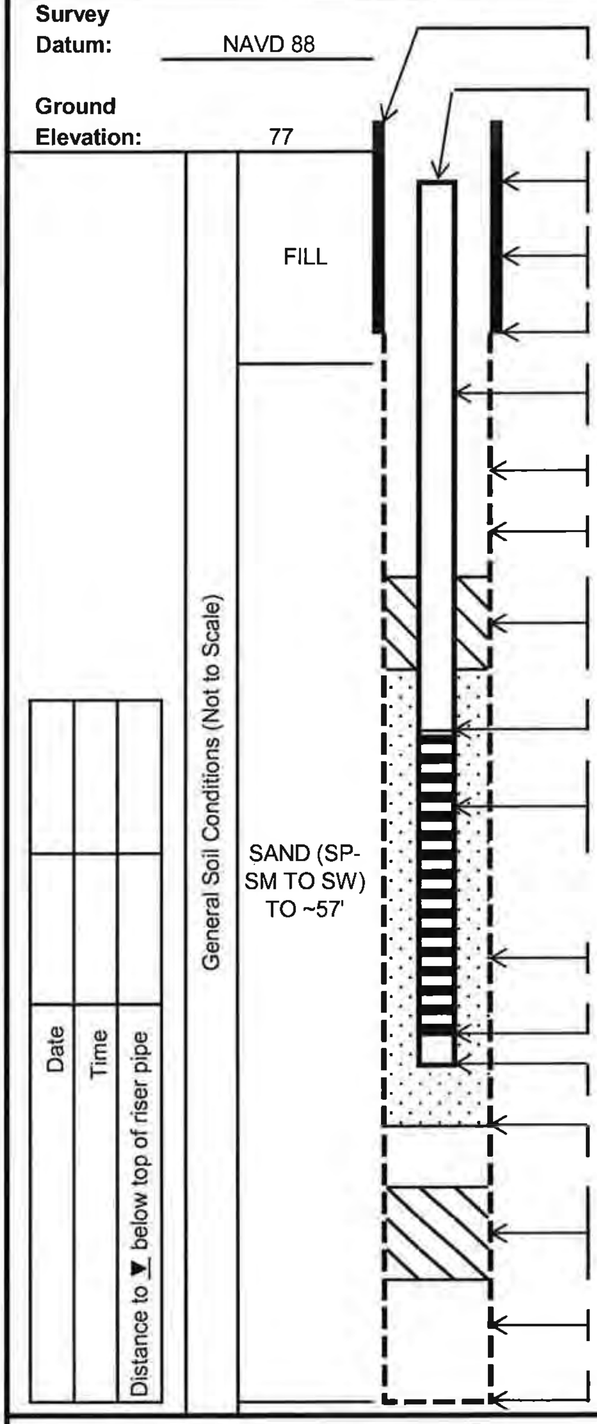
Groundwater Well Installation Log

GCMW-21I2

Project	Glen Cove Former Manufactured Gas Plant Site	**GEI Proj. No.**	093270-4-1405
City / Town	Glen Cove, New York	**Location**	
Client	National Grid	N	251789.20
Contractor	Island Pump & Tank	E	1088576.20
Driller	**GEI Rep.** C. Anastasiou	**Install Date**	5/21/2014

Survey Datum: NAVD 88

Ground Elevation: 77



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	40 ft
Type Seal	bentonite
Depth Bottom of Seal	43 ft
Depth Top of Screened Section	45 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	55 ft
Depth Bottom of Silt Trap	57 ft
Depth Bottom of Filter Material	57 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	57 ft

Notes:

GEI Consultants

Groundwater Well Installation Log

GCMW-22I

Project	Glen Cove Former Manufactured Gas Plant Site	**GEI Proj. No.**	093270-4-1405
City / Town	Glen Cove, New York	**Location**	
Client	National Grid		N 251674.10
Contractor	Island Pump & Tank		E 1088485.70
Driller	**GEI Rep.** C. Anastasiou	**Install Date**	6/3/2014

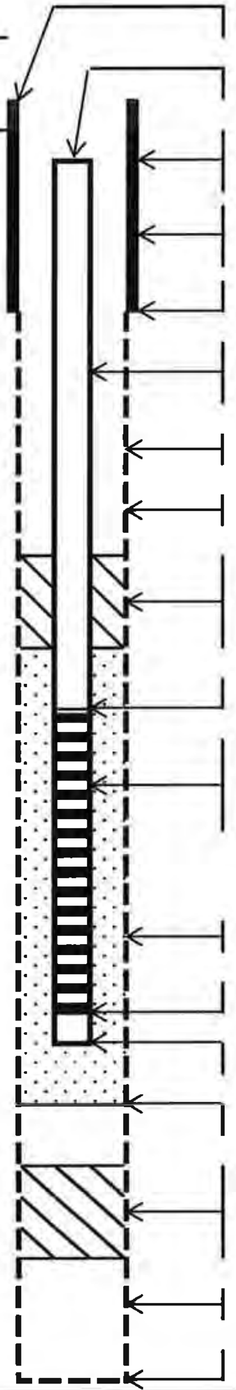
Survey Datum: NAVD 88

Ground Elevation: 54.84

General Soil Conditions (Not to Scale)

Soil was not logged.

Date	Time	Distance to ▼ below top of riser pipe



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	23 ft
Type of Seal	bentonite
Depth Bottom of Seal	25 ft
Depth Top of Screened Section	27 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	37 ft
Depth Bottom of Silt Trap	39 ft
Depth Bottom of Filter Material	39 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	39 ft

Notes:

GEI Consultants

Groundwater Well Installation Log

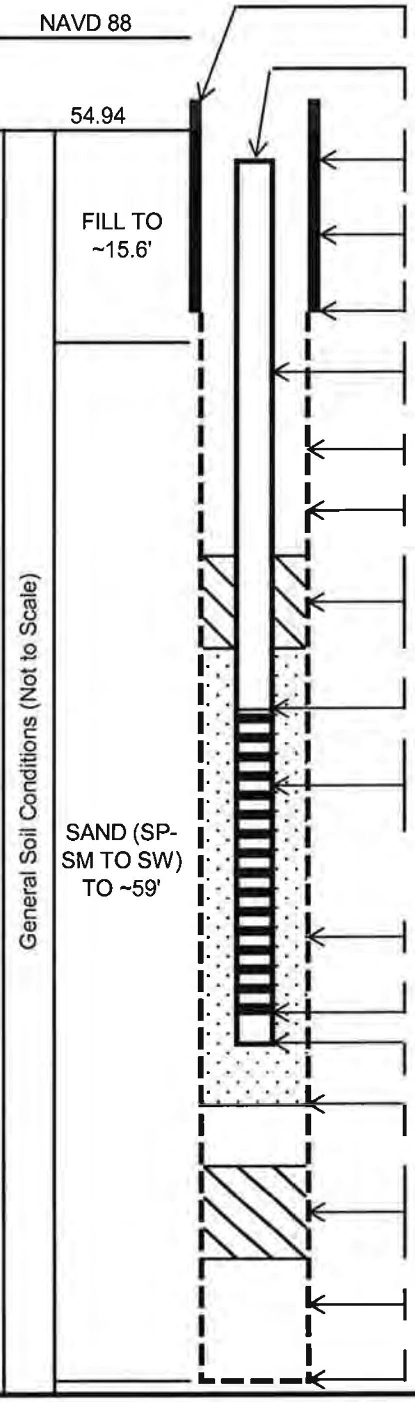
GCMW-22I2

Project	Glen Cove Former Manufactured Gas Plant Site
City / Town	Glen Cove, New York
Client	National Grid
Contractor	Island Pump & Tank
Driller	
GEI Rep.	C. Anastasiou

GEI Proj. No.	093270-4-1405
Location	
N	251670.70
E	1088483.80
Install Date	6/2/2014

Survey Datum: NAVD 88

Ground Elevation: 54.94



Length of Surface Casing above Ground	0 ft
Dist. Top of Surf. Casing to Top of Riser Pipe	0.4 ft
Type and Thickness of Seal around Surface Casing	~2 in. concrete
ID of Surface Casing	8 in.
Type of Surface Casing	locking flush mount
Depth Bottom of Surface Casing	1.0 ft
ID and OD of Riser Pipe	2 in. ID/2.25 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	grout
Diameter of Borehole	4.25 in.
Depth Top of Seal	43 ft
Type of Seal	bentonite
Depth Bottom of Seal	45 ft
Depth Top of Screened Section	47 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	2 in. ID/2.25 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	57 ft
Depth Bottom of Silt Trap	59 ft
Depth Bottom of Filter Material	59 ft
Depth Top of Seal	NA
Type of Seal	NA
Depth Bottom of Seal	NA
Type of Backfill below Filter Material	NA
Bottom of Borehole	59 ft

Date	Time	Distance to ▼ below top of riser pipe

Notes:

GEI Consultants

RECOVERY WELL INSTALLATION LOG

GCRW-01

PG. 1 OF 1

Project	Glen Cove Former MGP		
Location	Orchard Substation, Glen Cove, NY		
Client	National Grid		
Contractor	Fenley & Nicol	Driller	Mike Mede
Inspected by	Mike Quinlan	Date Started	2/16/2012
Checked by	Mike Quinlan	Date Completed	2/16/2012

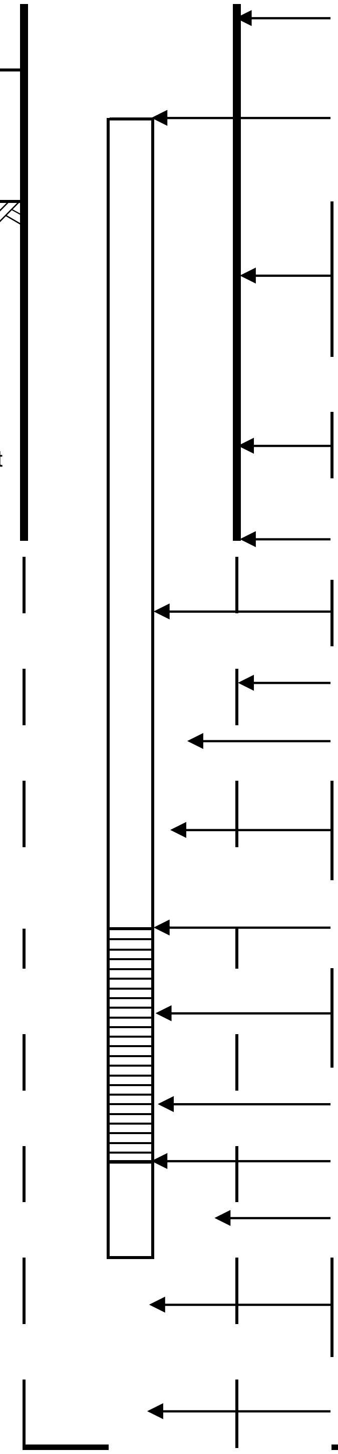
Boring No.	GCSB-103
Location	10 feet off sub- station fence
Project No.	093270-3-1303

SURVEY DATUM N 251682.08
E 1088528.03

GROUND ELEVATION 54.93

Sand throughout boring

GENERAL SOIL CONDITIONS (Not to Scale)



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	N/A
ELEVATION OF RISER PIPE	54.67
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	N/A
TYPE OF SURFACE CASING	N/A
DEPTH BOTTOM OF CASING (FT)	N/A
RISER PIPE DIAMETER(IN)	4"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	8"
TYPE OF BACKFILL AROUND RISER PIPE	Grout
DEPTH TOP OF SEAL, IF ANY (FT)	12'
TYPE OF SEAL	Bentonite
DEPTH BOTTOM OF SEAL (FT)	13'
DEPTH TOP OF PERVIOUS SECTION	15'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	4"
TYPE OF BACKFILL AROUND PERVIOUS SECTIOI	#1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	25'
DEPTH BOTTOM OF SUMP (FT)	30'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	Betonite
ELEV./DEPTH BOTTOM OF SEAL (FT)	31'
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Betonite

NOTES: #1 sand from 25' - 14'; #00 sand from 14'-13'

GEI Consultants

RECOVERY WELL INSTALLATION LOG

GCRW-02

PG. 1 OF 1

Project	Glen Cove Former MGP		
Location	Orchard Substation, Glen Cove, NY		
Client	National Grid		
Contractor	Fenley & Nicol	Driller	Mike Mede
Inspected by	Mike Quinlan	Date Started	5/7/2012
Checked by	Mike Quinlan	Date Completed	5/8/2012

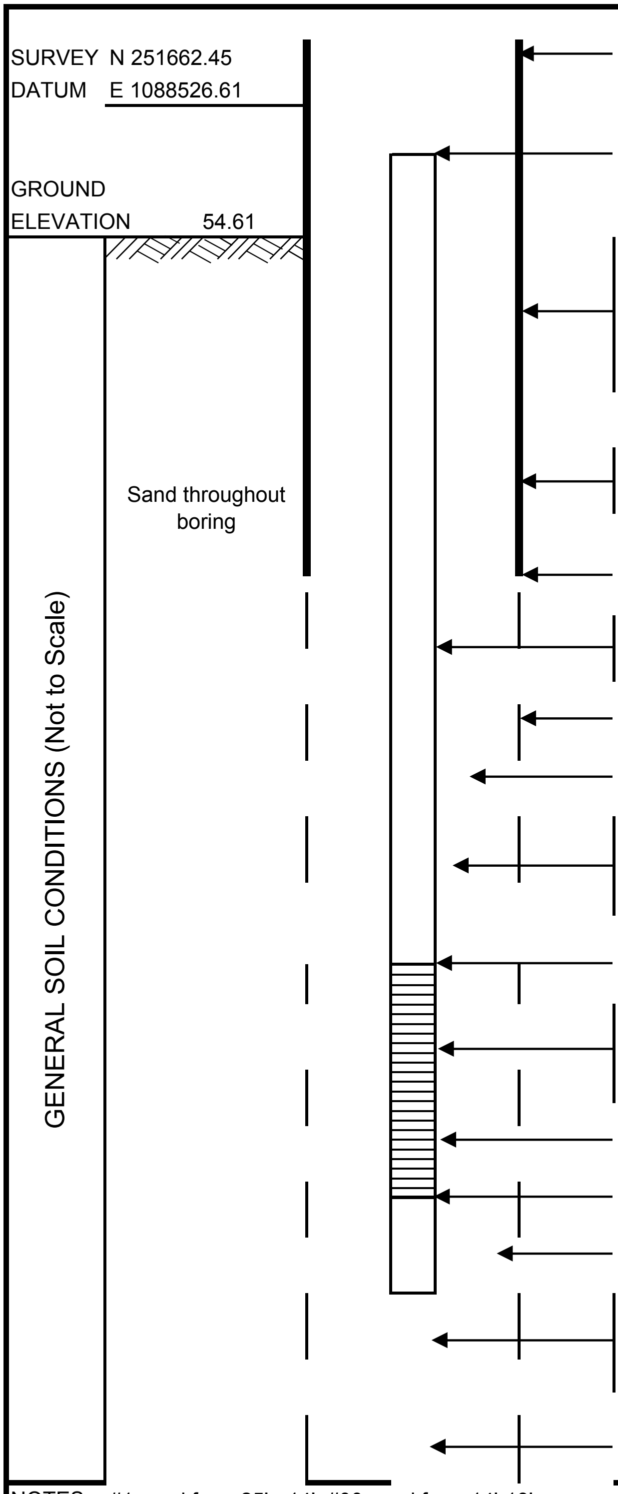
Boring No. GCSB-105

Location 10 feet off substation fence

Project No. 093270-3-1303

SURVEY DATUM N 251662.45 E 1088526.61

GROUND ELEVATION 54.61



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	N/A
ELEVATION OF RISER PIPE	54.01
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	N/A
TYPE OF SURFACE CASING	N/A
DEPTH BOTTOM OF CASING (FT)	N/A
RISER PIPE DIAMETER(IN)	4"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	8"
TYPE OF BACKFILL AROUND RISER PIPE	Grout
DEPTH TOP OF SEAL, IF ANY (FT)	12'
TYPE OF SEAL	Bentonite
DEPTH BOTTOM OF SEAL (FT)	13'
DEPTH TOP OF PERVIOUS SECTION	15'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	4"
TYPE OF BACKFILL AROUND PERVIOUS SECTIO	#1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	25'
DEPTH BOTTOM OF SUMP (FT)	30'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	Betonite
ELEV./DEPTH BOTTOM OF SEAL (FT)	31'
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Betonite

NOTES: #1 sand from 25' - 14'; #00 sand from 14'-13'

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RECOVERY WELL INSTALLATION LOG

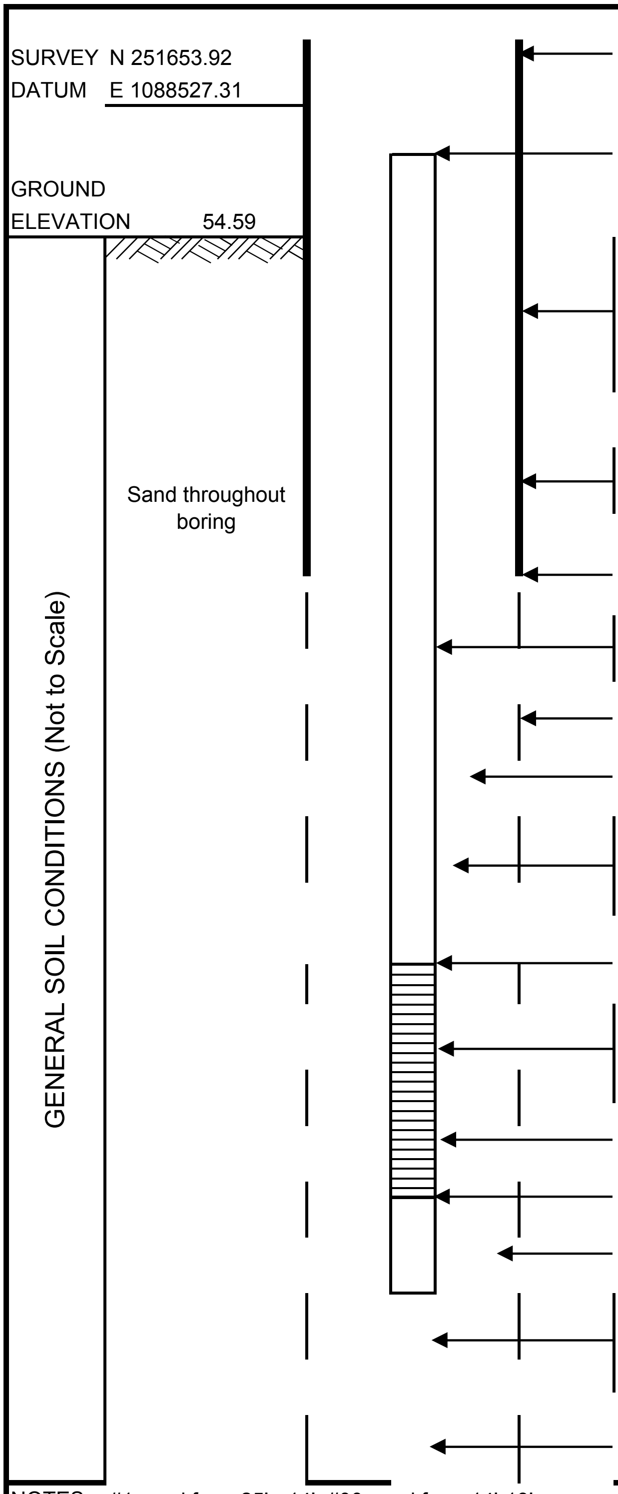
GCRW-03

PG. 1 **OF** 1

Project	Glen Cove Former MGP	Boring No.	GCSB-106
Location	Orchard Substation, Glen Cove, NY	Location	10 feet off substation fence
Client	National Grid	Project No.	093270-3-1303
Contractor	Fenley & Nicol	Driller	Mike Mede
Inspected by	Mike Quinlan	Date Started	5/8/2012
Checked by	Mike Quinlan	Date Completed	5/8/2012

SURVEY DATUM N 251653.92
E 1088527.31

GROUND ELEVATION 54.59



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)	N/A
ELEVATION OF RISER PIPE	54.37
THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)	0.5'
TYPE OF SURFACE SEAL (indicate any additional seals)	concrete
ID OF SURFACE CASING (IN)	N/A
TYPE OF SURFACE CASING	N/A
DEPTH BOTTOM OF CASING (FT)	N/A
RISER PIPE DIAMETER(IN)	4"
TYPE OF RISER PIPE	Sch 40 PVC
DIAMETER OF BOREHOLE (IN)	8"
TYPE OF BACKFILL AROUND RISER PIPE	Grout
DEPTH TOP OF SEAL, IF ANY (FT)	12'
TYPE OF SEAL	Bentonite
DEPTH BOTTOM OF SEAL (FT)	13'
DEPTH TOP OF PERVIOUS SECTION	15'
TYPE OF PERVIOUS SECTION	sch 40 PVC
DESCRIBE OPENINGS	0.020 slot
PERVIOUS SECTION DIAMETER (IN)	4"
TYPE OF BACKFILL AROUND PERVIOUS SECTIOI	#1 Sand
DEPTH BOTTOM OF PERVIOUS SECTION (FT)	25'
DEPTH BOTTOM OF SUMP (FT)	30'
ELEV./DEPTH TOP OF SEAL, IF ANY (FT)	
TYPE OF SEAL	Betonite
ELEV./DEPTH BOTTOM OF SEAL (FT)	31'
TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY	Betonite

NOTES: #1 sand from 25' - 14'; #00 sand from 14'-13'

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Appendix H

Groundwater Monitoring Well Sampling Log Form

Monitoring Well Sample Data Form

Project: ______________________

Well ID: ______________________

Sample Date: ______________________

Total Well Depth (from top of casing): ______________________

Depth to Water (from top of casing): ______________________

Well Diameter: ______________________

Volume of Standing Water in Well: ______________________

Sampling Crew: ______________________

Purge Time: *Start:* ______________________ *Finish:* ______________________

Purging Method: ______________________

Sampling Method: ______________________

Sample Time: *Start:* ______________________ *Finish:* ______________________

Sample Analysis: ______________________

Purge Data										
Sample Time	**Flow Rate** *(lpm/gpm)*	**Volume Purged** *(liters/gals.)*	**pH** *(std. Units)*	**Conductivity** *(mS/cm)*	**Turbidity** *(NTU)*	**Dissolved Oxygen** *(mg/l)*	**Temperature** *(Cel.)*	**Salinity** *(%)*	**ORP** *(mV)*	**Comments/Observations**
										Well Headspace PID =

nationalgrid

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York
February 2015

Appendix I

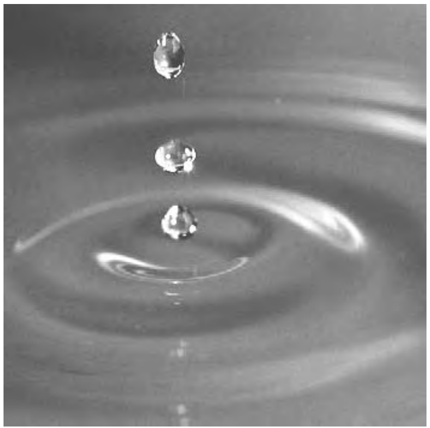
Field Sampling Plan

Geotechnical
Environmental and
Water Resources
Engineering

Field Sampling Plan

National Grid - Long Island, New York Sites

Prepared By:
GEI Consultants, Inc.
110 Walt Whitman Road, Suite 204
Huntington Station, New York 11746



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Section 1 – Introduction

Section 2 – Project Planning Activities (PP)

Section 3 – Field Documentation (FD)

Section 4 – Drilling Methods (DM)

Section 5 – Sample Collection and Field Screening (SC)

Section 6 – Solid Matrix Sampling (SM)

Section 13 – Groundwater Treatment System Inspection (SI)

Acronyms and Abbreviations

ACGIH	American Conference of Industrial Hygienists
AOC	Area of Concern
ASTM	American Society for Testing and Materials
BOD	Biological Oxygen Demand
BTEX	Benzene, Toluene, Ethyl Benzene, Xylenes
CAMP	Community Air Monitoring Plan
CD	Corrected Depth
CERCLA	Comprehensive Environmental Response, Cleanup, and Liability Act
CFR	Code of Federal Regulations
COC	Chain of Custody
DL	Detection Limit
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
DOT	Department of Transpsortation
DQO	Data Quality Objectives
EC	Engineering Controls
EIS	Environmental Impact Study
EM	Electro-Magnetic
EPA	Environmental Protection Agency
FID	Flame Ionization Detector
FS	Feasiblity Study

FSP	Field Sampling Plan
FWRIA	Fish and Wildlife Resources Impact Analysis
GAC	Granular Activated Carbon
GC/MS	Gas Chromatograph/Mass Spectrometer
GFAA	Graphite Furnace Atomic Absorption Spectrometry
GIS	Geographic Information Systems
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HASP	Health and Safety Plan
HDPE	High Density Polyethylene
HMI	Human Machine Interface
HOC	Halogenated Organic Compound
HPLC	High Pressure Liquid Chromatography
HSAs	Hollow-Stem Augers
HSO	Health and Safety Officer
HVAC	Heating Ventilating Air Conditioning
IATA	International Air Transport Association
IC	Institutional Controls
ICP	Inductively Coupled Plasma Atomic Emission Spectrometry
ID	Inner Diameter
IDW	Investigation Derived Waste
IHC	In-House Consultants

JHS	Jar Head Space
LEL	Lower Explosive Limit
LNAPL	Light Non-Aqueous Phase Liquid
MC	Macrocore®
MCL	Maximum Contaminant Level (for EPA Drinking Water Standards)
MDL	Method Detection Limit
MGP	Manufactured Gas Plant
MS/MSD	Matrix Spiked/Matrix Spiked Duplicate
MSDS	Material Safety Data Sheet
MTBE	Methyl Tert-Butyl Ether
NAPL	Non-aqueous Phase Liquids
NAVD	North American Vertical Datum
NCP	National Contingency Plan
NOAA	National Oceanic and Atmospheric Adminstration
NPL	National Priority List
NYSDEC	New York State Department of Environmental Conservation
OD	Outer Diameter
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl

PFD	Personal Floating Device
PID	Photoionization Detector
PM	Project Manager
PPE	Personal Protective Equipment
PUF	Polyurethane Foam
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance / Quality Control
QAPP	Quality Assurance Project Plan
QHEA	Qualitative Human Exposure Assessment
RAO	Remedial Action Objectives
RAP	Remedial Action Plan
RCRA	Resource Conservation Recovery Act
RD	Remedial Design
RFP	Request For Proposal
RI	Remedial Investigation
RP	Responsible Party
SARA	Superfund Amendments and Reauthorization Act
SAW	Surface Acoustic Wave
SC	Specific Conductance
SC (Section 11)	Site Characterization
SCGs	Standards, Criteria, and Guidance
SMP	Site Management Plan
SOP	Standard Operating Procedure

SOW	Scope of Work or Statement of Work
SPLP	Synthetic Precipitate Leaching Procedure
SPT	Standard Penetration Test
STEL	Short-Term Exposure Limit
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compounds
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Indentified Compound from Mass Spectrometry
TLV	Threshold Limit Value
TOC	Total Organic Carbon
TOSCA	Toxic Substance Control Act
TPH	Total Petroleum Hydrocarbons
TVOC	Total Volatile Compounds
TWA	Time Weighted Average
UFV	Ultraviolet Fluorescence
USACE	United States Army Corps of Engineers
USCS	Unified Soil Colassification System
USEPA	United States Environmental Protection Agency
USGS	United States Geologic Survey
UST	Underground Storage Tank
UTM	Universal Transverse Mercator

VC	Vibracore
VOC	Volatile Organic Compounds
WAAS	Wide Area Augmentation System
WAFs	Work Authorization Forms
WP	Work Plan
XRF	X-Ray Fluorescence

Measurements

bgs	Below Ground Surface
ft	Feet or Foot
g	Grams
lpm	Liters per minute
Mf/L	Million fibers per liter
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
mil	0.001-inch
ml	Milliliter
mL/min	Milliliters per minute
msl	Mean Sea Level
mV	Millivolt
ng	Nanogram
NTUs	Nephelometric Turbity Units
PM-2.5	2.5 Microns
PM-10	10 Microns
ppb	Parts per billion
ppbv	Parts per billion by volume
ppm	Parts per million
ppmv	Parts per million by volume
psi	Pounds per square inch
µg	Microgram

µg/Kg	Microgram per kilogram
µg/L	Microgram per liter

Section 1

INTRODUCTION

1. Introduction

This document serves as a Field Sampling Plan (FSP) for various types of environmental sampling activities that may be utilized during implementation of Site Characterizations, Remedial Investigations, Interim Remedial Measures, Feasibility Studies, Remedial Designs, and/or Remedial Actions at National Grid sites in Long Island, New York. The primary intent of this document is to promote accuracy and consistency for field and office support operations.

This FSP encompasses a broad range of activities to improve the planning, implementation, and documentation of field and pertinent office operations. All methodologies presented in this document may not be applicable to site-specific situations. In the event of differences between the FSP and any site-specific work plan, including a work plan or a quality assurance project plan, the provisions of the site-specific plan will prevail.

This document is organized according to the chronological sequence of typical work flow proceeding from project setup to field activities and then to data collection.

The document contains two types of guidance:

General Guidance Procedures – Documents intended to be informative and not prescriptive. The documents are designed to provide necessary background information to adequately understand associated field processes.

Standard Operating Procedures (SOPs) – Documents intended to provide the necessary procedures and notes to successfully implement the operation.

This FSP incorporates requirements including but not limited to New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER)-10, Technical Guidance for Site Investigation and Remediation dated May 3, 2010, any applicable local, state, or federal requirements, and National Grid requirements. Each SOP is current as of the effective date indicated in the header and will be updated as necessary.

This document has been provided to all staff performing field tasks for National Grid sites in Long Island, New York.

2. FSP Layout Design

2.1 Header Information

i. Each SOP contains, within its designation, a two letter abbreviation of the general category in which it belongs (i.e. PP-001 means it is in Project Planning). The table of contents provides the definition for each abbreviation. The SOP name and number is provided in the header and footer of the document. As discussed in the previous section, GEI guidance documents are not given an SOP reference number.

ii. The revision number is provided in the header of each SOP.

iii. The effective date is provided in the header of each SOP. The effective date provides the date when the revisions to the SOP are in effect and provides information as to the last time the SOP was updated. Each SOP should contain the most up-to-date version and effective date.

2.2 Footer Information

i. Each footer contains the page number and total page numbers as well as a second reference to the SOP name.

2.3 Body of Text

i. Details of the SOP are provided sequentially.

ii. Notes are provided to understand precautions or common issues associated with the performance of the procedure.

iii. References provide sources for the creation of the SOP.

iv. Attachments provide reference to external documentation that could be reviewed in conjunction with the document.

v. Hyperlinks have been embedded in the document to assist with navigation throughout the document. Reference and inclusion of complete SOPs are included within this document. Each SOP should contain the most up-to-date version and revision date.

Section 2

PROJECT PLANNING ACTIVITIES (PP)

SUMMARY GUIDANCE

PP-001 General Guidance on Project Planning Activities

---

1. Objective

The purpose of this summary guidance section is to present a summary of the project planning activities that must be completed prior to the start of field activities. The following text outlines the steps which should be followed.

To begin, the task-specific work plan should be reviewed to identify the specifics of the task to be completed. This includes the type of work, sampling requirements, and schedule, among others. A site visit (if possible) should be made to verify that sample locations are accessible. Once the review of the work plan is completed, it can then be determined which steps need to be taken to start the project. A project planning checklist (see attached) should be completed and includes the items detailed below

2. Execution

- **Subcontractor Selection** – If the subcontractor is to be contracted through GEI, the subcontractor should be selected based on a combination of their qualifications and their proposed costs, if not identified in the Master Services Agreement. A minimum of two subcontractor cost proposals should be obtained for each task. The subcontractor selected to provide cost proposals should be on National Grid's approved list (listed in the site-specific Work Authorization Forms [WAFs]), otherwise prior approval will be necessary.
- **Subcontractor Agreement –** Once a subcontractor is selected, a subcontractor agreement between GEI and the subcontractor must be established. This agreement is task specific and should reference an approved proposal from the subcontractor.
- **Markouts –** If the project includes intrusive work, a utility markout request must be called in to Dig Net (811). Markouts must be called in at least 72 hours prior to the start of intrusive activities; however, five business days is recommended. If the work conducted is on private property, markouts by a private markout company should be obtained as public utility locating services will generally only identify line point-of-entry to a private property from a right-of-way. Markout verifications from Dig Net must be received at least one day prior to the start of field activities. Following the receipt of the markout verifications, a National Grid required markout verification spreadsheet and the GEI utility clearance form must be completed, and the markouts must be visually verified. The markout verifications, verification spreadsheet and the GEI utility clearance forms must be compiled and remain onsite during the duration of intrusive activity. In addition, markouts must be

checked every 10 days throughout the duration of intrusive work. For more information on markouts, please see SOPs PP-002 and PP-003.

- **Health and Safety –** A site-specific Health and Safety Plan (HASP) must be developed prior to any field work. The site-specific HASP must be reviewed by the staff involved in the project and signed prior to the start of work (by field staff). Subcontractors are required to provide their own HASPs (which are at a minimum, as strict as the GEI HASP), or must sign and comply with the GEI site-specific HASP. The subcontractor must also provide the proper certifications for the field crew, which should include, but is not limited to, OSHA certifications (8-hour and 40-hour HAZWOPER) and medical clearance documentation. In addition, tailgate safety meetings must be held daily, which discuss hazards related to the task being performed. For more information, please refer to the site-specific HASP. For the SOPs presented in this FSP, health and safety items must be adhered to during the conduct of all field activities.
- **National Grid Notifications –** prior to the scheduling of field activities, all team members should be identified. The appropriate National Grid project manager should be notified as soon as possible of the upcoming work and the proposed schedule. As a general rule, at least one week notice should be provided. National Grid will coordinate access to any private property where sampling is planned to be conducted.
- **Data Group Notification –** GEI's Data Group should be notified if laboratory analysis is to be performed. The Data Group should be made aware of the types of analysis being performed, the approximate number of samples to be collected, the validation requirements and turnaround times.
- **Lab Notification –** If laboratory analysis is needed, the selected laboratory should be notified as soon as possible to order the necessary sample bottles and supplies. They also should be informed of the anticipated amount of samples, type of analysis and required turnaround times.
- **Equipment –** Any specialized equipment or supplies, including Community Air Monitoring Program (CAMP) equipment, needed for the job should be ordered, to allow for sufficient lead time. CAMP equipment is required for any intrusive work. For more information on CAMP requirements, please see the site-specific HASP or Work Plan and SOPs AR-001 through AR-005.
- **Investigation Derived Waste (IDW) Management –** Consideration should be given to the management of IDW. Based on the work to be performed at the specific site, a determination needs to be made on how the IDW is to be handled. Possibilities include drums for soil and groundwater, frac tanks for groundwater or roll-offs for soil. Reducing

the amount of IDW generated through selection of the appropriate sampling and investigation methods, as well as cost and efficiency of disposal, should always be considered.

- **Background Information –** Prior to field activities, pertinent background information should be discussed with the field staff and GEI task and project managers. Such information may include: historical perspective, property owner/community member interests, potential litigation matters, access and logistical issues, safety concerns, National Grid requirements and concerns, among others.
- **As indicated above, prior to initiation of field activities, all National Grid requirements and concerns must be implemented and understood by GEI staff.**
- **Kick-off Meeting –** A kick-off meeting should be conducted prior to the start of field activities. At a minimum, the meeting should be attended by the project manager and field staff. This meeting should review the tasks to be completed, equipment needed, laboratory analysis, and a review of any necessary background information (including potential sensitivities associated with the site or work area of the site). Other items that should be discussed include the process of and the need to keep National Grid informed of the work progress (including any relevant observations) and the steps to be taken if a member of the field crew is approached/questioned by a regulator or a member of the public or media.

Attachment A

Project Planning Checklist
National Grid Sites
Long Island, New York

SITE: ____

PROJECT MANAGER: ____________________________________

Activity	Completed (Yes, No or NA)	Date Completed	Comments
Subcontractor Identified (if needed)			
Subcontractor agreement			
Markouts			
HASP			
Subcontractor certs obtained			
National Grid Notifications			
Data Group Notified			
Laboratory notified			
Equipment Ordered			
IDW Management			
Background info reviewed			
Kick-off meeting or call			

GEI CONSULTANTS, INC.
110 Walt Whitman Road, Suite 204
Huntington Station, New York

SG No. PP-002
Revision No. 0
Effective Date: November 2010

SUMMARY GUIDANCE

PP-002 General Guidance on Private Utility Markout

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1. Overview

Prior to installing any wells, performing excavations or penetrating the subsurface for any investigation; all service lines, including water, electrical power, natural gas, sewers, cable and product distribution piping, and others, must be mapped out on the ground surface. This requirement is independent of the need for borehole clearing to 5 feet. Both exercises together minimize the safety risk as well as the time and cost penalty associated with severing an underground line.

This guidance describes and recommends technologies that should be (and normally are) employed from the companies performing the mapping, which are private utility locators. Public utility locating services will identify line point-of-entry from a right-of-way, but in many cases are unwilling to mark locations within the footprint of a site. Even if the public companies provide onsite service, it is good insurance to have a private company verify buried utility locations because of the potential consequences of hitting an unknown buried utility.

Because subsurface lines may be metal, plastic, clay, or concrete, multiple technologies are generally needed for their identification. For most applications the following technologies are fit-for-purpose.

Electro-Magnetic (EM) Device: This technology uses an electro-magnetic field in the subsurface to accurately locate metallic lines or non-metallic lines incorporating a metallic trace wire along their surface. The field is created either by direct contact to the pipe or trace wire, or by an induced current via radio waves.

Sewer Sonde: For non-metallic lines where internal access is possible (such as cleanout ports in a sewer), a beacon or 'sonde' that emits a signal to a surface receiver as it is snaked through the pipe provides the same accuracy as the EM detector. If the internal condition of the pipe is desired, a camera can be deployed instead of only a sonde.

Ground Penetrating Radar (GPR): This technology involves radar waves reflecting to a surface receiver which provides a visual real-time map of the subsurface by which anomalies (such as pipes or tanks) may be detected. It has limitations in clay or wet soils and requires a skilled operator for interpretation. For high risk utilities (e.g. PVC natural gas lines without trace wire) where line-of-sight projection from site entry point to a kiosk or other building is uncertain, GPR should be considered.

For most sites, utility markouts using the above technologies can be conducted in about two hours, assuming work covers a limited area where subsurface activities will be conducted. Consideration should be given to mapping an entire site if as-built drawings are suspect and work is planned over an extended period of time.

SUMMARY GUIDANCE

PP-003 General Guidance on Maintaining Markouts

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1. Overview

Maintain the marks set down by utility operators/ locators at your site. Several steps should be taken to ensure site markouts are maintained/refreshed throughout the project.

Walk-through the site to become familiar with the markings and the locations of buried utilities. Pay special attention to any changes in direction that the underground facilities take. Consider photographing the markouts.

If the excavation will cause the removal or disturbance of markings, establish offset marks in order to maintain a reference point for those underground facilities.

Make sure that everyone involved in your excavation is aware of any offsets that have been established, any marks that have been compromised, or any other information regarding facility locations.

Don’t put spoil piles over markings.

If the markouts are located over grassy areas or if snow is expected, flags or stakes should be employed to avoid having the markouts washed away by rain or covered by snow.

Avoid driving machinery over stakes and flags. Paved areas should be swept periodically so that painted marks remain visible.

If marks have faded or have been compromised to the point where proper and safe excavation is no longer possible, call the public or private utility markout service and make a request for a new markout ticket. If the markings at your site are refreshed, make sure that you use the uniform color code.

Section 3

FIELD DOCUMENTATION (FD)

STANDARD OPERATING PROCEDURE
FD-001 Field Notebook

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1. Objective

Proper documentation of all site activities is a crucial part of the field investigation process. Documentation, relative to sampling procedures, includes sample labels, sample seals, field logbooks, chain of custody (COC) records, sample analysis request forms, and laboratory sample logs. The field notebook serves as a record of significant field activities performed or observed during the project. The field notebook provides a factual basis for preparing field observation reports, if required, and reports to clients and regulatory agencies. Example field notes are provided in Appendix A.

2. Execution

- Use a separate all-weather bound notebook for each site/location/ project number, as appropriate.
- Write neatly using black or blue waterproof indelible pen (or note if field conditions [i.e., cold or wet weather] require use of pencil).
- Write the project name, project number, book number (i.e., 1 of 3), and date 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.
- Number all of the pages of the field book starting with the first entry if notebook is not numbered already.
- Record activities as they occur.
- 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.
- Sign or initial and date the bottom of the last daily page of an entry. Place a diagonal line through unused portions of a page.
- Record the following information upon each arrival at the site:
    1. Date/time/weather/project number.
    2. GEI personnel.
    3. Purpose of visit/daily objectives.
    4. Record conversations with:
        a. Contractors.
        b. National Grid.
        c. Visitors (include complete names, titles, and affiliations whenever possible).
        d. GEI office staff.

        e. Landowners (site or abutters).
    5. If possible, record telephone numbers of individual contacts for the site in the field notebook.
    6. Note time of arrival and departure of individuals visiting the site.

- Potential additional observations to record (as needed):
    1. Type and quantity of monitoring well construction materials used.
    2. Use of field data sheets or electronic logging equipment (e.g. boring logs, monitoring well sampling logs, etc.).
    3. Ambient air monitoring data.
    4. Locations and descriptions of sampling points.
    5. Sample media (soil, sediment, groundwater, etc.).
    6. Sample collection method.
    7. Sample identification number(s) and date and time of sample collection.
    8. Approximate volume of groundwater removed before sampling.
    9. Field observations.
    10. Any field observations made such as pH, temperature, turbidity, conductivity, water level, etc.
    11. References for all maps and photographs of the sampling site(s).
    12. Information pertaining to sample documentation: bottle lot numbers/dates, method of sample shipments, COC record numbers, and overnight shipping numbers.
    13. Surveying data (including sketches with north arrows).
    14. Changes in weather.
    15. Rationale for critical field decisions.
    16. Recommendations made to the client representative and GEI Project Manager.
    17. Include a site sketch or representative site photograph of conditions at the end of the day, if required.
    18. Time.
    19. Summarize work completed/work remaining.

3. Notes

- Only record facts.
- Record all observations regardless of relevancy.
- Identify conditions or events that could affect/impede your ability to observe conditions.
- Do not use spiral notebooks because pages can be easily removed.

4. References

New Jersey DEP Field Sampling Procedures Manual, August 2005.

Yerington Mine Site SOP-03 Standard Operating Procedure Field Notes and Documentation, Revision 0 Revision Date: June 6, 2006.

ASFE Model Daily Field Report (1991), ASFE, Inc.

5. Attachments

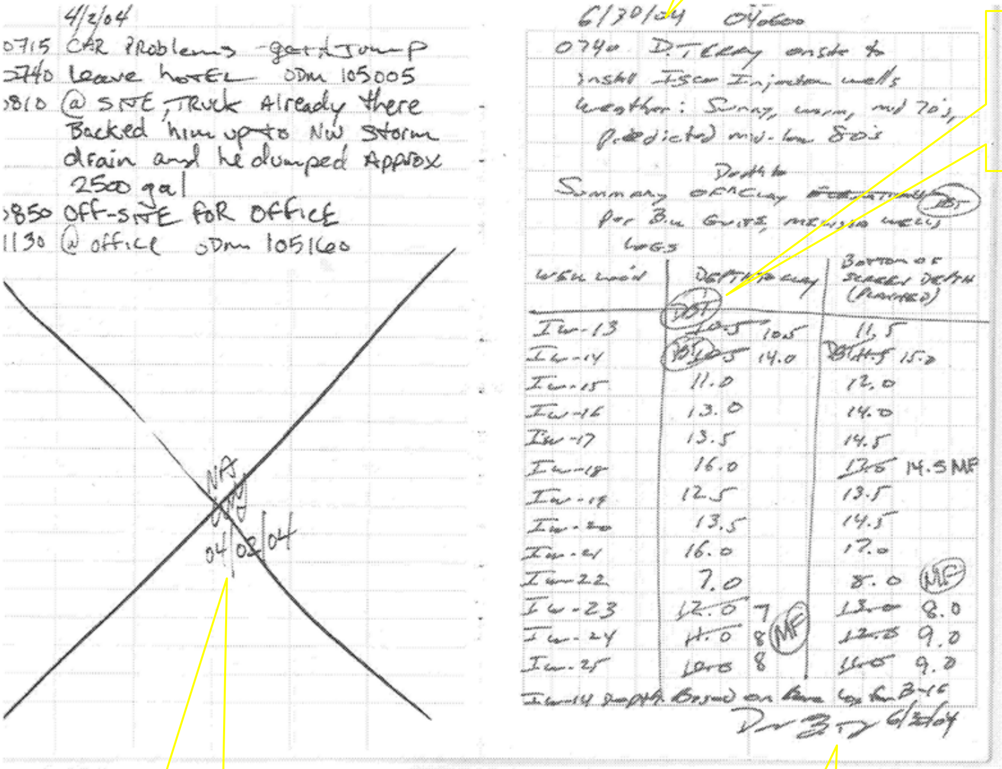
Attachment A – Example Field Notes

Attachment A

SOP FD-001

Attachment A – Example Field Notes

Start of each day includes:
- Date
- Project Number
- People on site
- Purpose of Work
- Weather Conditions



4/2/04
0715 CAR Problems - get Jump
0740 leave hotEL ODm 105005
0810 @ SITE, TRuck Already there Backed him up to NW Storm drain and he dumped Approx 2500 gal
0850 Off-SITE FOR OffICE
1130 @ office ODm 105160

04/02/04

6/30/04 04000
0740 D. Terry onsite to install ISCO Injection wells
Weather: Sunny, warm, mid 70's, predicted mid-low 80's

Summary of Depth to Clay ~~[illegible]~~ DBT for Bill Guite, measured well logs

Well ID	Depth to clay	Bottom of screen depth (Planned)
IW-13	~~10.5~~ 10.5 DBT	11.5
IW-14	~~10.5~~ 14.0 DBT	~~[illegible]~~ 15.0
IW-15	11.0	12.0
IW-16	13.0	14.0
IW-17	13.5	14.5
IW-18	16.0	~~17.5~~ 14.5 MF
IW-19	12.5	13.5
IW-20	13.5	14.5
IW-21	16.0	17.0
IW-22	7.0	8.0 MF
IW-23	~~12.0~~ 7 MF	~~13.0~~ 8.0
IW-24	~~11.0~~ 8	~~12.5~~ 9.0
IW-25	~~10.5~~ 8	~~11.5~~ 9.0

IW-14 depth based on boring log for B-16

6/30/04

Errors are single line crossed out and initialed

Blank Space crossed out and initialed

Bottom of each page signed and dated

STANDARD OPERATING PROCEDURE

FD-002 Field Observation Report

---

1. Objective

A Daily Report may be required to accurately summarize the activities, observations, and decisions made during the day's field work. The daily field observation report may serve as a permanent record of the day's activity for the Project Manager (PM), In-House Consultant (IHC), and National Grid.

2. Execution

- If required, at the close of the day's field work, a Daily Report must be prepared by the individual responsible for the field notebook. This report must be completed before leaving work for the day. Contents of the report should include, at a minimum, the following information.
    1. A record of person(s) present at the site, time of arrival, departure times (e.g., GEI, contractor(s), client, etc.).
    2. A record of the daily objective(s) and the activities performed (e.g., drilled five borings in the overburden).
    3. A summary of deviation(s) from the field plan or objectives.
    4. A summary of field decision(s) made, who made it/them, and the basis for such decision(s).
    5. A diagram, sketch, and/or map showing the location and extent of the work or other significant observation(s) made during the day.
    6. Any recommendations that may result from field observations and any actions that resulted from those recommendations.
    7. A summary listing and field sketch showing location(s) of field activity.
- Submit a draft report to the PM/IHC for review and editing related to the clarity and conciseness of the report. Complete any editorial changes, sign, date, and submit the report to PM/IHC for approval/signature. Field Observation Reports should be written neatly. They are not required to be typed unless specifically requested by the PM.

3. Notes

- Not all projects require daily field observation reports.
- The Field Observation Report should be based solely upon factual information, not opinions. Any speculation should be clearly noted in the report as such.

- The Field Observation Report should never be released to anyone other than the PM/IHC prior to review and signoff unless explicitly authorized by the PM/IHC.

4. References

New Jersey DEP Field Sampling Procedures Manual, August 2005.

Yerington Mine Site SOP-03 Standard Operating Procedure Field Notes and Documentation, Revision 0 Revision Date: June 6, 2006.

ASFE Model Daily Field Report (1991), ASFE, Inc.

5. Attachments

Attachment A – Example Daily Report Form

Attachment A

Attachment A: FIELD OBSERVATION REPORT

	Date:
Project :	**Report No.**
Client :	**Page:**
Contractor:	**GEI Proj. No.**

Time of Arrival: **Departure:** **Weather:**

Persons Contacted, Company **GEI Representatives**

Purpose of Site Visit:

Observations

1.

By:	**Reviewed By:**

STANDARD OPERATING PROCEDURE

FD-003 Sample Handling and Chain of Custody

---

1. Objective

To properly collect, label, document, preserve, package, and transport environmental samples; provide a record of the custody of any environmental field sample from time of collection to delivery to the laboratory. The chain of custody (COC) can be used as a legal document to demonstrate that samples were not mishandled and that they were delivered to the laboratory within the timeframe necessary to start analysis. A sample is under custody if it is in:

a) GEI’s possession;
b) GEI’s sight after being in GEI's possession;
c) it was in GEI’s possession and then it was locked up to prevent tampering; or
d) a designated secure area. GEI facilities are designated secure areas.

2. Execution

- Review the work plan and Quality Assurance Project Plan (QAPP) prior to sampling to determine the following:
    i. The analysis required by the work plan and sample volumes required by the laboratory to perform those analysis. (Be explicit when requesting analysis on the COC (e.g. rather than “VOCs” [Volatile Organic Compounds], write “VOCs 8260”.)
    ii. The turnaround time required by the project.
    iii. If the data will be sent directly from the laboratory to the data validator or Data Group.
    iv. Holding time restrictions for sampling media and analytical methods.
- Label the jar or bottle
- Following sample collection, the sample container is labeled using a waterproof marker with the sample ID, the date and time (military time) of sample collection, project number, sample preservatives, and the sampler’s initials. Sample custody begins at this time.
- Record the above information in the field notebook.
- Individually wrap sample jars with packing material. Place samples in a chilled (4°C) cooler immediately after collection.
- Complete a COC for the samples as described below, and sign off on the COC each time a new person takes possession of the samples. A COC form must accompany each shipment/delivery of samples to the laboratory. GEI or laboratory COC forms may be used as long as the laboratory form contains the same required information as described below.

- An example COC is provided in Attachment A.
- Place a custody seal on the cooler if shipping.
- Transport samples to the laboratory as soon as possible. It is preferable the samples are sent from the field rather than brought back to the office for submission at a later date.

2.1. Chain of Custody (COC) Completion

- Record the project name and number, the sampler's name(s) and the site, town, and state where the samples were collected.
- For each sample, enter the sample identification number, date and time (military time) collected, whether the sample is a grab or composite sample and the number of sample containers. Record the type of analysis (including laboratory method; e.g. EPA-SW846 Method XX) requested and the preservative (if appropriate) in the vertical boxes.
- When samples are ready to be relinquished, complete the bottom of the form with date and time (military time) and signatures of relinquisher and receiver of samples as indicated. The sample collector is always the first signature while the analytical laboratory is the final signature. Theoretically, all individuals handling the samples between collection and laboratory should sign the form; however, if a common carrier (i.e., FedEx, UPS) is used for shipping, GEI must identify the carrier in the 'Received by' box on the COC. If the sampler hand delivers the samples to the laboratory, the received box must be signed by the laboratory.
- Include turnaround time and project contact on the COC.
- The forms are in triplicate (white, yellow, and pink copies). The pink copy should be retained by the sampling personnel and provided to the Data Group for proper filing. The white and yellow copies should accompany the samples to the laboratory.
- Prior to sample shipment, the COC must be placed inside the cooler (in a ziplock bag or other watertight package taped inside the lid of the cooler), and the cooler must be sealed with a signed COC seal.
- If a common carrier such as FedEx is used to transport the samples to the laboratory, include the carrier tracking number and identify the carrier in the "Received by" box on the COC.
- Any unused sampling containers/media that is sent back to the lab should be included on the COC. Return samples to the laboratory in a timely manner.
- Field duplicates should be anonymous to the laboratory, but must be recorded for use by the Data Group. To keep track of this information, link the field duplicate with the proper sample in the field copy of the COC and also the field book.

- Prior to samples being sent to the laboratory, the project or task manager will check the COCs for accuracy against the sample tracking summary, if appropriate, or the work plan.
- After the samples are sent to the laboratory, the field copy must be sent to the Data Group. You can send the field copy with duplicate information in the mail to the Data Group.

3. Notes

- The field notebook must document all GEI personnel who had custody of any samples prior to shipping the samples to the laboratory, the samples must be relinquished to the shipper and the COC signed and dated by the sampler and the shipper, even if both people are GEI personnel.
- Keep the number of people involved in collecting and handling samples and data to a minimum.
- Only allow people associated with the project to handle samples and data.
- Always document the transfer of samples and data from one person to another on chain of custody forms.
- Always accompany samples and data with their chain of custody forms.
- Give sample identification at all times that is legible and written with permanent ink.
- When sending samples via a common carrier, use one COC per package.
- Do not send samples from more than one site with separate COCs in a single package.

4. References

New Jersey Department of Environmental Protection, Field Sampling Procedures Manual, August 2005.

Connecticut Department of Environmental Protection, Guidance for Collecting and Preserving Soil and Sediment Samples for Laboratory

Determination of Volatile Organic Compounds, Version 2.0 February 28, 2006.

5. Attachments

Attachment A – Example Chain of Custody

Attachment A

Chain of Custody Record

STL-4124 (0901)

STL Connecticut
128 Long Hill Cross Road
Shelton, CT 06484
Tel: 203-929-8140

EXAMPLE COC

SEVERN TRENT **STL**
Severn Trent Laboratories, Inc.

Client: GEI	Project Manager: Dave Terry	Date: 12-31-07	Chain of Custody Number: 00452
Address: 455 Winding Brook Dr	Telephone Number (Area Code)/Fax Number: 860 368 5300 / 860 368 5307	Lab Number:	Page 1 of 1
City: Glastonbury · State: CT · Zip Code: 06033	Site Contact: M. Felter · Lab Contact: Paul Hobart		
Project Name and Location (State): Carroll Gardens NY	Carrier/Waybill Number: FedEx 9383 7603 0879		
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	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Matrix:	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis (Attach list if more space is needed): VOC 8260B	SVOC 8270C	TO-15 + NAPHTHALENE	Special Instructions/ Conditions of Receipt
CGSB-01 (0-2)	12-31-07	1130				X		X						X	X		
CGSB-02 (3-4)	12-31-07	1250				X		X						X	X		
CGSB-02 (3-4) MS	12-31-07	1250				X		X						X	X		
CGSB-02 (3-4) MSD	12-31-07	1250				X		X						X	X		
CGSB-XX (5-6)	12-31-07	0800				X		X						X	X		
CGTB-123107	12-31-07	1400					TB				X			X			
CGGW-01	12-31-07	1430		X				X			X			X	X		
CGSG-01	12-31-07	0700-1500	X													X	CANISTER# 2613 REGULATOR# 779

[illegible] NEW JERSEY: "CLP data package deliverables"

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 See Contract

QC Requirements (Specify) NYS Cat B ASP deliverable send EDD to datagroup@geiconsultants.com send to Lorie Mackinnon

1. Relinquished By: Melissa J Felter	Date: 12-31-07	Time: 1600	1. Received By: FedEx	Date: 12-31-07	Time:
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments
USED FLOW CONTROLLER FOR AIR SAMPLE INCLUDED

TRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

GEI CONSULTANTS, INC.
110 Walt Whitman Road, Suite 204
Huntington Station, New York

SOP No. FD-004
Revision No. 0
Effective Date: November 2010

STANDARD OPERATING PROCEDURE

FD-004 Photo Documentation

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1. Objective

To properly document and retain photographic records. Keeping a record of photographs taken is crucial to their validity as a representation of an existing situation.

2. Execution

- Photographs of a site, individual samples, or other observations should be taken using a digital camera.
- All photographic records should be recorded in the Field Notebook (SOP FD 001) and the following information should be recorded in the field notebook:
    i. Number of photograph in sequence.
    ii. Compass direction describing the direction the photograph was taken (e.g. looking southeast).
    iii. Brief description of what the photograph is intended to show.
- The field notebook should also note who took the photographs, and the date and time each photograph was taken.
- The photographs should be electronically backed up on a computer or other data storage device.
- Photographs should be placed on a photograph record template and the relevant information describing the photograph should be inserted into the caption section for each photograph.

3. References

New Jersey Department of Environmental Protection, Field Sampling Procedures Manual, August 2005.

4. Attachments

Attachment A – Example of Photo Documentation Template

Attachment A

Attachment A – Example of Photographic Record

GEI Consultants, Inc.

Project: Project Name

Location: Project Location

Photographer:	K. Barber
Date:	10/25/07
Photo No.:	1
Direction:	N

Comments:
Entrance of site with tree mulching operations.

Photographer:	K.Barber
Date:	10/25/07
Photo No.:	2
Direction:	W

Comments:
On-site building built in 1936.

STANDARD OPERATING PROCEDURE

FD-005 Surveying and Mapping Specifications

---

1. Objective

The objective of this Standard Operating Procedure (SOP) is to present the minimum requirements for establishing horizontal and vertical surveying control for field programs. Accurately surveyed locations are a key element in the evaluation of all field data, and are necessary for the preparation of geologic profiles and the interpretation of horizontal and vertical groundwater flow directions, and the locations of facilities. The accuracy of measurements and established elevations is particularly important when groundwater gradients are low, as errors may easily lead to misinterpretation of the direction of groundwater flow. The survey is usually performed after the field activities have been completed. Activities and land features requiring accurate horizontal and vertical control include:

- borings;
- test pits and trenches;
- monitoring wells and piezometers;
- geophysical surveys;
- surface water and drainage features;
- buildings and structures; and
- underground utilities and storage tanks as marked on the surface.

2. Execution

Mapping shall be based on field measurements and calculated to sufficient accuracy to be in conformance with A-2 standards, regardless of the intended end product of such work.

Standard site plans, as a minimum, shall provide the following elements:

- Location of all surface features, including, but not limited to: buildings, structures, fences, aboveground utilities, drainage equipment, underground features as marked on the surface, limits of pavement, landscaped or graded areas, and a general description of surface material and vegetation. All monitoring wells, soil borings, test pits, and other samples points shall be located.
- Location of all enclosed or abutting water bodies. Flow direction of rivers, streams, or surface drainage shall be noted with arrows.
- Location of boundaries by reference to other plans, when available, and to lines of occupation, where apparent. If this information does not exist, the surveyor shall make reference to Assessor's map and lot numbers.

- Disclaimers of certification to boundary and title should be prominently displayed.
- Location of surface features on abutting properties to a distance of 100 feet beyond property boundaries of study area are desired where practical, but in any case, to a minimum of 20 feet. Names of abutting property owners, as listed by the Town Assessor, shall be included.
- Include a location map of sufficient scale and detail to locate the site from a statewide reference.
- Provide a verbal and graphical scale of distance. All maps shall include a north arrow with reference to direction (magnetic, true, or grid). Unless a site-specific grid system is required, NAD83 (2007) should be identified as the horizontal datum.
- All maps shall be accompanied by copies of all field notes and sketches used in their preparation. The surveyor shall provide a coordinate and elevation list for all control and location points.
- Topography, when requested, shall conform to Class T-2 standards (90 percent of contours true to within 1/2 contour interval). The vertical datum should be identified on the plan. Monitoring well elevations shall be established at the ground surface and at the top of casing or riser.
- Requirements for location by state plane coordinates will include reference to geodetic monuments or global positioning system (GPS) base stations used.
- Plan should comply with GEI's Section 3 "File Specifications for Subcontractors" provided below.

Requests for boundary survey entail the following additional requirements.

- Examination of record descriptions of the property and adjoining parcels, of record surveys and plans, and of record easements appurtenant to the property. Record search will extend long enough to determine the original intended boundary locations. Certification as to ownership should be provided by the client's legal counsel.
- Location and description of all boundary monumentation found.
- Location of record easements and visible evidence of entry.
- Location and description of apparent encroachments by structures, occupation, and improvements on the property.
- Location and description of any conflict between deed description and actual occupation.
- Distance and bearing of property lines are to be shown to the nearest hundredth foot (0.01') and arc second (0°00'01"). Area should be shown in decimal acres and/or square feet.

- Plans should include certification as to conformation to state standards for boundary and topographic survey. No other certifications should be provided, except as specifically negotiated with the client.

2.1. Survey Requirements for Exploration Programs

The project manager shall go over the survey program with the survey chief to be sure that all requirements are understood and that the survey crew is alerted to potential site hazards.

The following criteria should be met for all survey programs.

- The survey is to be performed by or under the direction of a registered professional land surveyor.
- The survey shall be accurately performed to a precision of 0.01 foot for vertical control and 0.1 foot for horizontal control.
- Horizontal control is to be related to either a state plane coordinate system or the Universal Transverse Mercator (UTM) coordinate system. North American Vertical Datum (NAVD) 1988 should be used as the vertical datum unless a site-specific datum is required.
- Elevation precision to be obtained at monitoring wells and piezometers shall be:
    i. Top lip of protective casing without cover (0.01 foot); this point should only be used for vertical control and not for water-level measurements.
    ii. Top of monitoring well riser pipe (0.01 foot); a permanent reference point should be marked on the top of the riser to be used as the measuring point for all water-level measurements.
- Establish a permanent site benchmark on the most stable nearby feature and note its location on survey maps.
- The surveyor should submit a report of the survey, including a copy of all original field notes. Survey information needs to be reviewed carefully with respect to horizontal and vertical determinations. Survey errors may often be caught by using relative distances between wells or noting apparent anomalies in water levels or flow directions.

2.1.1. Previous Use of a Datum Other Than Mean Sea Level

Many times a parcel of land contains a previously established vertical benchmark on site to which elevations have been referenced. Such an arbitrary local datum may not provide any specific information about its relationship to Mean Seal Level (MSL), or a standard vertical datum. An arbitrary datum, when used, should be identified as a local or arbitrary datum. In other cases, when a standard city-wide local datum is used, the vertical relationship to the standard datum should be provided.

Otherwise, surveys at all sites subject to agency review shall be referenced to NAVD88.

2.1.2. Weather Conditions

Inclement conditions increase the chance for errors in identification, measurement, and recordings. Surveyors need to take extra time to assure proper identification of all monitoring wells surveyed, to guarantee ice- and snow-free surface elevation shots, and to carefully record survey data despite adverse conditions. Obtaining stable tripod set-ups may be more difficult under these conditions. Sightings should use shorter distances than under more favorable conditions. Warm, sunny days generate heat waves that may present problems for optical instruments.

2.1.3. Work at Hazardous Waste Sites

Surveyors need to be made aware of hazardous site conditions and potential exposures. Surveyors should have been enrolled in a health monitoring program for any sites which require personal protection above Level D. Note that anticipated risks to surveyors would be expected to be less than for those engaged in collecting samples or in subsurface explorations. However, potential exposure to hazardous materials should be pointed out and appropriate protective equipment worn and used. Surveyors shall also be made aware of other site activities and procedures for evacuation in case of emergency.

3. File Specifications For Subcontractors

3.1. General File Standards

- The method of naming files shall incorporate the name of the site and/or the GEI project number and the content. For example, SITE NAME-001110-Site Layout.
- All files provided to GEI will be electronically transmitted or recorded on CD, DVD, or other permanent recording medium. All referenced files and other supporting files such as special line types, color tables, images, etc., shall be included.
- All files are to be provided in .DWG or .DXF format and shall be compatible with AutoCAD Release 2007.
- It will be standard procedure to have purged all unused entities from a CAD file prior to delivery.
- Each file will be clearly labeled as follows:
  i. Project No.:
  ii. Project Name:
  iii. Drawing Title:
  iv. File Size:
  v. Date:

    vi. Revised Date:

- Files which contain non-standard ACAD fonts, line types or custom menus are not acceptable.

3.2. General Drafting Standards

- All entity line types, colors, etc. are to be defined “BYLAYER.”
- It shall be standard to use “object snap” for the creation or insertion of all entities (as compared to “eyeballing”).
- All symbols will be originally drawn on layer “0.” This will allow the symbol to acquire the color and line type properties it is inserted on. All symbols used to define sample locations are to contain attributes describing the sample identifier and any elevation data required by contract.
- All line entities are to be continuous polylines (PLINES).
- All text shall be rotated such that it is readable from the bottom of the sheet and from the right of the sheet. It will be standard to use the AutoCAD style “STANDARD” and Arial font whenever possible. All text shall be of a size such that it is legible when plotted at the file's intended scale.
- North up or to the right.

3.3. General Layering Standards

- The following are some of the acceptable layer names. Others may be added as needed. Descriptions of new layers are to be provided to GEI.
    i. PROPERTY (property lines)
    ii. TRAVERSE
    iii. BASELINE
    iv. BUILDING (buildings, other on-site/off-site structures)
    v. STREET
    vi. ELEC (all electrical lines, manholes, power poles, transformers)
    vii. WATER (all water lines, manholes, hand holes, gates, valves)
    viii. SAN (all sanitary sewer lines, manholes, catch basins, if combined sanitary/storm sewer)
    ix. STM (all storm sewer lines, manholes, roof drains, catch basins)
    x. CONTOUR (all contour lines & labels)
    xi. TEL (telephone)
    xii. GAS (all gas lines, valves, etc.)
    xiii. TEXT
    xiv. TANKRIVER
    xv. STREAM
    xvi. SEDIMENT (sediment sample location)
    xvii. SURFACE SOIL (surface soil sample location)
    xviii. MW (monitoring well location)

xix. BORING (soil boring location)
xx. SURFACE WATER (surface water sample location)
xxi. PAD, SLAB, STRUCTURE, FND (foundations or miscellaneous structures)
xxii. EASEMENT
xxiii. SAMPLING LAYERS (begin with “E” existing or “P” proposed)

3.4. Additional Data Required

- All files shall be accompanied by a “check plot” of each file. The “check plot” shall be checked for accuracy and corrected as necessary.
- Whenever surveyed files are supplied to GEI, they shall be considered incomplete until GEI is provided with copies of all field notes and sketches, data printouts, and a point reference file (if applicablel).

STANDARD OPERATING PROCEDURE

FD-006 Handheld Global Positioning Receiver Operation

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1. Objective

Use handheld global positioning system (GPS) receivers to locate sample points and site features with “Mapping-Grade” accuracy.

Use handheld GPS receivers to “stake out” proposed sample point locations within the limits of “Mapping Grade” accuracy.

2. Execution

- Handheld GPS receivers provide a low-cost and user-friendly method for locating sample points and site features with a fair degree of horizontal accuracy.
- In simplistic terms, GPS works by measuring the distance from numerous orbiting satellites to a point on the earth surface. Individual satellites broadcast their real-time location in terms of x, y and z coordinates, and the distance from each satellite is measured as a function of the length of time that a time-stamped signal takes to reach the receiver. Built-in GPS software derives new points by intersecting the distances from known orbital locations – in much the same way that points are located by intersecting tape-measured distances from building corners or other pre-existing site features.
- Late-model handheld GPS receivers utilize a real-time differential correction technique called WAAS (Wide Area Augmentation System). This system was designed to provide greater confidence and reliability in using GPS data for commercial aircraft landing approaches, and the additional correction improves all GPS operations.
- Handheld GPS receivers display navigational information on a variety of standard pages. Although each manufacturer uses slightly different formats, all receivers toggle back and forth between the following visual presentations:
    i. A “satellite” page displays the relative orbital location of all GPS satellites that are currently being tracked by the receiver. The display may include information on the real-time geometrical strength of the solution: satellite intercepts that cross at right angles provide more accurate solutions than intercepts that cross at acute or obtuse angles.
    ii. A “track” page that displays the travel path of the receiver while it is turned on, along with the relative location of recorded points. Many GPS models have a “track-back” function that will guide the user on the same path back to the starting point.

    iii. A “navigation” page that displays instantaneous location and the real-time direction and velocity of travel. Some units provide two pages to display this information in different formats. Most units will report the overall “course made good” (straight-line bearing and distance from the starting point) at any point.
    iv. A “waypoint” page that allows users to “Go To” a created point or previously recorded point by providing a straight-line bearing and distance to the point. The information is instantaneously updated as the user moves along; some units display a pointing arrow that directs the user to the direction of travel. Be careful of go-to lines that lead through swamps or over cliffs – if you will be travelling in difficult terrain have a paper copy of the USGS quadrangle and a compass on hand for navigation.
- Signal strength degrades significantly next to buildings and underneath tree canopy. Most GPS receivers have an “averaging” function to improve the accuracy of shielded locations. GPS users can also improve precision by locating points three times, at different times of the day. Two of the solutions will generally be closer to each other than to the third and can be averaged for a more reliable fix.
- Most GPS receivers default to latitude and longitude, but data is more accurate and easier to input and when expressed in Universal Transverse Mercator (UTM) coordinates to the nearest meter. The handheld GPS setup will have a function somewhere to change to UTM. All of Long Island is in UTM Zone 18.
- Consult “Corpscon” the datum translator available from the National Geodetic Survey website. Corpscon translates instantly from latitude/longitude to UTM coordinates to state plane coordinates and provides tools to identify UTM Zones. Also consult the Trimble, Garmin and Magellan websites for technological improvements and discussion of advanced techniques.

3. Notes

- Handheld GPS receivers operating in unobstructed locations are currently reckoned to provide 2-5 meter accuracy, meaning that the true location of measured points lie within an “error ellipse” with axes of 2-5 meters centered on the measured location. In other words, even under the best of conditions a real-time GPS solution may be as much as 20 feet off the true horizontal location of a point.
- Due to geodetic restrictions, vertical locations (elevations) have less than half the accuracy of horizontal locations, meaning that even under the best of conditions, a surface elevation displayed on a handheld GPS receiver may be off by more than 50 feet.
- Horizontal and vertical data derived from handheld GPS receivers should never be considered more than relatively accurate, and this

level of uncertainty should be identified in any discussion of positional tolerance.

4. References

Trimble Website: www.trimble.com
Garmin Website: www.garmin.com
Magellan Website: www.magellangps.com
National Geodetic Survey: http://www.ngs.noaa.gov/

Section 4

DRILLING METHODS (DM)

SUMMARY GUIDANCE

DM-001 General Guidance on Determination of Appropriate Drilling Methods

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1. Objective

There are multiple drilling methods which can be employed based on the type of stratum (e.g. overburden or bedrock) and the end use of borehole. End uses include geotechnical investigation, subsurface soil sampling, and monitoring well installation or a combination thereof.

The following text describes different methods of drilling with considerations for their use to collect groundwater and/or subsurface soil samples. Profiles of subsurface conditions encountered and well installation details must be recorded on logs. Procedures for field documentation are provided in Section 3 – Field Documentation.

2. Hollow-Stem Augers (HSAs)

Borings can be installed in unconsolidated formations using hollow-stem augers (HSAs). The augers are advanced by rotation and the drill cuttings are brought to the surface by travelling up the outside of the auger flights in a screw-like manner. HSAs have the advantage of allowing the well to be installed inside the hollow stem of the auger, which prevents the borehole from collapsing. Upon reaching the planned well depth, the casing and screen are placed inside the HSAs and the flights are individually removed while the annular space around the well is filled with the filter pack and grout, as appropriate. Conversely, solid-stem augers must be completely removed from the borehole before well installation, which can lead to collapse of the borehole. For this reason, solid stem augers are seldom used for installation of monitor wells.

HSAs come in a variety of sizes and allow collection of soil samples utilizing split spoons or Shelby tubes. Samples are collected ahead of the augers for determining soil/sediment type, stratigraphy, depth to the water table, and for collecting soil samples for chemical analysis. During this process, the standard penetration test (SPT, American Society for Testing and Materials [ASTM] Method D 1586) can also be performed. The HSA method also has an advantage over mud-rotary drilling techniques in that drilling mud is not used that can contaminate the soil samples and potentially reduce the yield of the wells.

A disadvantage of the method is that HSAs cannot be used to drill into competent bedrock or through large boulders. Also, "heaving or running sands" can be forced up inside the augers as a result of strong vertical groundwater gradients, which can hamper efforts to collect soil samples or complete well installation. Furthermore, the maximum depth achievable using HSAs, which is generally shallower than other methods, is dependent not only on the ability of the rig (e.g., horsepower, rig-torque, weight of augers, etc.), but also the lithology of the material drilled.

3. Rotary Drilling

Rotary drilling methods include both direct rotary and reverse-circulation rotary. Direct rotary is more commonly used in environmental investigations, whereas reverse-circulation rotary is used in drilling large-diameter water supply wells. In direct rotary drilling the borehole is advanced by rotating the drill pipe (rods) and bit to produce a cutting action. The cuttings are removed from the borehole by continuous circulation of a drilling fluid. The fluid or "mud" is pumped down the inside of the drill pipe and is circulated back to the surface on the outside of the pipe. The fluid removes the drill cuttings from the borehole and cools and lubricates the bit. Mud used during direct rotary consists of additives (e.g., bentonite), water, or air.

Reverse-circulation rotary drilling is similar to direct rotary except the drill rigs are larger and the flow of the drilling fluid is reversed. The drilling fluid moves upward inside the drill pipes and circulates back to the borehole via settling pits. The drilling fluid returns to the borehole via gravity and moves downward in the annular space between the drill pipe and borehole wall. Drilling fluids for reverse-circulation rotary are generally water and any suspended particles picked up from the surrounding formations.

Mud-rotary methods can be used to drill in both unconsolidated and consolidated (bedrock) formations. In addition, drilling mud stabilizes the borehole and limits the potential for borehole collapse. Disadvantages of using the mud-rotary method include the difficulty in determining the depth to the water table, the potential for drilling mud to impact soil samples and dragging of contamination into deeper zones since the drill cuttings are re-circulated in the borehole. Wells installed using this method typically take longer to develop than wells installed using the HSA or air-rotary methods due to the invasion of mud filtrate into the formation.

In air-rotary drilling, compressed air is directed down the inside of the drill pipe to a percussion “hammer” that breaks up soil and shatters rock. As in mud-rotary drilling, air removes the cuttings and lubricates the bit. However, since air has no viscosity, it cannot be used to stabilize a borehole therefore, casing must be advanced in unconsolidated formations to keep the borehole open. This is why air rotary methods are best suited for drilling in bedrock formations. The percussion-type air-rotary "hammer" bit provides the best penetration rate when drilling bedrock consisting of crystalline rock. However, when drilling above the water table, an air-rotary bit can grind the soil and bedrock to a fine powder which is blown out of the hole with air and which has the potential to be inhaled. Therefore, drilling above the water table using air-rotary methods requires the addition of potable water to the borehole for dust control. In addition, the air compressor should be of the oil-less variety, or have a filter to prevent any oil from entering the borehole.

A disadvantage of using rotary methods while drilling in unconsolidated formations is the requirement of pulling the drill pipe out of the hole each time a split-spoon soil sample is collected (and the SPT is performed). This adds up to considerable amounts of time when deep wells are being installed or when continuous split-spoon sampling is being performed. As stated above, split-spoons used to collect soil samples can become contaminated when they are advanced down a mud-filled borehole.

A special type of rotary drilling is bedrock coring, wherein a special core bit and barrel are used to retrieve relatively undisturbed core samples of the bedrock. Coring allows better characterization of bedrock lithology and other features including orientation of fractures and bedding planes, which can control contaminant migration. Core barrels can either be unoriented or oriented. An oriented core is scribed with respect to magnetic north. Although more expensive than collecting an unoriented core, this method gives the true orientation of the features encountered in the core.

Drilling fluids are generally air (air-rotary) or bentonite and/or water (mud-rotary). Water added to a borehole must be of potable quality. The source of the potable water used during the installation (and development) of monitor wells should be documented (e.g., in the Remedial Investigation Report).

Bentonite is high swelling clay with sodium montmorillonite as its primary clay mineral. Bentonite is added to water to increase the viscosity of the drilling fluid so that drill cuttings can be removed from the borehole more effectively. At the same time, the viscosity must be low enough to allow cuttings and coarse-grained particles to settle out once they are circulated out of the hole. Bentonite also adds weight to the drilling fluid, which helps to maintain borehole stability.

4. Sonic Drilling

The method involves driving a core barrel using vibration, rotation, and a downward force to collect soil samples. A sonic drill rig looks and operates very much like a conventional top-drive rotary or auger rig. The main difference is that a sonic drill rig has a specially designed, hydraulically powered drill head or oscillator, which generates adjustable high-frequency vibrational forces. The oscillator uses two eccentric, counter-rotating balance weights or rollers that are timed to direct 100 percent of the vibrational energy at 0 and 180 degrees. There is an air spring system in the drill head that insulates or separates the vibration from the drill rig itself. The sonic head is attached directly to the drill pipe or outer casing, sending the high-frequency vibrations down through the drill pipe to the bit.

A core barrel is advanced using vibration, rotation, and downward force to collect continuous soil cores up to 20 feet in length. The bit at the end of the core barrel contains carbide teeth allowing the core barrel to be advanced through most overburden, soft bedrock, and minor obstructions such as bricks and boulders. Once the core barrel has been advanced, a secondary or "over-ride" casing is advanced down to the same depth as the inner core barrel. The over-ride casing keeps the borehole from collapsing while the inner core barrel is removed. Once the core barrel is removed, the soil core is pushed out of the core barrel through the use of vibration and either air or water pressure. Soil core diameters are dependent on the size of core barrel used and range from 3 to 12 inches. The use of multiple over-ride casings of increasing diameter allows the borehole to be telescoped down through multiple confining units. The setup used in sonic drilling makes this drilling method amendable to collecting soil cores and installing wells in angled boreholes. With only the bottom of the inner and outer core barrel exposed to the aquifer at any given time, determining the location of the water table can be difficult.

While this drilling method has the capability of drilling through and providing samples of coarse gravels, boulders, and tight clays, these situations will result in slow drilling or advancement of the core barrel. The result is a hotter core barrel and a longer contact time between the core barrel and the encased soil core. The aforementioned conditions will increase the probability that the sonic method will raise the temperature of the soil core and facilitate volatile organic compound (VOC) and semi-volatile organic compound (SVOC) loss.

The ability to quickly install deep borings and wells, while generating a large-diameter continuous soil core, makes this drilling technique invaluable when continuous soil sampling is needed to assess deep or complex geological situations. However, sonic drilling's high cost, relative to other drilling methods, may be prohibitive for small projects or shallow boreholes. The higher cost of the drilling method should be weighed against the cost savings incurred due to its faster drilling rate and high quality of the soil core produced.

5. GeoProbe®-Direct Push

The method involves hydraulically pushing a sampling device attached to a string of hollow rods into the subsurface for the purpose of collecting soil and/or groundwater samples (e.g., Geoprobe®). The method can be used to collect discrete soil samples or groundwater samples, as well as install small-diameter groundwater monitoring wells.

Advantages of the direct-push method include the relatively quick collection of groundwater samples and, when used along with a mobile laboratory, collection of data in “real” time. The method allows for collection of multiple samples in a day with the potential for achieving contaminant delineation in one mobilization of the field equipment. The data can also be used to select locations of permanent monitor wells.

Disadvantages of using a mobile lab include the fact that the data quality achieved are often suitable only for screening purposes. Direct-push methods typically result in very turbid groundwater samples since an oversize borehole is not produced and a filter pack is not used. Turbid samples can produce higher metal concentrations in groundwater samples since metals are typically adsorbed onto soil particles. Use of direct-push methods can also cause cross-contamination since contamination from shallow zones may be driven down to deeper zones.

Another disadvantage of using direct-push technology for collecting groundwater samples is the potential to breech confining units. To prevent this, soil sampling using direct-push technology or conventional split-spoon sampling techniques should first be performed to identify the presence, depth and lateral extent of confining units. Pushing through confining units should be avoided if the presence of dense non-aqueous phase liquid (DNAPL) or very soluble compounds, such as methyl tert-butyl ether (MTBE), are suspected or the contaminant plume appears to be diving in the aquifer.

STANDARD OPERATING PROCEDURE

DM-002 Hollow-Stem Auger

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1. Objective

To standardize the drilling of overburden soil borings for environmental investigations. This standard operating procedure (SOP) addresses the use of hollow-stem augers to drill the soil boring.

2. Execution

- If work is to be conducted on private property, verify that National Grid has been notified (see SOP PP-001) and that National Grid has verified that access has been granted.
- Ensure that markout procedures outlined in PP-001, PP-002, and PP-003 have been completed.
- Ensure that a safety check has been conducted.
- Inspect the drilling rig to make sure it has been appropriately decontaminated and that the down-hole equipment has been steam-cleaned. Check that the steam-cleaner is working properly (i.e., that steam is being produced). Record all observations and measurements in the field notebook.
- Plastic sheet, plywood sheet, or other suitable cover will be placed around the auger area during drilling, if needed, to contain soil cuttings.
- Soil cuttings will be placed in a 55-gallon steel drum or a roll-off container for subsequent sampling and disposal. Decontamination water and drilling water will be placed in tanks and/or 55-gallon steel drums for proper disposal.
- Prior to the start of drilling, the borehole location should be hand-cleared to a minimum of 5 feet below ground surface.
- For all split-spoon soil samples, use a 140-pound hammer to drive the sampler, unless conditions necessitate using a 300-pound hammer (see SOPs SM-001, *Split-Spoon Sampling* and SM-0003, *Soil Classification,* for details). Count and record the number of blow counts per 6-inch increments, confirming, blow counts with driller if necessary.
- Remove the sample with a clean laboratory spoon and transfer it directly to a suitable sample container.
- Label, preserve, and store the sample in accordance with SOP SC-002 *Sample Handling*.
- Decontaminate the split-spoon sampler after each use (see *Equipment Decontamination,* SOP QA-001) or use another decontaminated split-spoon sampler.

- Direct the drillers to drill the borehole to the top of the next sampling interval. Remove the auger cutting bit/plug and insert the split-spoon sampler into the interior of the augers (the drillers are responsible for this activity). Measure the stick-up of the rods attached to the sampler to ensure that the nose of the spoon is in virgin soil below the augers.
- Watch for signs of a soil strata change at depth during drilling (i.e., change in blow counts, change in soil color, soil wetness, soil contamination, bouncing of the drill rig, etc.). If important to the investigation, stop drilling and collect a soil sample.
- Repeat until the borehole has been drilled to the desired depth.
- If a monitoring well is not installed in the soil boring, the boring should be abandoned with cement/bentonite grout. Do not backfill the boring with drill cuttings unless explicitly allowed under state-specific regulations and approved by National Grid.
- Complete boring log and, if necessary, well installation logs (SOP SM-003, *Soil Classification*).
- Record boring locations on a site map and in a field notebook sketch. Measure each location from onsite reference points in the field notebook so that enough information can be obtained to recreate the location.
- All boring locations or monitoring well locations should be surveyed and a boring/well location figure generated.

3. Notes

- In areas of significant soil contamination, hollow-stem augers may cross-contaminate upper soil layers as contaminated cuttings move up the auger flights. The potential also exists for contaminated augers to carry contamination to deeper soil strata.
- If *in situ* borehole permeability tests are to be performed prior to installation of the monitoring well, the hollow-stem auger method is not appropriate due to water loss at the auger junctions.
- If significant unanticipated contamination is encountered during drilling, stop drilling to confer with the project manager and evaluate health and safety conditions. If the borehole is to be advanced below the contaminated strata, use telescoping techniques, if appropriate, (see SOP DM-008 *Monitoring Well Telescoping*) to avoid cross-contaminating underlying geologic strata.
- When drilling below the groundwater table in fine to medium sands, the potential exists for the phenomenon of “running sands” or “blow in” to occur. Frequent measurements inside the hollow-stem augers after the drill bit/plug is removed will indicate if running sands are present.
- If necessary, arrange for the storage of contaminated soil cuttings and water in drums or other appropriate containers in a secure place at the site. Containers should be labeled.

- Plan the drilling program to drill borings from the least- to most-contaminated areas. Be prepared in advance and know where alternative drilling locations are in the event that problems are encountered at each planned soil boring location. Alternative locations will need to have utility clearance.

4. References

Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49.

Standard References for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91.

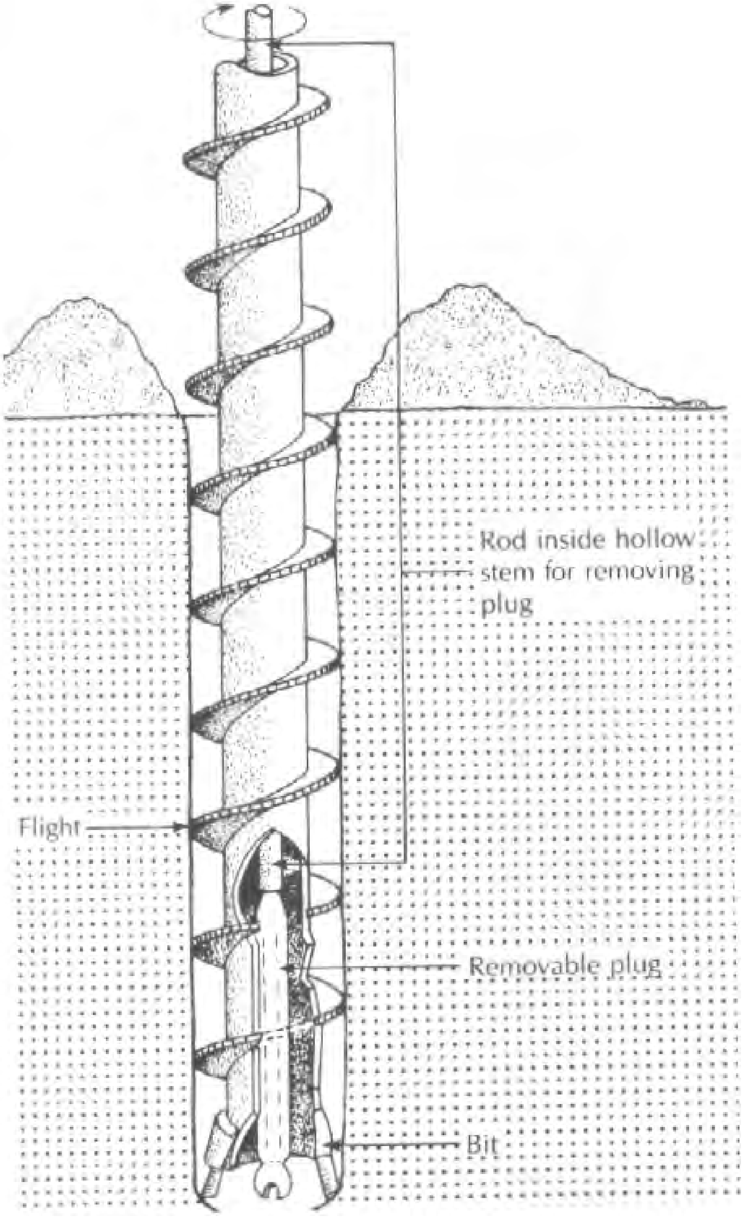
5. Attachments

Attachment A – Hollow-Stem Auger

Attachment A

SOP DM-002

Attachment A – Hollow Stem Auger



GEI Consultants

STANDARD OPERATING PROCEDURE

DM-003 Sonic Drilling

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1. Objective

The objective of this standard operating procedure (SOP) is to standardize the drilling of overburden soil borings for environmental investigations. This SOP addresses the use of sonic drilling to drill the soil boring.

2. Execution

- If work is to be conducted on private property, verify that National Grid has been notified (see SOP PP-001) and that National Grid has
- verified that access has been granted.
- Ensure that markout procedures outlined in PP-001, PP-002, and PP-003 have been completed.
- Inspect the drilling rig to make sure it is clean and that the down-hole equipment has been steam-cleaned. Check that the steam-cleaner is working properly (i.e., that steam is being produced). Record all observations and measurements in the field notebook.
- Prior to the start of drilling, the borehole location should be hand-cleared to a minimum of 5 feet below ground surface (bgs).
- Collect soil cores in shorter runs. While some sonic rigs have the capability of collecting 20 feet of soil core at a time, the process of collecting the longer core results in the core being in contact with the core barrel for a longer period of time and consequently absorbing more heat from the core barrel itself.
- The core barrel should 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.
- The core barrel will then be advanced, within the isolation casing on the same borehole, to collect the next soil core interval.
- Add water between the inner core barrel and the outer override casing. This water would reduce friction and adsorb heat between the inner core barrel and the outer over-ride casing.
- Maximize drilling advance rate. The faster the core barrel is advanced, the less likely the core barrel will heat up, and the less contact time the soil core has with the core barrel. Drilling with a 3-inch diameter core barrel and a 5-inch diameter override casing, instead of the standard 4-inch core barrel and 6-inch over-ride casing, may increase advance rates and reduce the potential for soil core heating.

- If a significant decrease in drilling advance rate is observed, stop drilling and remove what soil core has accumulated in the core barrel. Resume drilling through the resistant material (gravel, boulder, hard clay, etc.). When the resistant material has been penetrated and the drilling advance rate increases, stop drilling and remove what material has accumulated in the core barrel.
- Wash down the core barrel with cool water to cool the core barrel and associated casing, and resume drilling.
- If a well is to be installed in the borehole, the sandpack and grout are placed as the core-barrel and over-ride casing(s) are selectively vibrated out of the ground. The vibratory action reportedly facilitates the settlement of the sandpack and grout. Upon completion, no casing is left in the ground other than the well casing and screen.

3. Notes

- Disturbance of the soil core is most likely to occur during removal of the soil core from the core barrel. The soil cores are usually vibrated out of the core barrel into plastic bags approximately 5 feet in length. As the plastic bags are a little larger than the soil core itself, fragmentation of the soil core may occur as the core is extruded into the bag or while the bagged core is being moved in an unsupported manner. Soil conditions that are prone to disturbance include wet or dry zones that contain little or no fines, and well graded sands that contain significant volumes of water.
- If integrity of the soil core is of concern, the following procedures should be implemented:
    i. Measures should be taken to ensure that the core, from the time it is extruded from the core barrel, is rigidly supported through the use of some type of cradle or carrying device.
    ii. The core should not be removed from its cradle until all sampling of the core has been completed. Acrylic liners are available for some core sizes and can be used to hold the core together upon removal from the core barrel.
    iii. If the soil is to be sampled for volatile organic compounds (VOCs), acrylic liners must be used.
    iv. Sampling of the soil core for VOCs or semi-volatile organic compounds (SVOCs) must be approved on a case by case basis. Proposals for VOC or SVOC soil core sampling must include provisions to minimize core fragmentation and heat generation, such as:
        1. Acetate liners in the core barrel so that the soil core does not have to be extruded out of the core barrel.
        2. Limit the length of soil core generated during a given downhole run.

    3. Implement practices to reduce the residency time of the soil core in the core barrel.

- For the analysis of SVOCs, the use of the acetate liners is not required.
- The large diameter of the core barrel enables ground water sampling equipment to be placed inside the core barrel so that discrete depth groundwater samples can be collected during borehole advancement.

4. References

Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

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SOP No. DM-004
Revision No. 0
Effective Date: November 2010

STANDARD OPERATING PROCEDURE

DM-004 Drive and Wash

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1. Objective

The objective of this standard operating procedure (SOP) is to standardize the drilling of overburden soil borings for environmental investigations. This SOP addresses the use of casing with either the drive-and-wash or spin method to drill the soil boring.

2. Execution

- If work is to be conducted on private property, verify that National Grid has been notified (see SOP PP-001) and that National Grid has
- verified that access has been granted.
- Ensure that markout procedures outlined in PP-001, PP-002, and PP-003 have been completed.
- Steam cleaning may be performed by drillers either on site or prior to site mobilization. If performed prior to site mobilization, observe the drilling rig to make sure it is clean and that the down-hole equipment has been steam-cleaned. Check that the steam-cleaner is working properly (i.e., that steam is being produced). Record all observations and measurements in the field notebook (See SOP FD-001).
- If a surface-soil sample is desired, this sample should be collected prior to hand-clearing the borehole and in accordance with SOP SM-001 and American Society of Testing and Materials (ASTM) Specification D-1586-84.
- Prior to the start of drilling, the borehole location should be hand-cleared to a minimum of 5 feet below ground surface.
- For all split-spoon soil samples, use a 140-pound hammer to drive the sampler, unless conditions necessitate using a 300-pound hammer (see SOPs SM-001, *Soil Sampling Techniques Including Split-Spoon* and SM-0003, *Soil Classification,* for details). Count and record the number of blow counts per 6-inch increments, confirming, blow counts with driller if necessary.
- Decontaminate the split-spoon sampler after each use (see SOP QA-001 *Equipment Decontamination).*
- Instruct drillers to drill the borehole, either by pounding or spinning the casing, to the top of the next sampling interval.
- The wash water should be carefully observed for indications of a soil strata change with depth (i.e., change in soil color and particle size). Record the changes and depth of changes on the boring log. Make sure that the soils in the borehole have been fully removed by the rotary bit before sampling by measuring the depth of the borehole, or

by measuring the length of stick-up of drill rods to verify that the driller has sufficiently cleaned out the boring.

- Monitor the return wash water and record water losses from around the borehole onto the ground surface.
- Follow steps until the borehole has been drilled to the desired depth. If refusal is encountered, a 5-foot core of the rock (at a minimum) may be required to confirm the bedrock surface (see site-specific field sampling plan).
- If a monitoring well is not installed in the soil boring, the boring should be abandoned with cement/bentonite grout. Do not backfill the boring with drill cuttings unless explicitly allowed under state-specific regulations and approved by National Grid.
- Complete boring log and, if necessary, well installation logs (see SOP SM-006 *Rock Coring Log*).
- Record boring locations on a site map. Measure each location from on-site reference points and record the information in the field book.

3. Notes

- At all times, follow safety procedures as defined in the site-specific Health and ~~&~~ Safety Plan.
- When the first 5-foot section of casing is pounded into the ground, make sure that the casing (i.e., the borehole) is vertical.
- If significant unanticipated contamination is encountered during drilling, stop drilling to confer with the project manager and evaluate health and safety conditions.
- If the borehole is to be advanced below the contaminated strata, use telescoping techniques (see DM-008 *Monitoring Well Telescoping)* to avoid cross-contaminating underlying geologic strata.
- While drilling through contaminated strata, do not recirculate the drilling water. Be prepared to containerize the drilling water in these situations.
- When drilling below the groundwater table in fine to medium sands, the potential exists for the phenomenon of “running sands” to occur. To minimize the problem, remove the drill rods with the rotary bit very slowly while adding potable water to the casing. A head should be kept on the borehole at all times.
- Arrange for the storage of contaminated soil cuttings and water in drums or other appropriate containers in a secure place at the site (see SOP SC-003, *Investigation Derived Waste*).
- Plan the drilling program to drill borings from the least to most contaminated areas. Be prepared in advance and know where alternative drilling locations are in the event that problems are encountered at each planned soil boring location. These locations must also have been cleared by the state utility service prior to drilling.

4. References

Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49.

Standard References for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91.

ASTM Standard D1586, Standard Method for Penetration Test and Split Barrel Sampling of Soils.

STANDARD OPERATING PROCEDURE

DM-005 GeoProbe® Direct Push Boring

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1. Objective

The purpose of this standard operating procedure (SOP) is to standardize soil sample collection using GeoProbe® and MacroCore® technologies. A Geoprobe® relies on a relatively small amount of static (vehicle) weight combined with percussion as the energy for advancement of a tool string. Using a Geoprobe®, you can drive a MacroCore® to obtain continuous soil cores or discrete soil samples.

2. Execution

- Complete utility markout procedures in accordance with PP-001, PP-002, and PP-003.
- Inspect the drilling rig to make sure it is clean and that the down-hole equipment has been steam-cleaned. Check that the steam-cleaner is working properly (i.e., that steam is being produced). Record all observations and measurements in the field notebook.
- Prior to the start of drilling, the borehole location should be hand-cleared to a minimum of 5 feet below ground surface.
- Insert a Macrocore® (MC) liner, (i.e., polyvinyl chloride [PVC]) into the sample tube, and connect a MC drive head to the top of the sample tube. A diagram of the MC assembly is provided as Attachment A.
- The drive head is then tightened into the sample tube, and a drive cap is attached to the drive head.
- Place the sampler in the driving position, and drive the sampler until the drive head reaches the ground surface.
- Remove the drive cap, attach a pull cap to the sampler drive head, and pull the sampler out of the ground.
- Remove the cutting shoe and filled liner.
- When the sampler is brought to the ground surface, it should be opened immediately, and the length of recovery should be measured and recorded.
- Decontaminate the sampler if necessary (SOP QA-001 *Equipment Decontamination*) and reassemble the parts with a new liner, and insert the sampler down the same hole to take the next soil core.
- In non-cohesive soils, slough material may enter the sampler as the next core is collected (see notes below).
- Careful logging of soil stratigraphy is necessary to document whether soil sloughing has occurred within the borehole (see limitations).
- Remove the sample with a clean laboratory spoon and transfer it directly to a suitable sample container.

- Label, preserve, and store the sample in accordance with SOP SC-002 *Sample Handling*.
- If a monitoring well is not installed in the soil boring, the boring should be abandoned with either cement/bentonite grout. Do not backfill the boring with drill cuttings unless explicitly allowed under state-specific regulations and approved by National Grid.
- Upon completion, all soil boring locations will be surveyed. This will include the location and ground surface elevation.

3. Notes

- The GEI oversight person shall ensure that the borehole created by the MC sampling tube does not collapse between collection of each sample. If the borehole collapses and representative samples cannot be obtained using the standard macro-core sampler, then one of two options may be used.
    i. The MC sampler can be fitted with a piston rod assembly, or a 1.5-inch outer diameter (OD), large bore sampler equipped with a piston rod assembly may be used to collect the samples. The sample tube (MC) is advanced through the caved-in borehole material to the top of the desired sampling interval. The sample tube remains closed by a piston tip as it is advanced. Upon reaching the target sample depth, the piston tip will be released and the discrete sampler device is then advanced to collect the representative sample.
    ii. The piston rod assembly is driven up to the top of the sample tube as the sample enters the tube.
- Because the MC sampling tube uses a dedicated, disposable liner made of clear plastic, the only part of the sampler that contacts the soil sample is the cutting shoe. Each sample liner will be disposed of after use and a new liner will be placed in the macro-core tube prior to collection of subsequent samples. Cutting shoes and sample collection spoons used to transfer samples to the laboratory jars will be decontaminated between use.

4. References

ASTM D6001-05 Guide for Direct Push Water Sampling for Geoenvironmental Investigations, April 2005.

GeoProbe Systems, "GeoProbe MacroCore MC-5 1.25-inch Light Weight Center Rod Soil Sample System SOP", Technical Bulletin No. MK 3139, November 2006.

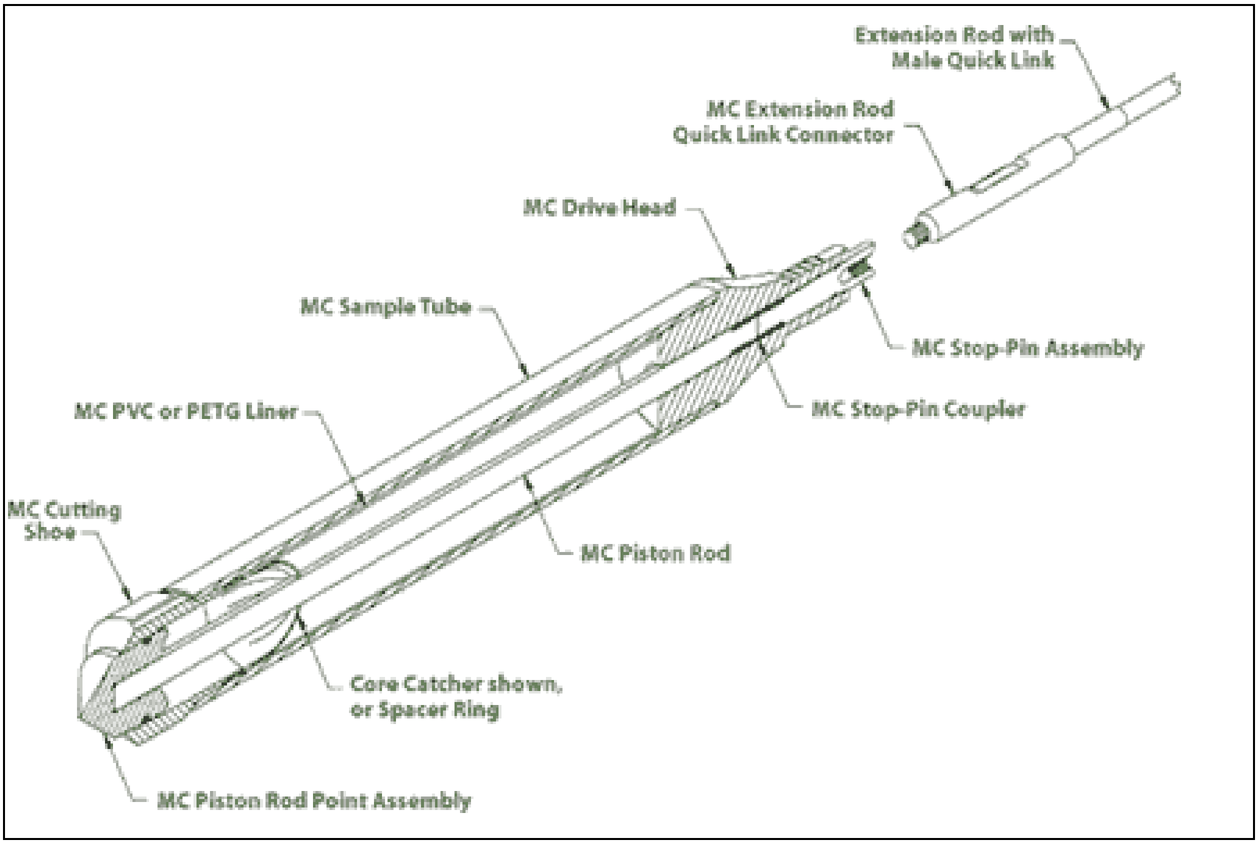
5. Attachments

Attachment A – GeoProbe® with Macrocore® Sampler Assembly

Attachment A

SOP DM-005

Attachment A – GeoProbe® with Macrocore® Sampler Assembly



Above: Diagram of a Macrocore® sampler

Right: A track-mounted GeoProbe ® Rig

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STANDARD OPERATING PROCEDURE

DM-006 Monitoring Well Construction and Installation

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1. Objective

The objective of this standard operating procedure (SOP) is to standardize the installation of overburden monitoring wells for environmental investigations. This SOP assumes the monitoring wells will be constructed of flush-joint polyvinyl chloride (PVC) pipe; the screened section will have factory-slotted openings. Well dimensions (well diameter, screen length, and screen slot-diameters) will be specified in the Work Plan and recorded in field notes, along with rationale for any changes from the work plan.

2. Execution

- Attachment A provides a diagram of typical shallow, intermediate, and deep groundwater monitoring well construction detail.
- During the monitoring well installation, record all pertinent information on Attachment B, Well Construction Form.
- Using a weighted tape, measure and record the depth of the completed soil boring (within the augers), if applicable, before beginning the well installation.
- Measure the depth to groundwater in the borehole over a 10 to 15 minute period to ensure that the groundwater elevation has approximately stabilized. Compare the saturated soil depth estimated from the soil samples, if collected prior to well installation, to the measured water level in the borehole. If drilling water has been used during boring advancement, pump the water out of the borehole to the static water depth, based on examination of the soil samples, and monitor the recovery of groundwater until the level has stabilized.
- Choose the monitoring well screen and riser lengths so that the slotted section of the screen intersects the groundwater table, for shallow wells. If the borehole is deeper than the desired well depth, then fill the base of the borehole with sand.
- A minimum of a one-foot sump should extend to the bottom of the well if dense non-aqueous phase liquid (DNAPL) is suspected.
- Monitoring well screens should be constructed of either 2 or 4 inch inner diameter (ID) 0.01-inch or 0.02-inch slotted Schedule 40 PVC well screen.
- If DNAPL is suspected, the monitoring well should be constructed of either 2 or 4 inch ID 0.02-inch slotted Schedule 40 PVC well screen.
- Monitoring wells should be constructed of either 2 or 4 inch ID Schedule 40 threaded flush-jointed PVC. One-inch wells may be installed with prior approval of National Grid and the New York State Department of Environmental Conservation.

- Install and secure a bottom well cap. The bottom cap should be secured with either a threaded coupling and/or stainless steel screws. Do not use any kind glue to secure well sections together.
- Place at least 12 inches of clean uniformly graded medium quartz filter sand pack into the base of the borehole. Measure and record the depth of the boring. Temporarily cover the top of the riser pipe and lower the complete well plus riser into the borehole, with the base resting on the sand pack.
- Add adequate sand to surround the area around the slotted section. The filter sand should extend at least 2 feet above the top of the slotted section.
- Remove the drilling casing/augers from the borehole slowly, at a maximum of 2-foot intervals. As the drillers pour or use tamping rods to place the filter sand in the borehole, take frequent measurements of the depth-to-sand. Do not let the sand "bridge" in the annular space. Continue to observe the water level in the borehole.
- Place at least 1 foot of bentonite seal above the filter pack. If the seal is above the water table, use at least 5 gallons of potable water to hydrate the bentonite.
- If necessary, pump bentonite-cement grout using a tremie pipe into the bottom of the annular space to the ground surface. Grout should be mixed in approximately the following proportions: 7.5 gallons water to one 94-pound bag of cement to 2-4 pounds of pulverized bentonite. The grout must be mixed using the pump on the rig to ensure proper mixing. The protective casing should be set in the grout before it sets.
- The protective surface casing will be either a flush-mounted roadbox or a steel “stick up” pipe. The base of either type of casing should extend at least 1 foot into the grout below the ground surface (below the frost line) whenever possible.
- Cut the monitoring well riser flat and place a mark or "V"-notch or an arrow on the casing with an indelible marker at one point for surveying and groundwater measurements. Cut the well riser so that the top of the well is 3 to 6 inches below the top of the protective casing.
- Set bentonite-cement grout in the annular space between the protective casing and the borehole up to the ground surface. Slope the concrete radially away from the protective casing at the ground surface to promote surface water runoff. In areas of high traffic or areas of parking lots and/or roadways where plowing occurs, set the roadbox FLUSH with the ground surface to avoid damage to the well.
- If the well is installed in a high-traffic area with a guardpipe, additional protection such as steel pole bumpers around the guardpipe may be necessary.
- Place a locking, vented cap on the well pipe.

- All well locations should be photodocumented in accordance with SOP FD-004, *Photo Documentation*.
- Label the protective well casing with a paint pen and tape out the location to nearby landmarks so that the well may be located in the future. Make sure to enter this information in the field notebook. If possible, place a brightly colored stake or other identifier adjacent to the well.
- Develop the well (see SOP DM-009, *Monitoring Well Development*).
- Upon completion, all newly installed monitoring wells will be surveyed. This will include the well location, ground surface elevation and measuring point elevation.

3. Notes

- At all times, follow safety procedures as defined in the site-specific Health and Safety Plan.
- Site-specific conditions must be evaluated to determine appropriate materials.
- The water table will fluctuate seasonally and from year-to-year. Try and estimate the maximum high and low elevations of the water table from the current water table elevation and the season. Place the 10-foot screen so that at least 2 feet of the screen will extend above the top of the screen when water is at its highest. If very substantial fluctuations in the groundwater table are expected, a 15-foot screen is acceptable.
- Do not screen across different hydrostratigraphic units if possible (for example, outwash sands and till) unless specified in the Work Plan or approved by the Project Manager.
- If the formation is composed of a material that is uniformly coarser than the filter sand, the grain size of the filter sand must be increased. Consideration should also be given to changing the slot size on the well screen. Differences in average grain size should generally not be greater than a factor of two to four times.
- Do not use borehole/auger cuttings for backfill during monitoring well installation. If the cuttings are suspected to contain contamination which was identified during drilling, cuttings are to be containerized for later characterization and not used for filter pack materials.
- Do not screen across a confining layer (e.g., silt or clay). Backfill all confining layers with hydrated bentonite or grout.

4. References

Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

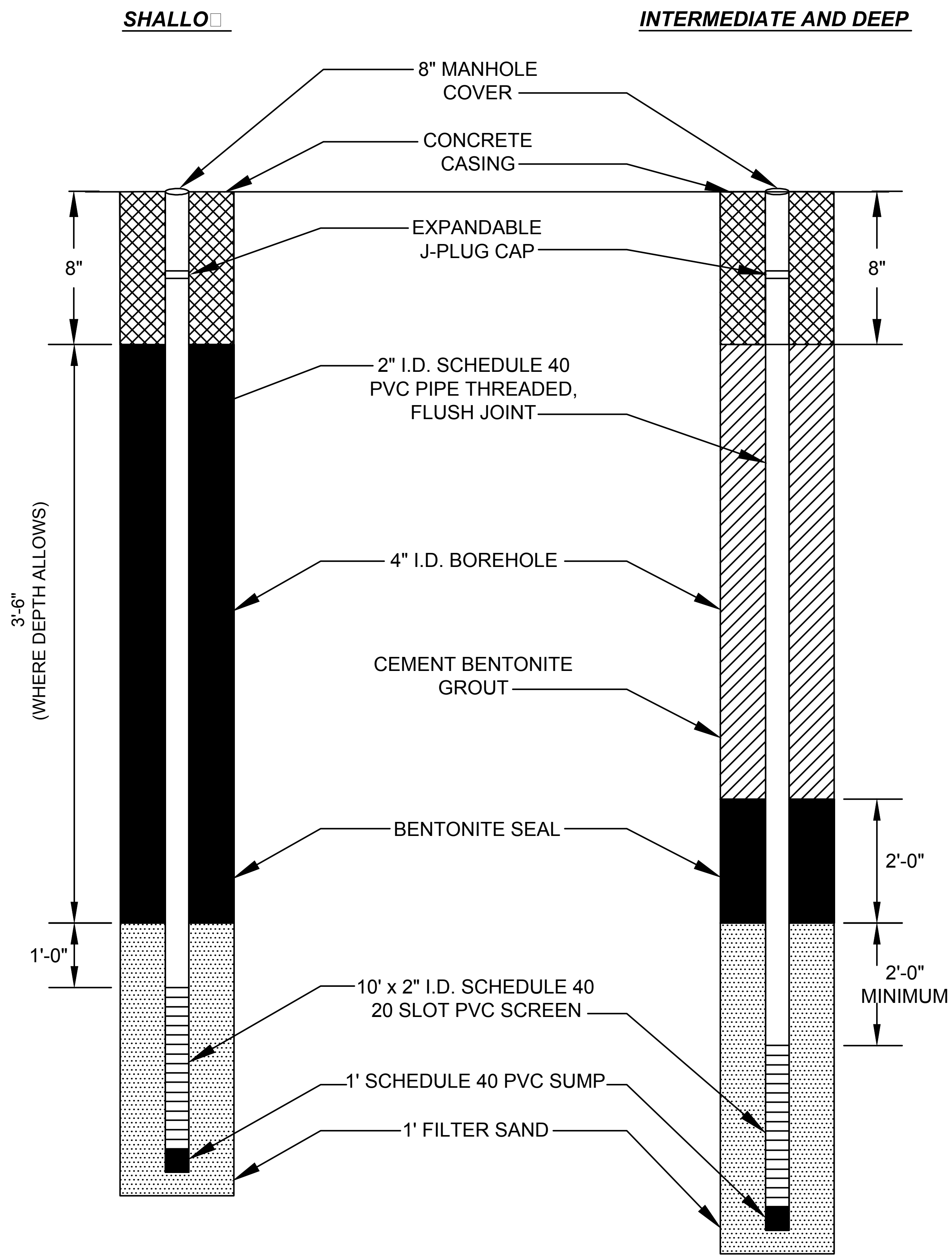
Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49.

5. Attachments

Attachment A – Typical Shallow, Intermediate, and Deep Groundwater Monitoring Well Construction Detail

Attachment B – Well Construction Form

Attachment A



NOT TO SCALE

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TYPICAL SHALLOW, INTERMEDIATE AND DEEP GROUNDWATER MONITORING WELL CONSTRUCTION DETAIL

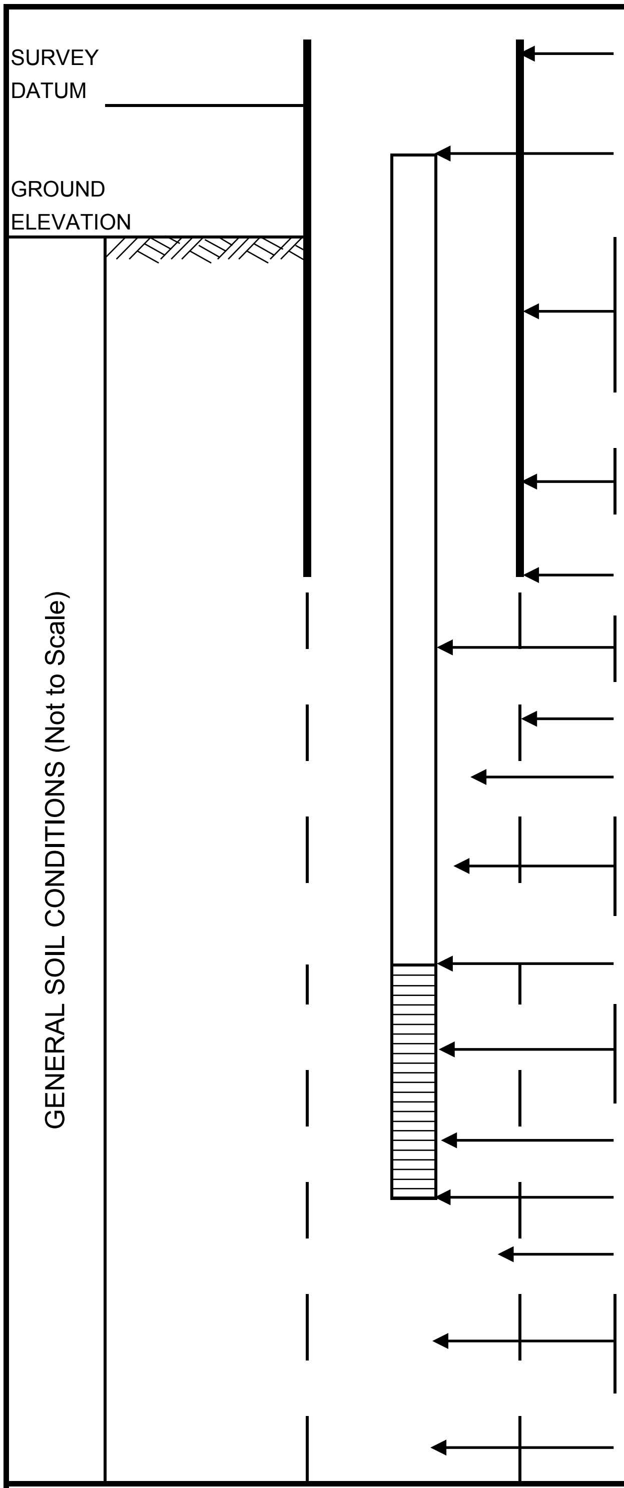
November 2010

Attachment B

WELL CONSTRUCTION FORM

Project
Location
Client
Contractor
Driller
Inspected by
Date Started
Checked by
Date Completed

ID No.
PG. 1 OF 1
Boring No.
Location
Project No.



LENGTH OF SURFACE CASING ABOVE GROUND SURFACE (FT)

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (FT)

THICKNESS OF SURFACE SEAL BELOW GROUND SURFACE, IF ANY (FT)

TYPE OF SURFACE SEAL (indicate any additional seals)

ID OF SURFACE CASING (IN)
TYPE OF SURFACE CASING

DEPTH BOTTOM OF CASING (FT)

ID and OD OF RISER PIPE (IN)
TYPE OF RISER PIPE

DIAMETER OF BOREHOLE (IN)

TYPE OF BACKFILL AROUND RISER PIPE

DEPTH TOP OF SEAL, IF ANY (FT)
TYPE OF SEAL
DEPTH BOTTOM OF SEAL (FT)

DEPTH TOP OF PERVIOUS SECTION

TYPE OF PERVIOUS SECTION
DESCRIBE OPENINGS
ID and OD OF PERVIOUS SECTION (IN)

TYPE OF BACKFILL AROUND PERVIOUS SECTION

DEPTH BOTTOM OF PERVIOUS SECTION (FT)

DEPTH BOTTOM OF SAND COLUMN (FT)

ELEV./DEPTH TOP OF SEAL, IF ANY (FT)
TYPE OF SEAL
ELEV./DEPTH BOTTOM OF SEAL (FT)

TYPE OF BACKFILL BELOW PERVIOUS SECTION, IF ANY

NOTES:

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STANDARD OPERATING PROCEDURE

DM-007 Monitoring Well Telescoping

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1. Description

The method of monitoring well telescoping prevents the connection of two stratigraphic layers during monitoring well installation. Typically, these two stratigraphic layers are overburden and bedrock strata, or overburden deposits with a semiconfining layer.

2. Execution

- If work is to be conducted on private property, verify that National Grid has been notified (see SOP PP-001) and that National Grid has verified that access has been granted.
- Ensure that markout procedures outlined in PP-001, PP-002, and PP-003 have been completed.
  Prior to the start of drilling, the borehole location should be hand-cleared to a minimum of 5 feet below ground surface.
- Install large diameter casing (e.g., 6-inch outer diameter) to the top of the bedrock or semiconfining layer.
- Drill or core at least 10 feet into bedrock, or an appropriate thickness into the semiconfining layer, to confirm the presence of bedrock and adequately separate stratigraphic units (see precautions below).
- Freshly mixed grout is required. Depending on application, a mixture of Portland cement and bentonite meets most grouting requirements. For proper consistency, use no more than 6 gallons of water per 94-pound sack of cement. Add a few pounds of bentonite or hydrated lime per sack of cement for a better flow.
- Use a tremie pipe to deliver grout outside the casing. This method is not recommended for depths greater than 100 feet. You can use this method if the space between the casing and the borehole wall is large enough to contain a 1-inch tremie pipe. Use the following procedures to complete grouting using this method:
  - i. Lower the tremie-pipe to the bottom of the borehole outside of the well casing. Make sure that the lower end of the casing is tightly seated at the bottom of the borehole.
  - ii. Mix a sufficient quantity of grout and pump it through the tremie pipe or let it descend naturally. As the grout is placed, lift the tremie pipe slowly, but keep the lower end submerged in the grout.
  - iii. Fill the casing with water as the grout is placed to balance the fluid pressure inside and outside the casing. Doing so prevents grout from leaking under the bottom of the casing.

    iv. Allow the grout to set for a minimum of 24 hours.
    v. Drill through the existing casing into bedrock to complete monitoring well. Install additional casing, polyvinyl chloride (PVC), or open borehole into bedrock.

3. Notes

- These operating procedures include drilling the borehole used to case off the overburden a minimum of 10 feet into a semiconfining layer. However, if dense non-aqueous phase liquid (DNAPL) and/or dissolved contamination is suspected or likely to be present in the weathered bedrock, the 10-foot casing requirement will hide the DNAPL from detection. In this case, an overburden well (with casing and screen) should be installed in the weathered bedrock and an outer steel casing installed 10 feet into bedrock would not be required.

4. References

Environmental Protection Agency, Region 4, "Environmental Investigation Standard Operating Procedures and Quality Assurance Manual, Chapter 6 – Design and Installation of Monitoring Wells," November 2001.

STANDARD OPERATING PROCEDURE

DM-008 Monitoring Well Development

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1. Objective

To remove drilling fluids and fine soil particles that may be trapped in the monitoring well's sand pack and screen, and to set the sand pack so that it will function properly, and create good hydraulic communication between the well and the formation.

2. Execution

- Wait at least 48 hours following monitoring well installation before beginning development activities.
- Decontaminate all development equipment prior to use with, Alconox, and deionized-water rinses. See SOP QA-001, *Equipment Decontamination*.
- Calculate the volume of water in the monitoring well (one well volume).
- Record volume on Monitoring Well Development Record (Attachment A).
- Collect a sample of water from the monitoring well with a submersible pump, a bailer, or a water pump. Record the color and turbidity of the sample.
- Utilize one of the following methods for purging:
  - Surging;
  - Bailing;
  - Using a centrifugal pump and dedicated polyethylene tubing;
  - Positive displacement pumps and dedicated polyethylene tubing; and/or
  - Other methods recommended by the field geologist and approved by the National Grid Project Manage.
- Purge groundwater until it runs clear (<50 nephelometric turbity units [NTUs]) or until pH, temperature and specific conductivity stabilize as judged suitable by the field geologist.
- Well development should not exceed two hours for a single well.
- Measure the purge rate (gallons per minute) and total volume purged.
- Monitor the groundwater level in the well during development to determine if the pumping rate is sufficient to create a drawdown in the well.
- Collect groundwater samples every few well volumes during the pumping and record the physical properties (color and turbidity).
- Stop pumping when the purge water is relatively clear. Place a surge block in the monitoring well (if the method of development doesn't include a down-hole pump which serves as a surge block). Slowly

move the surge block up and down in the well. Periodically remove the surge block and purge the groundwater until it is relatively clear again. Start at a slow pace and progress to a faster surging action through time.

- Monitor the turbidity and color of the water during this procedure. The well is considered fully developed when all of the following criteria have been met:
    i. The volume of fluid added during drilling has been removed.
    ii. The water removed from the well is relatively free of fine-grained particles.
    iii. Record the volume of water pumped from the well and the physical properties (color, turbidity) of the water.

3. Notes

- Always remove groundwater with fine particles from the well before surging. The fine particles may be forced into the well screen by the surging action.
- Pump contaminated groundwater into an approved container (properly labeled drum or portable tank for transfer into frac tank).
- Use a bailer to develop monitoring wells that are installed in soils that are composed of fine-grained silts and clays. Pumping and mechanical surging is not recommended because these more vigorous techniques can cause fine particles to clog the filter pack.
- Sampling of groundwater should not occur within one weekafter development.

4. Calculations

To calculate the volume of water in the well, the following equation is used:
Well Volume (V) = Br^2 h (cf) **[Equation 1]**
where:

B = pi (3.14)
r = radius of monitoring well in feet (ft)
h = height of the water column in ft. [This may be determined by subtracting the depth to water from the total depth of the well as measured from the same reference point.]
cf = conversion factor in gallons per cubic foot (gal/ft^3) = 7.48 gal/ft^3. [In this equation, 7.48 gal/ft^3 is the necessary conversion factor.]

Monitor well diameters are typically 2-, 3-, 4-, or 6-inches. A number of standard conversion factors can be used to simplify the above equation using the diameter of the monitor well. The volume, in gallons per linear foot, for various standard monitor well diameters can be calculated as follows:
Where:

V (gal/ft) = Br^2 (cf) **[Equation 1]**

B = pi (3.14)
r = radius of monitoring well (ft)
cf = conversion factor (7.48 gal/ft^3)

For example, a 2 inch diameter well, the volume per linear foot can be calculated as follows:

V (gal/ft) = Br^2 (cf) **[Equation 2]**
= 3.14 (1/12 ft)^2 7.48 gal/ft^3
= 0.1631 gal/ft

NOTE: The diameter must be converted to the radius in feet as follows:

Well Diameter (inches) x 0.5 = Well Radius (ft) **[Equation 3]**

The volume in gallons/feet for the common size monitor wells are as follows:

Well diameter (inches)	Volume (gal/ft)
2	0.1631
3	0.3670
4	0.6524
6	1.4680

If you utilize the volumes for the common size wells above, Equation 1 is modified as follows:
Where:

Well volume = (h) (f) **[Equation 4]**

h = height of water column (ft)

f = the volume in gal/ft calculated from Equation 2

5. References

Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49.

"The Methods & Mechanics of Well Development, Part 2 of 5," National Drillers Buyers Guide, March 1993, p. 17.

Standard References for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91.

U. S. EPA Environmental Response Team Standard Operating Procedure SOP: 2044 ," Monitor Well Development" REV: 0.1, 10/23/01.

6. Attachments

Attachment A - Monitoring Well Development Record

Attachment A

Monitoring Well Development Record

Project: National Grid - ____________ **Well ID:** ____________ **Date:** ____________

Total Well Depth (from top of casing): ____________ **Depth to Water (from top of casing):** ____________

Well Diameter: ____________ **Pump Intake Depth:** ____________

Sampling Crew: ____________ **Purge Time:** *Start:* ____________ *Finish:* ____________

Purging Method: ____________

Sampling Method: ____________ **Sample Time:** *Start:* ____________ *Finish:* ____________

Sample Analysis: ____________

Purge Data

Sample Time	**Flow Rate** *(lpm/gpm)*	**Volume Purged** *(liters/gals.)*	**pH** *(std. Units)*	**Conductivity** *(mS/cm)*	**Turbidity** *(NTU)*	**Dissolved Oxygen** *(mg/l)*	**Temperature** *(Cel.)*	**Salinity** *(%)*	**ORP** *(mV)*	**Comments/Observations**
										Well Headspace PID =

Final Stabilization Data

Sample Time	**Flow Rate** *(lpm/gpm)*	**Volume Purged** *(liters/gals.)*	**pH** *(std. Units)*	**Conductivity** *(mS/cm)*	**Turbidity** *(NTU)*	**Dissolved Oxygen** *(mg/l)*	**Temperature** *(Cel.)*	**Salinity** *(%)*	**ORP** *(mV)*	**Comments/Observations**

GEI Consultants

SUMMARY GUIDANCE

DM-009 General Guidance on Monitoring Well Abandonment

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1. Objective

To properly abandon a monitoring well, preventing direct connections from surface conditions to the well screen zone.

When a decision is made to abandon a monitoring well, the borehole should be sealed in such a manner that the well can not act as a conduit for migration of contaminants from the ground surface to the water table or between aquifers. Guidelines for well abandonment are provided below but do not supersede state or local regulations. Make sure all well abandonment procedures adhere to appropriate regulations.

To properly abandon a well, the preferred method is to completely remove the well casing and screen from the borehole, clean out the borehole, and backfill with a cement or bentonite grout, neat cement, or concrete. In order to comply with New York State well abandonment requirements, the New York State Department of Environmental Conservation (NYSDEC) should be notified (if applicable) of monitoring well abandonment. However, some state requirements are not explicit, so a technically sound well abandonment method should be designed based on the site geology, well casing materials, and general condition of the well(s). In New York, the NYSDEC policy document titled, CP-43: Groundwater Monitoring Well Decommissioning Policy, should be followed. The document includes a flow chart to be used in selecting the appropriate decommissioning methods based upon the geologic and hydrogeologic conditions at the well site, the presence or absence of contamination in the groundwater and the original well construction details.

Execution

In accordance with NYSDEC's policy document referenced above, the four primary well decommissioning methods are:

- Grouting in-place.
- Perforating the casing followed by grouting in-place.
- Grouting in-place followed by casing pulling.
- Overdrilling and grouting with or without a temporary casing.

The methods and rationale for each of these methods is detailed in NYSDEC's policy document.

1.1. Borehole Abandonment

All soil borings not finished as monitoring wells or piezometers will be abandoned by adding neat cement grout or cement/bentonite grout via tremie pipe from the bottom of the borehole up to the ground surface. If the boring was completed via the hollow stem auger method, the borehole will be grouted as the augers are withdrawn, in the case of a direct-push soil boring, the borehole will be redrilled and pressure-grouted from the bottom depth of the borehole up. The neat cement grout will be mixed in accordance with the manufacturer's recommendations. The bentonite/cement grout will be mixed in the following relative proportions: 30 gallons of water to three 94-pound bags of cement to 25 pounds granular bentonite.

2. References

New York State Department of Environmental Conservation, *"CP-43: Groundwater Monitoring Well Decommissioning Policy"*, November 2009.

Environmental Protection Agency, Region 4*, "Environmental Investigation Standard Operating Procedures and Quality Assurance Manual, Chapter 6 – Design and Installation of Monitoring Wells,"* November 2001.

3. Attachment

Attachment A – CP-43: Groundwater Monitoring Well Decommissioning Policy

Attachment A

CP-43:Groundwater Monitoring Well Decommissioning Policy

New York State Department of Environmental Conservation

DEC POLICY

Issuing Authority: Commissioner Alexander B. Grannis

Date Issued: November 3, 2009

Latest Date Revised:

I. Summary:

Groundwater monitoring wells provide essential access to the subsurface for scientific and engineering investigations (including monitoring wells installed for leak detection purposes). To a degree, every monitoring well is an environmental liability because of the potential to act as a conduit for pollution to reach the groundwater. To limit the environmental risk, a groundwater monitoring well must be properly decommissioned when its effective life has been reached. This document provides procedures to satisfactorily decommission groundwater monitoring wells in New York State. This policy also pertains to other temporary wells such as observation wells, test wells, de-watering wells and other small diameter, non-potable water wells. It does not pertain to water supply wells.

II. Policy:

Environmental monitoring wells should be decommissioned when:

1. they are no longer needed and re-use by another program is not an option; or
2. the well's integrity is suspect or compromised.

The method for decommissioning will be determined based upon well construction and environmental parameters. The method selected must be designed to protect groundwater and implemented according to current best engineering practices while following all applicable federal, state and local regulations. *Groundwater Monitoring Well Decommissioning Procedures* shall be maintained as an addendum to this policy.

This policy is applicable to all New York State Department of Environmental Conservation (DEC) programs that install, utilize and maintain monitoring wells for the study of groundwater, except monitoring wells for landfills regulated under 6 NYCRR Part 360 decommissioned in accordance with those regulations [*see* 6 NYCRR 360-2.11(a)(8)(vi)] and wells installed under the Oil, Gas and Solution Mining Law, Environmental Conservation Law Article 23. There is no specific time frame to dictate when to decommission a well; timing is dependent upon the use and condition of the well and shall be determined on an individual basis. Best professional judgment must be exercised when using the decommissioning procedures. Outside of DEC use, this policy is mandatory when incorporated into the specifications of a state contract, an Order on Consent or a permit. In all other situations, it shall serve as guidance.

III. Purpose and Background:

This document establishes a monitoring well decommissioning policy and provides technical guidance. Synonyms for well decommissioning include “plugging,” “capping” and “abandoning. For consistency, only the term “decommissioning” is used within this document.

Unprotected, neglected and improperly abandoned monitoring wells are a serious environmental liability. They can function as a pollution conduit for surface contaminants to reach the subsurface and pollute our groundwater. They also can cause unwanted mixing of groundwater, which degrades the overall water quality within an aquifer. Improperly constructed, poorly maintained or damaged monitoring wells can yield anomalous poor data that can compromise the findings of an environmental investigation or remediation project. Unneeded or compromised monitoring wells should be properly decommissioned in order to prevent harm to our groundwater.

Since 1980, the DEC has installed, directed or overseen the installation of thousands of monitoring wells throughout New York for various state and federal programs, such as Superfund, solid waste, Resource Conservation and Recovery Act (RCRA), spill response, petroleum bulk storage and chemical bulk storage. This guidance addresses the environmental liability associated with this aging network of wells.

Within its boring zone, a successfully decommissioned well prevents the following:

1. Migration of existing or future contaminants into an aquifer or between aquifers;
2. Migration of existing or future contaminants within the vadose zone;
3. Potential for vertical or horizontal migration of fluids in the well or adjacent to the well; and
4. Any change in the aquifer yield and hydrostatic head, unless due to natural conditions.

Monitoring well construction in New York varies considerably with factors such as age of the well, local geology and either the presence or absence of contamination. The predominant type of monitoring well in New York is the shallow, watertable monitoring well constructed of polyvinyl chloride plastic (PVC). The best method for decommissioning should be selected to suit the conditions and circumstances. Each decommissioning situation is to be evaluated separately using this guidance before a method is chosen and implemented.

IV. Responsibility:

The Division of Environmental Remediation (DER) is responsible for updating this policy and the *Groundwater Monitoring Well Decommissioning Procedures* (addendum) in consultation with the Division of Solid and Hazardous Materials (DSHM) and the Division of Water (DOW). Compliance with the guidance does not relieve any party of the obligation to properly decommission a monitoring well. Oversight responsibility will be carried out by the DEC Regional Engineer.

V. Procedure:

Groundwater Monitoring Well Decommissioning Procedures, the addendum to this policy, provides guidance on proper decommissioning of monitoring wells in New York State.

VI. Related References:

- Groundwater Monitoring Well Decommissioning Procedures, October 1986. Prepared by Malcolm Pirnie, Inc. for the New York State Department of Environmental Conservation, Division of Environmental Remediation.

- Standard Guide for the Decommissioning of Ground Water Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities, ASTM D 5299-99. American Society for Testing and Materials (ASTM). Philadelphia. 2005.

- 6 NYCRR Part 360 Solid Waste Management Facilities, New York State Department of Environmental Conservation, Division of Solid and Hazardous Materials.

- Specifications for Abandoning Wells and Boreholes in Unconsolidated Materials, New York State Department of Environmental Conservation, Region 1 - Water Unit, undated.

- Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells, EPA 600/4-89/034, United States Environmental Protection Agency (EPA).

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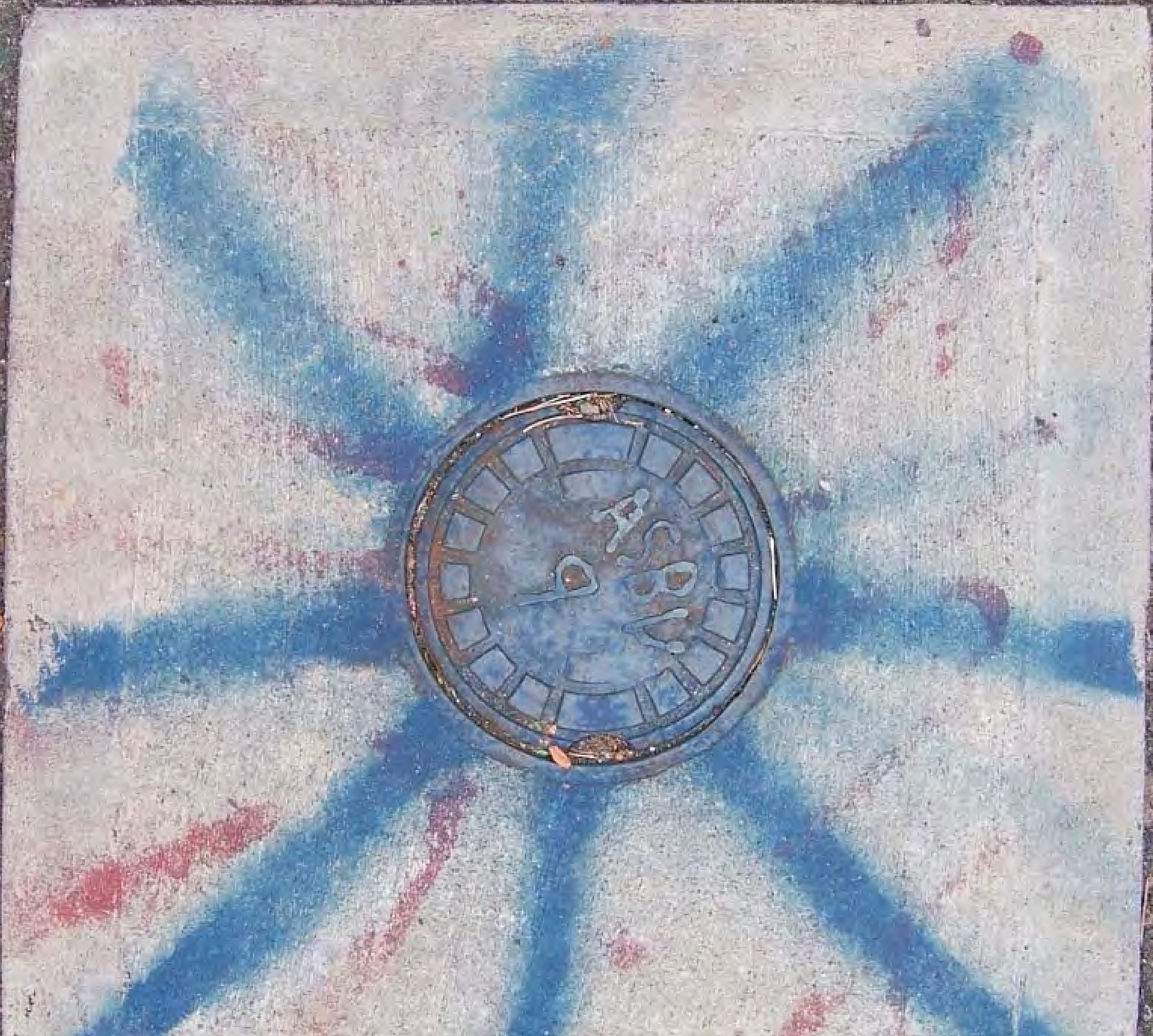
Final - August 2009

GROUNDWATER MONITORING WELL DECOMMISSIONING PROCEDURES



New York State Department of Environmental Conservation
Division of Environmental Remediation

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INTRODUCTION

This document, *Groundwater Monitoring Well Decommissioning Procedures*, is the addendum to CP-43, Groundwater Monitoring Well Decommissioning Policy, which provides acceptable procedures to be used as guidance when decommissioning monitoring wells in New York State. Please note that this document does not address some site-specific special situations that may be encountered in the field. Compliance with the procedures set forth in this document does not relieve any party of the obligation to properly decommission a monitoring well.

Unprotected, neglected and improperly abandoned monitoring wells are a serious environmental liability. They can function as a pollution conduit for surface contaminants to reach the subsurface and pollute our groundwater. They also can cause unwanted mixing of groundwater, which degrades the overall water quality within an aquifer. Improperly constructed, poorly maintained or damaged monitoring wells can yield anomalous poor data that can compromise the findings of an environmental investigation or remediation project. Unneeded or compromised monitoring wells should be properly decommissioned in order to prevent harm to our groundwater.

Previous versions of this guidance have been issued since 1995. Originally developed as a specification for well decommissioning at Love Canal, the procedures were rewritten to make them applicable across the state. From an engineering standpoint, the guidance has changed very little. Most situations do not require a complex procedure.

If you have any questions, please contact Will Welling at (518) 402-9814.

Sincerely,

Gerald J. Rider, Jr., P.E.
Chief, Remedial Section D
Remedial Bureau E
Division of Environmental Remediation

1.0 PREPARATION

If an unneeded monitoring well remains in good usable condition, an alternative to decommissioning might be the reuse by another agency program. DEC encourages reuse in situations where a well will continue to be used and cared for responsibly.

When reuse is not an option, the first step in the well decommissioning process is to review all pertinent well construction information. One must know the well depth and construction details. GPS coordinates and permanent labeling (if available) will be useful in confirming the well to be decommissioned. An inspection must be performed prior to decommissioning in order to verify the construction and condition of each well. Specific details and subsurface conditions form the basis for decisions throughout the decommissioning process.

Well Details

1. Is the well a single stem riser (all one diameter)?
2. Is the well a simple overburden well (no penetration into bedrock)?
3. Does the well riser consist of telescoping diameters of pipe which decrease with depth?
4. Is the well seal compromised (leaking, inadequate or damaged)?
5. If the well is PVC, is it 25 feet or shallower and not grouted into rock?
6. Can the riser be pulled and is removal of the well desired?
7. Is the well a bedrock well?
8. If the monitoring well is a bedrock well, does it have an open hole?
9. Is there a well assembly (riser and screen) installed within the bedrock hole?

Subsurface Conditions

10. Is the soil contaminated?
11. Does the well penetrate a confining layer?
12. If the well penetrates a confining layer, might overdrilling or casing pulling cause contamination to travel up or down through a break in the confining layer?
13. Does the screened interval cross multiple water-bearing zones?

For additional collection and verification of information, the "Monitoring Well Field Inspection Log" (Figure 1) can be used during a field inspection. After the well has been located and the information gathered, one is ready to select the decommissioning procedure in accordance with Section 2.

Special conditions, such as access problems, well extensions through capped and covered non-Part 360 landfills and seasonal weather patterns affecting construction, should be assessed in the planning stage. Decommissioning work requiring the use of heavy vehicular equipment on landfill caps should be scheduled during dry weather (if possible) so as to minimize damage to the cover. If work must be performed during the spring, winter or inclement weather, special measures to reduce ruts should be employed to maintain the integrity of a completed landfill cover system. As an example, placement of plywood under vehicular equipment can eliminate deep ruts that would require repair.

2.0 DECOMMISSIONING METHODS

The primary rationale for well decommissioning is to remove any potential groundwater pathway. A secondary rationale, often important to the property owner or owner of the well, is to physically remove the well. Removed well materials may be recycled and will not interfere with future construction excavation. The previous versions of these decommissioning procedures have stressed that physical removal of the well by pulling is preferable to leaving casing in the ground. Due to the added effort, expense and risk involved with pulling, the decision of whether to pull or not should be a separate consideration aside from selecting the sealing procedure.

One should select a decommissioning procedure that takes into account the geologic and hydrogeologic conditions at the well site; the presence or absence of contamination in the groundwater; and original well construction details. The selection process for well decommissioning procedures is provided by the flow chart, Figure 2. Answers to the questions in the preceding section are the input for this flow chart. The four primary well decommissioning methods are:

1. Grouting in-place;
2. Perforating the casing followed by grouting in-place;
3. Grouting in-place followed by casing pulling;
4. Over-drilling and grouting with or without a temporary casing.

In a complex situation, one or more decommissioning procedures may be used for different intervals of the same well.

The remainder of Section 2 discusses the well decommissioning methods and the selection process. Refer to Figure 2 for a flow chart diagram of the complete procedure selection process. The DEC Project Manager has the discretion to deviate from the flow chart, (Figure 2), based on site conditions and professional judgment.

2.1 Grouting In-Place

Grouting in-place is the simplest and most frequently used well decommissioning method and grouting itself is the essential component of all the decommissioning methods. The grout seals the borehole and any portion of the monitoring well that may be left in the ground. Because dirt and foreign objects can fall into an open well, whenever possible a well should be sealed first with grout before attempting subsequent decommissioning steps.

For the purpose of these decommissioning procedures, the well seal is defined as the bentonite seal above the sand pack. Aside from obvious channeling by in-flowing surface water around the well, an indication of the well seal integrity may be obtained through review of the boring logs and/or a comparison of groundwater elevations if the well is part of a cluster. Any problems noted on the boring logs pertaining to the well seal, such as bridging of bentonite pellets or running sands, or disparities between field notes (if available) and the well log would indicate the potential for a poor (compromised) well seal.

If the well seal is not compromised and there is no confining layer present, a single-stem, 2-inch PVC, monitoring well can be satisfactorily decommissioned by grouting it in-place. If the seal is compromised, casing perforation may be called for as discussed in Section 2.2.

As discussed in Section 2.4 and its sub-sections, this method is specified for the bedrock portion of a well, and is used for decommissioning small diameter cased wells. Grouting in-place involves filling the casing with grout to a level of five feet below the land surface, cutting the well casing at the five-foot depth, and removing the top portion of the casing and associated well materials from the ground. The casing must be grouted according to the procedures in Section 6. In addition, the upper five feet of the borehole is filled to land surface and restored according to the procedures described in Section 7.

For open-hole bedrock wells, the procedure involves filling the opening with grout to the top of rock according to the procedures in Section 5. A thicker grout may be required to fill any bedrock voids. If excessive grout is being lost down-hole, consider grouting in stages to reduce the pressure caused by the height of the grout column.

The standard mix with the maximum amount of allowable water will be required to penetrate the well screen and sand pack when a well assembly has been installed within a bedrock hole. For an assembly such as this, the grout should be mixed thinly enough to penetrate the slots and sand pack. The grout mixes are discussed in Sections 6.1 and 6.2.

2.2 Casing Perforating/Grouting In-Place

Casing perforation followed by grouting in-place is the preferred method to use if there is poor documentation of the grouting of the well annulus, or the annulus was allowed to be back-filled with cuttings. The grout will squeeze through the perforations to seal any porous zones along the outside of the casing. The procedure involves puncturing, cutting or splitting the well casing and screen followed by grouting the well. A variety of commercial equipment is available for perforating casings and screens in wells with four-inch or larger inside diameters. Due to the diversity of applications, experienced contractors must recommend a specific technique based on site-specific conditions. A minimum of four rows of perforations several inches long around the circumference of the pipe and a minimum of five perforations per linear foot of casing or screen is recommended (American Society for Testing and Materials, Standard D 5299-99, 1999). After the perforating is complete, the borehole must be grouted according to the procedures in Section 6 and the upper five feet of borehole restored according to the procedures in Section 7.

2.3 Casing Pulling

Casing pulling should be used in cases where the materials of the well assembly are to be recycled, or the well assembly must be removed to clear the site for future excavation or re-development. Casing pulling is an acceptable method to use when no contamination is present; contamination is present but the well does not penetrate a confining layer; and when both contamination and a confining layer are present but the contamination cannot cross the confining layer. Additionally, the well construction materials and well depth must be such that pulling will not break the riser. When contamination is likely to cross the confining layer during pulling, a temporary casing can be used. See Section 2.4.

Casing pulling involves removing the well casing by lifting. Grout is to be added during pulling; the grout will fill the space once occupied by the material being withdrawn. An acceptable procedure to remove casing involves puncturing the bottom of the well or using a casing cutter to cut away the screen, grouting, using jacks to free casing from the hole, and lifting the casing out by using a drill rig, backhoe, crane, or other suitable equipment. Additional grout must be added to the casing as it is withdrawn. Grout mixing and placement procedures are provided in Section 6. In wells or well points in which the bottom cannot be punctured, the casing or screened interval will be perforated or cut away prior to being filled with grout. This procedure should be followed for wells installed in collapsible formations or for highly contaminated wells.

At sites in which well casings have been grouted into the top of bedrock, the casing pulling procedure should not be attempted unless the casing can be first cut or freed from the rock.

2.4 Over-Drilling

Over-drilling is the technique used to physically remove an entire monitoring well, its sand pack and the old grout column and fill. In situations where PVC screens and risers are expected to sever and removal of all well materials is required, over-drilling will be required. Over-drilling is called for when a riser can't be pulled and it penetrates a confining layer. Compared to the other procedures, over-drilling is the least common method of well decommissioning.

A "temporary casing" may be necessary when extraordinary conditions are present, such as a high concentration of mobile contaminants in the overburden, depth to water is shallow, there is poor construction documentation or shoddy construction practices. The approach involves installing a large diameter steel casing around the outside of the well followed by drilling / pulling /grouting within this casing. The casing is withdrawn at the end of pulling, grouting and (perhaps) drilling. If the confining layer is less than 5 feet thick, the casing should be installed to the top of the confining layer. Otherwise, it is installed to a depth of 2 feet below the top of the confining layer. After the outer casing has been set, the well can be removed and grouted through pulling if possible or removed and grouted by drilling inside the casing.

Over-drilling is used where casing pulling is determined to be unfeasible, or where installation of a temporary casing is necessary to prevent cross-contamination, such as when a confining layer is present and contamination in the deeper aquifer could migrate to the upper aquifer as the well is pulled. The over-drilling method should:

- Follow the original well bore;
- Create a borehole of the same or greater diameter than the original boring; and
- Remove all of the well construction materials.

In over-drilling the difficulty lies in keeping the augers centered on the old well as the bit is lowered; it will tend to wander off. As a precaution, the well column should be filled with grout before over-drilling. Then without allowing the grout to dry, the driller proceeds with over-drilling the well. Grouting first guarantees that if the drill wanders off the old well and the effort is less than 100% successful, the remaining well portion will at least have been grouted. There are many methods for over-drilling. Please note that the following methods are not suitable for all types of casing, and the advice of an experienced driller should be sought.

- Conventional augering (i.e., a hollow stem auger fitted with a pilot bit). The pilot bit will grind the well construction materials, which will be brought to the well surface by the auger.
- A conventional cable tool rig to advance “temporary” casing having a larger diameter than the original boring. The cable tool kit is advanced within the casing to grind the well construction materials and soils, which are periodically removed with large diameter bailer. This method is not applicable to bedrock wells.

- An over-reaming tool with a pilot bit nearly the same size as the inside diameter of the casing and a reaming bit slightly larger than the original borehole diameter. This method can be used for wells with steel casings.

- A hollow-stem auger with outward facing carbide cutting teeth having a diameter two to four inches larger than the casing.

Prior to over-drilling, the bottom of the well should be perforated or cut away, and the casing filled with grout as with casing removal by pulling.

In all cases above, over-drilling should advance beyond the original bore depth by a distance of half a foot to ensure complete removal of the construction materials. Oversight attention should be focused on the drill cuttings, looking for fragments of well materials. Absence of these indicators is a sign that the drill has wandered off the well. If wandering is suspected, having previously filled the well with grout, the remaining portion which cannot be over-drilled can be considered grouted in-place. When the over-drilling is complete, grout should be tremied within the annular space between the augers and well casings. The grout level in the borehole should be maintained as the drilling equipment and well materials are sequentially removed. As with all the other methods, the upper five feet of borehole should be restored according to the procedures in Section 7.

3.0 SELECTION PROCESS AND IMPLEMENTATION

The decommissioning procedure selection flow chart, Figure 2, is to be used to select decommissioning methods. The selection process first identifies the basic monitoring well type. There are only two types of monitoring wells described in this guidance, overburden wells and bedrock wells. Bedrock wells typically have an overburden portion which in the selection process is to be treated as an overburden well. Techniques are specified for wells based upon their type and the other physical conditions present. Decommissioning techniques called for by the selection process have their practical limits; construction details dictate when a well stem can be pulled without breaking and when it cannot be pulled. The DEC project manager has the discretion to deviate from the flow chart, (Figure 2), based on site conditions, budgetary concerns and professional judgment. The remainder of this section will discuss types of monitoring wells in various settings along with recommended decommissioning techniques.

3.1 Bedrock Wells

Referring to Figure 2 and Section 2.1, if the well extends into bedrock, the rock hole portion of the well is to be grouted in-place to the top of the rock. The grout mix, however, may vary according to the conditions. A thicker grout may be required to fill voids and a thinner grout may be necessary to penetrate well screen and sand pack. Refer to the grout mixture specifications given in Section 6.1 and 6.2.

Prior to grouting, the depth of the well will be measured to determine if any silt or debris has plugged the well. If plugging has occurred, all reasonable attempts to clear it should be made before grouting. The borehole will then be tremie grouted according to Section 6.4 from the bottom of the well to the top of bedrock to ensure a continuous grout column.

After the rock hole is grouted, the overburden portion of the well is decommissioned using appropriate techniques described below. If the bedrock extends to the ground surface, grouting can extend to the ground surface or to slightly below so that the site can be restored as appropriate in accordance with Section 7.

3.2 Uncontaminated Overburden Wells

For overburden wells and the overburden portion of bedrock wells, the first factor in determining the decommissioning method is whether the overburden portion of the well exhibits contamination, as determined through historical groundwater and/or soil sampling results. If the overburden is uncontaminated, the next criteria considers whether the well penetrates a confining layer. In the case that the overburden portion of the well does not penetrate a confining layer, the casing can either be tremie-grouted and pulled or tremie grouted and left in place. As a general rule, PVC wells greater than 25-feet deep should not be pulled unless site-specific conditions or other factors indicate that the well can be pulled without breaking. If the well cannot be pulled, the well should be grouted in-place as accordance with Sections 2.1 and 2.2.

If a non-telescoped overburden well penetrates a confining layer, the casing should be removed by pulling (if possible) in accordance with Section 2.3. If the casing cannot be removed by pulling, the well should be grouted in-place or where complete removal is required, removed by over-drilling. Over-drilling will be based upon the site-specific conditions and requirements. If pulling is attempted and fails (i.e., a portion of the riser breaks) the remaining portion of the well should be removed by using the conventional augering procedure identified in Section 2.4. Note that if the riser is broken during pulling, it is highly unlikely that the driller will be able to target it to over-drill it. This is the reason why all wells should be grouted first. In all cases, after the well construction materials have been removed to the extent possible, the borehole will be grouted in accordance with Section 6 and the upper five feet will be restored in accordance with Section 7.

3.3 Contaminated Overburden Monitoring Wells/Piezometers

Contamination in the overburden plays a role in the selection process. Any contamination present in the overburden must not be allowed to spread as a result of the decommissioning construction. For wells and piezometers suspected or known to be contaminated with light non-aqueous phase liquid (LNAPL) and/or dense non-aqueous phase liquid (DNAPL), often referred to as “product,” the decision to decommission the well should be reviewed. Such gross contamination is a special condition and requires design of the decommissioning procedure. If decommissioning is determined to be the proper course of action, measurement of the non-aqueous phase liquid volume will be determined and this liquid will be removed.

If an overburden well (or the overburden portion of a bedrock well) is contaminated with LNAPL, DNAPL and /or dissolved fractions as indicated by historical sampling results, one must evaluate the potential for contamination to cross an overburden confining layer (if one exists) during decommissioning. A rock or soil horizon of very low permeability is known as a confining layer. Contamination in the overburden lying above a confining layer is a significant condition to recognize. To prevent mobile contaminants from crossing a confining layer during pulling or over-drilling, a temporary casing should be installed to isolate the work zone. One should follow the procedure selection flow chart. Some contaminated conditions call for over-drilling or a specially designed procedure.

A well in contaminated overburden may be grouted in-place as long as the grout fully seals the well and boring zone. If a well in contaminated overburden was constructed allowing formation collapse as annular backfill or if the well has a compromised well seal, one must either physically remove the well or thoroughly perforate the riser and grout it in-place.

If physical removal of the well is required and the overburden contaminants are likely to be dragged upward or downward during decommissioning, a temporary casing should be used to seal off the construction work zone. Casing pulling and overdrilling can be safely accomplished within the temporary casing. Section 2.4 discusses the temporary casing technique.

3.4 Telescoped Riser

If the riser is telescoped in one or more outer casings, the decommissioning approach depends upon the integrity of the well seal. If there is no evidence that the well seal integrity is compromised, the riser should be grouted in-place in accordance with Sections 2.1 or 2.2 and the upper 5 feet of the well surface should be restored in accordance with Section 7. If indications are that the well seal is not competent, it will be necessary to design and implement a special procedure to perforate and grout or remove the well construction materials. The presence and configuration of the outer casing(s) will be specific in the individual wells and will be a key factor in the decommissioning approach. The special procedure must mitigate the potential for cross-contamination during removal of the well construction materials.

4.0 LOCATING AND SETTING-UP ON THE WELL

Prior to mobilizing to decommission a monitoring well, one should notify the property owner and/or other interested parties including the governing regulatory agency. It is advisable that when at the well location, one should review the proposed well decommissioning procedure. Verify well locations and identification by their identifying markers and GPS coordinates. Lastly, verify the depth of each well with respect to depth recorded on the well construction log.

5.0 REMOVING THE PROTECTIVE CASING

Most monitoring wells installed in non-traffic locations are finished with an elevated, protective casing (guard pipe) and a concrete rain pad. Wells at gasoline stations, usually being in high-traffic areas, are typically finished with a flush-mount, curb box and protective 8" dia steel inspection plate rather than a stick-up riser. The curb box is usually easily removed from around the flush-mount well before pulling or over-drilling. In the case of stick-up wells, the riser pipe may be bonded to the guard pipe and rain pad. When the protective casing and concrete pad of a stick-up monitoring well are "yanked out," a PVC riser will typically break off at the bottom of the guard pipe several feet below grade. Once this happens, it may become impossible to center a drill rig upon the well. The riser may become splintered and structurally unstable for pulling. Unless grouted first, the well may fill with dirt. Before pulling a casing or over-drilling a well, a method must be devised for removing these protective surface pieces without jeopardizing the remaining decommissioning effort.

Generally, unless the protective casing is loose and can be safely lifted off by hand, *one* *should fill the monitoring well with grout before removing the outer protective casing.* This will ensure that the well is properly sealed regardless of any problems later when removing the protective casing. Remove the protective casing or road box vault initially only if the stick-up or vault will interfere with subsequent down-hole work which must be done before grouting. This down-hole work may include puncturing, perforating or cutting the screen or riser. But as a general procedure don't remove the protective casing or road box until after initial grouting is complete.

The procedure for removing the protective casing of a well depends upon the decommissioning method specified for the monitoring well. The variety of protective casings available preclude developing a specific removal procedure but often one can simply break up the concrete seal surrounding the casing and jack or hoist the protective casing out of the ground. A check should be made during pulling to ensure that the inner well casing is not being hoisted with the protective casing. If this occurs, the well casing should be cut off after the base of the protective casing is lifted above the land surface. At well locations where the riser has been extended, the burial of a previous concrete pad may require the excavation of soil to the top of the concrete pad to remove the well.

Steel well casing should be removed approximately five feet below the land surface so as to be below the frost line and out of the way of any subsequent shallow digging. The upper five feet of casing and the protective casing can be removed in one operation if a casing cutter is used.

Waste handling and disposal must be consistent with the methods used for the other well materials unless an alternate disposal method can be employed (i.e., steam cleaning followed by disposal as non-hazardous waste).

6.0 SELECTING, MIXING, AND PLACING GROUT

This section gives recipes for the “standard grout mixture” and the thicker “special grout mixture.” Mixing and placing grout is also discussed in this section. The goal of well decommissioning is to eliminate the capability of water to travel up or down within the volume of the former well and its boring. Success depends upon the correct grout mixture and placement where it is needed. There are two types of grout mixes that may be used to seal monitoring wells: a standard mix and a special mix. Both mixes use Type 1 Portland cement and four percent bentonite by weight. However, the special mix uses a smaller volume of water and is used in situations where excessive loss of the standard grout mix is possible (e.g., highly-fractured bedrock or coarse gravels).

6.1 Standard Grout Mixture

For most boreholes, the following standard mixture will be used:

- One 94-pound bag Type I Portland cement;
- 3.9 pounds powdered bentonite; and
- 7.8 gallons potable water.

Slightly more water may be used in order to penetrate a sand pack when a well screen transects multiple flow zones. This mixture results in a grout with a bentonite content of four percent by weight and will be used in all cases except in boreholes where excessive use of grout is anticipated. In these cases a special thicker mixture will be used.

6.2 Special Mixture

In cases where excessive use of grout is anticipated, such as high permeability formations and highly fractured or cavernous bedrock formations, the following special mixture will be used:

- one 94-pound bag type I Portland cement;
- 3.9 pounds powdered bentonite;
- 1 pound calcium chloride; and
- 6.0-7.8 gallons potable water (depending on desired thickness).

The special mixture results in a grout with a bentonite content of four percent by dry weight. It is thicker than the standard mixture because it contains less water. This grout is expected to set faster than the Standard Grout Mixture due to the added calcium chloride. The least amount of water that can be added for the mixture to be readily pumpable is 6 gallons per 94-pound bag of cement.

6.3 Grout Mixing Procedure

To begin the grout-mixing procedure, calculate the volume of grout required to fill the borehole. If possible, the mixing basin should be large enough to hold all of the grout necessary for the borehole.

Mix grout until a smooth, homogeneous mixture is achieved. Grout can be mixed manually or with a mechanized mixer. Colloidal mixers should not be used as they tend to excessively decrease the thickness of the grout for the above recipes.

6.4 Grout Placement

This guidance requires that grout be placed in the well from the bottom to the top by means of a "tremie." A tremie is a pipe, a hose or a tube extending from the grout supply to the bottom of the well. The tremie delivers the grout all the way down through the water column without its being diluted and mixed with the water that may be present in the well. The tremie pipe or tube is withdrawn as (or after) the well is filled with grout.

Using the tremie, grout is placed in the borehole filling from the bottom to the top. Two-inch and larger wells should use tremie tubing of not less than 1-inch diameter. Smaller diameter wells will call for a smaller tremie pipe. Grout will then be pumped in until the grout appears at the land surface (when grouting open holes in bedrock, the grout level only needs to reach above the bedrock surface). Any groundwater displaced during grout placement, if known to be contaminated, will be contained for proper disposal.

At this time the rate of settling should be observed. If grouting the well in place, the well casing remains in the hole. But if the decommissioning method has involved down-hole tools such as hollow-stem augers or temporary casing for overdrilling, these will be removed from the hole. As each section is removed, grout will be added to keep the level between 0 and 5 feet below grade. If the grout level drops below the land surface to an excessive degree, an alternate grouting method must be used. One possibility is to grout in stages; i.e., the first batch of grout is allowed to partially cure before a second batch of grout is added.

As previously described in Section 5.0, the outer protective casing "stick-up" should be removed only after a well has been properly filled with grout. This will ensure that the well is properly sealed regardless of any breakage which may occur when removing the stick-up. It is important to reiterate that when either casing pulling or over-drilling are required, due to the uncertainty of successfully pulling a well or over-boring a well, we insist that the driller tremie grout the well first. Then without allowing the grout to dry, the driller proceeds with pulling the casing or over-drilling the well.

Upon completion of grouting, ensure that the final grout level is approximately five feet below land surface. A ferrous metal marker will be embedded in the top of the grout to indicate the location of the former monitoring well. Lastly, a fabric "utility" marking should be placed one foot above the grout so an excavator can see it clearly.

7.0 BACKFILLING AND SITE RESTORATION

The uppermost five feet of the borehole at the land surface should be filled with material physically similar to the natural soils. The surface of the borehole should be restored to the condition of the area surrounding the borehole. For example, concrete or asphalt will be patched with concrete or asphalt of the same type and thickness, grassed areas will be seeded, and topsoil will be used in other areas. All solid waste materials generated during the decommissioning process must be disposed of properly.

8.0 DOCUMENTATION

A form which may be used in the field to record the decommissioning construction is included as Figure 3. Additional documentation may be required by a DEC project manager and samples are included in Appendix A. Programs within the DEC that maintain geographic data on monitoring wells strive to keep that data up to date. Owners of these data sets must be notified when a well is decommissioned. Historical groundwater quality data is linked to monitoring well locations so when a well is decommissioned, existing GIS data must be updated to reflect that fact but the coordinate location in the GIS database should not be eliminated. A metal detector may not be able to detect a deeply buried marker so if this locator is important for future utility runs or foundations, a map should be submitted to the property owner and the town engineer showing the decommissioned well locations. Global Positioning System (GPS) coordinates should be indicated on this map. Lastly, whatever documentation is produced should be provided to the property owner, the DEC, and all other parties involved.

9.0 FIELD OVERSIGHT

Over-drilling requires careful observation to detect whether the drill has wandered off the well. Grout preparation and tremie work should be carefully observed. The successful implementation of a decommissioning work plan depends upon proper direction, observation and oversight. Methods to be employed must be clearly worked through and all parties must understand what they have to do before going into the field. Flexibility is allowed where necessary but the work effort must be thorough and effective to protect our groundwater.

10.0 RELATED REFERENCES

- *Groundwater Monitoring Well Decommissioning Procedures*, October 1986. Prepared by Malcolm Pirnie, Inc., for the New York State Department of Environmental Conservation, Division of Environmental Remediation.

- American Society for Testing and Materials, A.S.T.M. D 5299-99, Standard Guide for the Decommissioning of Ground Water Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities. A.S.T.M.. Philadelphia. 2005.

- New York State Department of Environmental Conservation, Division of Solid and Hazardous Materials, 6 NYCRR Part 360, Solid Waste Management Facilities.

- New York State Department of Environmental Conservation, Region I - Water Unit, Specifications for Abandoning Wells and Boreholes in Unconsolidated Materials, undated.

- United States Environmental Protection Agency, The Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells, EPA 600/4-89/034.

FIGURES

APPENDICES

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FIGURE 1

MONITORING WELL FIELD INSPECTION LOG

FIGURE 1

SITE NAME:

SITE ID.: ______
INSPECTOR: ______
DATE/TIME: ______
WEll ID.: ______

MONITORING WELL FIELD INSPECTION LOG
NYSDEC WELL DECOMMISSIONING PROGRAM

	YES	NO
WELL VISIBLE? (If not, provide directions below)		
WELL I.D. VISIBLE?		
WELL LOCATION MATCH SITE MAP? (if not, sketch actual location on back).....................		

WELL I.D. AS IT APPEARS ON PROTECTIVE CASING OR WELL: ....

	YES	NO
SURFACE SEAL PRESENT?		
SURFACE SEAL COMPETENT? (If cracked, heaved etc., describe below)		
PROTECTIVE CASING IN GOOD CONDITION? (If damaged, describe below)		

HEADSPACE READING (ppm) AND INSTRUMENT USED.. ______
TYPE OF PROTECTIVE CASING AND HEIGHT OF STICKUP IN FEET (If applicable) ______
PROTECTIVE CASING MATERIAL TYPE: .... ______
MEASURE PROTECTIVE CASING INSIDE DIAMETER (Inches): .... ______

	YES	NO
LOCK PRESENT?		
LOCK FUNCTIONAL?		
DID YOU REPLACE THE LOCK?		
IS THERE EVIDENCE THAT THE WELL IS DOUBLE CASED? (If yes,describe below)		
WELL MEASURING POINT VISIBLE?		

MEASURE WELL DEPTH FROM MEASURING POINT (Feet): .... ______
MEASURE DEPTH TO WATER FROM MEASURING POINT (Feet): .... ______
MEASURE WELL DIAMETER (Inches): .... ______
WELL CASING MATERIAL: .... ______
PHYSICAL CONDITION OF VISIBLE WELL CASING: .... ______
ATTACH ID MARKER (if well ID is confirmed) and IDENTIFY MARKER TYPE .... ______
PROXIMITY TO UNDERGROUND OR OVERHEAD UTILITIES.. ______

DESCRIBE ACCESS TO WELL: (Include accessibility to truck mounted rig, natural obstructions, overhead power lines, proximity to permanent structures, etc.); ADD SKETCH OF LOCATION ON BACK, IF NECESSARY.

______

______

DESCRIBE WELL SETTING (For example, located in a field, in a playground, on pavement, in a garden, etc.) AND ASSESS THE TYPE OF RESTORATION REQUIRED.

______

______

IDENTIFY ANY NEARBY POTENTIAL SOURCES OF CONTAMINATION, IF PRESENT (e.g. Gas station, salt pile, etc.):

______

______

REMARKS:

______

______

FIGURE 2

DECOMMISSIONING PROCEDURE SELECTION

NYSDEC Monitoring Well Decommissioning Procedure Selection

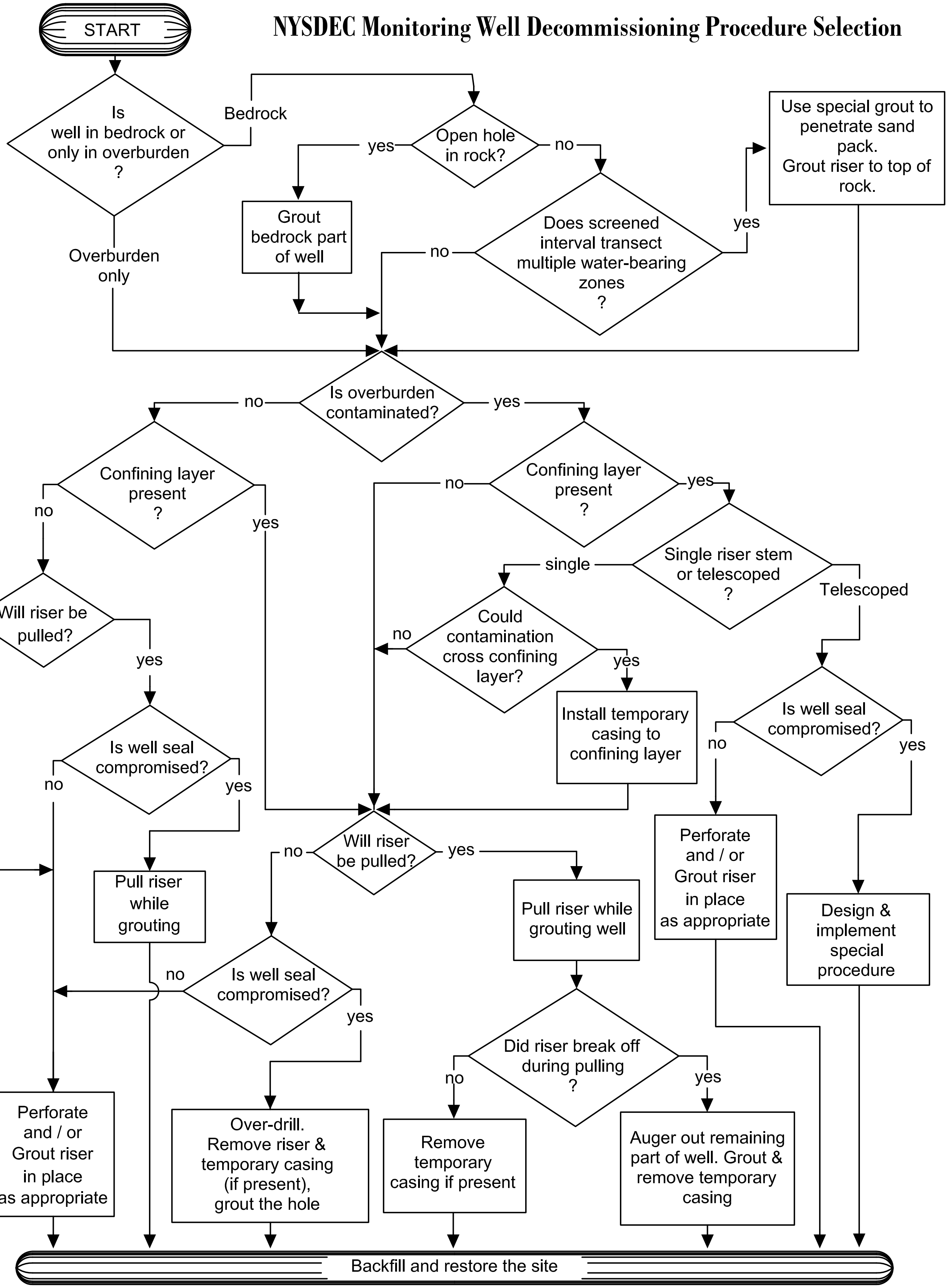


FIGURE 2

FIGURE 3

WELL DECOMMISSIONING RECORD

FIGURE 3

WELL DECOMMISSIONING RECORD

Site Name:	Well I.D.:
Site Location:	Driller:
Drilling Co.:	Inspector:
	Date:

DECOMMISSIONING DATA

(Fill in all that apply)

OVERDRILLING

Interval Drilled
Drilling Method(s)
Borehole Dia. (in.)
Temporary Casing Installed? (y/n)
Depth temporary casing installed
Casing type/dia. (in.)
Method of installing

CASING PULLING

Method employed
Casing retrieved (feet)
Casing type/dia. (in)

CASING PERFORATING

Equipment used
Number of perforations/foot
Size of perforations
Interval perforated

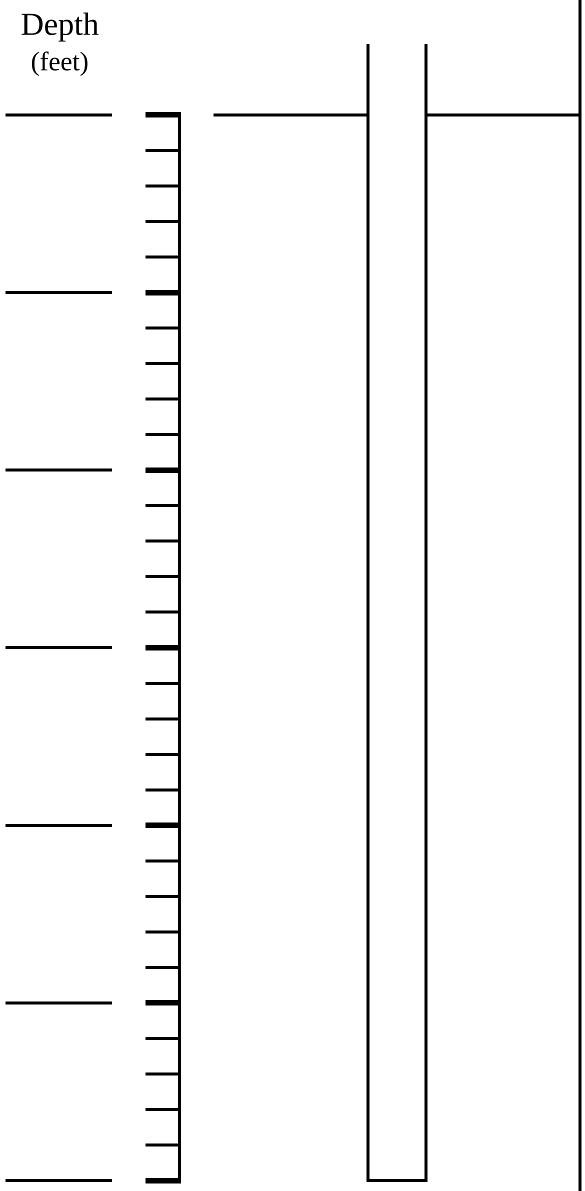
GROUTING

Interval grouted (FBLS)
# of batches prepared

For each batch record:

Quantity of water used (gal.)
Quantity of cement used (lbs.)
Cement type
Quantity of bentonite used (lbs.)
Quantity of calcium chloride used (lbs.)
Volume of grout prepared (gal.)
Volume of grout used (gal.)

WELL SCHEMATIC*



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor

Department Representative

APPENDIX A - REPORTS

APPENDIX A1 - INSPECTOR’S DAILY REPORT

APPENDIX A2 - PROBLEM IDENTIFICATION REPORT

APPENDIX A3 - CORRECTIVE MEASURES REPORT

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Appendix A1

Inspector's Daily Report

CONTRACTOR:
ADDRESS:

TELEPHONE:
LOCATION FROM TO
WEATHER TEMP A.M. P.M. DATE

CONTRACTOR'S WORK FORCE AND EQUIPMENT

DESCRIPTION	*H*	*#*	*DESCRIPTION*	*H*	*#*	*DESCRIPTION*	*H*	*#*	*DESCRIPTION*	*H*	*#*
Field Engineer						Equipment			Front Loader Ton		
Superintendent			Ironworker			Generators			Bulldozer		
						Welding Equip.					
Laborer Foreman			Carpenter								
Laborer									Backhoe		
Operating Engineer			Concrete Finisher								
Carpenter						Paving Equip. & Roller					
						Air compressor					

SEE REVERSE SIDE FOR SKETCH YES ☐ NO ☐

WORK PERFORMED:

PAY ITEMS

CONTRACT		STA		DESCRIPTION	QUANTITY	REMARKS
Number	ITEM	FROM	TO			

TEST PERFORMED:
PICTURES TAKEN:

VISITORS:

QA PERSONNEL
SIGNATURE

REPORT NUMBER
SHEET Of

[Page Intentionally Left Blank]

PROBLEM IDENTIFICATION REPORT

Date ______________________

Project ____________________________ Job Number ________

Contractor ____

Subject ____

Day	Su	M	T	W	Th	F	Sa

Sky/Precip.	Clear	Partly Cloudy	Cloudy	Rainy	Snow
TEMP.	<32F	32-40F	40-70F	70-80F	80-90F
WIND	No	Light	Strong		
HUMIDITY	Dry	Mod.	Humid		

PROBLEM DESCRIPTION Reference Daily Report Number 1: ____________________

PROBLEM LOCATION - REFERENCE TEST RESULTS AND LOCATION (Note: Use sketches on back of form as appropriate):

PROBABLE CAUSES: ____________________

SUGGESTED CORRECTIVE MEASURES: ____________________

APPROVALS:

QA ENGINEER: ____________________

PROJECT MANAGER: ____________________

Distribution:

1. Project Manager
2. Field Office
3. File
4. Owner

QA Personnel
Signature: ____________________

MEETINGS HELD AND RESULTS

REMARKS

REFERENCES TO OTHER FORMS

SKETCHES

SAMPLE LOG

SAMPLE NUMBER

APPROXIMATE LOCATION OF STOCKPILE

NUMBER OF STOCKPILE

DATE OF COLLECTION

CLIMATIC CONDITIONS

FIELD OBSERVATION

SHEETS OF

Appendix A3

CORRECTIVE MEASURES REPORT

Date ______________________

Project ______________________ **Job Number** __________

Contractor ______________________

Subject ______________________

Day	Su	M	T	W	Th	F	Sa

Sky/Precip.	Clear	Partly Cloudy	Cloudy	Rainy	Snow
TEMP.	<32F	32-40F	40-70F	70-80F	80-90F
WIND	No	Light	Strong		
HUMIDITY	Dry	Mod.	Humid		

CORRECTIVE MEASURES TAKEN (Reference Problem Identification Report No.): ______________________

RETESTING LOCATION: ______________________

SUGGESTED METHOD OF MINIMIZING RE-OCCURRENCE: ______________________

SUGGESTED CORRECTIVE MEASURES: ______________________

APPROVALS:

QA ENGINEER: ______________________

PROJECT MANAGER: ______________________

Distribution:

1. Project Manager
2. Field Office
3. File
4. Owner

QA Personnel

Signature: ______________________

Section 5

SAMPLE COLLECTION AND FIELD SCREENING (SC)

SUMMARY GUIDANCE

SC-001 General Guidance on Sample Collection

---

1. Overview

The primary objective of all sampling activities is to characterize a site accurately so that its impact on human health and the environment can be properly evaluated. It is only through sampling and analysis that site hazards can be measured and the job of cleanup and restoration can be accomplished effectively with minimal risk. The sampling itself must be conducted so that every sample collected retains its original physical form and chemical composition. In this way, sample integrity is insured, quality assurance standards are maintained, and the sample can accurately represent the larger body of material under investigation. The extent to which valid inferences can be drawn from a sample depends on the degree to which the sampling effort conforms to the project's objectives. For example, one sample may produce adequate, technically valid data to address the project's objectives. Meeting the project's objectives requires thorough planning of sampling activities, and implementation of the most appropriate sampling and analytical procedures.

2. Sample Purposes

In relation to the media to be sampled, two basic types of samples can be considered:

2.1. Waste Characterization sample

Hazardous or concentrated samples are those collected from drums, tanks, lagoons, pits, waste piles, soil, groundwater, soil vapor, fresh spills, or areas previously identified as contaminated, and require special handling procedures because of their potential toxicity or hazard. These samples can be further subdivided based on their degree of hazard; however, care should be taken when handling and shipping any wastes believed to be concentrated regardless of the degree.

2.2. Environmental sample

Environmental samples are those collected from streams, ponds, lakes, wells, and are off-site samples that are not expected to be contaminated with hazardous materials. They usually do not require the special handling procedures typically used for concentrated wastes. However, in certain instances, environmental samples can contain elevated concentrations of pollutants and in such cases would have to be handled as hazardous samples.

The importance of making the distinction between environmental and hazardous samples is two-fold:

- Personnel safety requirements: Any sample thought to contain enough hazardous materials to pose a safety threat should be designated as hazardous and handled in a manner which ensures the safety of both field and laboratory personnel.
- Transportation requirements: Hazardous samples must be packaged, labeled, and shipped according to the International Air Transport Association (IATA) Dangerous Goods Regulations or the Department of Transportation (DOT) regulations and U.S. Environmental Protection Agency (EPA) guidelines.

3. Sample Collection Techniques

In general, two basic types of sample collection techniques are recognized, both of which can be used for either environmental or hazardous samples.

3.1. Grab Samples

A grab sample is defined as a discrete aliquot representative of a specific location at a given point in time. The sample is collected all at once at one particular point in the sample medium. The representativeness of such samples is defined by the nature of the materials being sampled. In general, as sources vary over time and distance, the representativeness of grab samples will decrease.

3.2. Composite Samples

Composites are non-discrete samples composed of more than one specific aliquot collected at various sampling locations and/or different points in time. Analysis of this type of sample produces an average value and can in certain instances be used as an alternative to analyzing a number of individual grab samples and calculating an average value. It should be noted, however, that compositing can mask problems by diluting isolated concentrations of some hazardous compounds below detection limits. Compositing of hazardous waste is often performed after compatibility tests have been completed to determine an average value over a number of different locations (group of drums). This procedure generates data that can be useful by providing an average concentration within a number of units, can serve to keep analytical costs down, and can provide information useful to transporters and waste disposal operations.

For sampling situations involving hazardous wastes, grab sampling techniques are generally preferred because grab sampling minimizes the amount of time sampling personnel must be in contact with the wastes, reduces risks associated with compositing unknowns, and eliminates chemical changes that might occur due to compositing.

3.3. Types of Sampling Strategies

The number of samples that should be collected and analyzed depends on the objective of the investigation. There are three basic sampling strategies: random, systematic, and judgmental sampling.

- Random sampling involves collection of samples in a nonsystematic fashion from the entire site or a specific portion of a site.
- Systematic sampling involves collection of samples based on a grid or a pattern which has been previously established.
- When judgmental sampling is performed, samples are collected only from the portions) of the site most likely to be contaminated.

Often, a combination of these strategies is the best approach depending on the type of the suspected/known contamination, the uniformity and size of the site, the level/type of information desired, etc.

4. Sample Hold Time, Container, and Preservation Methods

The following table provides general required Holding Time, Container, and Preservation Methods. Most of the information is specific to the EPA analytical method and should be pertinent to all sampling schemes. However, some analytical preservation and analytical methods are state specific. The QAPP should clearly identify preservation methods and hold times prior to sampling.

Samples should be submitted to the laboratory as soon as possible. It is preferable to send samples from the field via courier service rather than bringing to the office for later pickup.

Aqueous

Parameter	Holding Time	Container	Volume	Preservative
Acidity	14 days	P, G	100 ml	Cool, 4°C
Alkalinity	14 days	P, G	100 ml	Cool, 4°C
Biological Oxygen Demand (BOD)	48 hours	P, G	1000 ml	Cool, 4°C
Chemical Oxygen Demand (COD)	28 days	P, G	100 ml	Cool, 4°C, H_2SO_4 to pH<2
Chloride	28 days	P, G	100 ml	Cool, 4°C
Chromium, Hexavalent	24 hours	P, G	250 ml	Cool, 4°C
Cyanide				
Amenable	14 days[1]	P, G	500 ml	Cool, 4°C, NaOH to pH>12
Free	14 days[1]	P, G	500 ml	Cool, 4°C, NaOH to pH>12
Total	14 days[1]	P, G	500 ml	Cool, 4°C, NaOH to pH>12
Fluoride	28 days	P	100 ml	Cool, 4°C
Hardness, Total	6 months	P, G	100 ml	HNO_3 to pH<2
Metals (except Cr+6, Hg)	6 months	P	500 ml	Cool, 4°C, HNO_3 to pH<2
MBAS	48 hours	G	500 ml	Cool, 4°C
Mercury	28 days	P, G	500 ml	HNO_3 to pH<2
N, Ammonia	28 days	P, G	100 ml	H_2SO_4 to pH<2
N, T. Kjeldahl	28 days	P, G	500 ml	H_2SO_4 to pH<2
N, Nitrate	48 hrs/ 28 days preserved	P, G	100 ml	Cool, 4°C or add H_2SO_4 to pH<2
N, Nitrite	48 hours	P, G	100 ml	Cool, 4°C
Oil and Grease	28 days	G	1000 ml	Cool, 4°C, H_2SO_4 or HCl to pH<2
Petroleum Hydrocarbons	14 days	G	1000 ml	Cool, 4°C, H_2SO_4 to pH<2
pH	Analyze Immediately	P, G	50 ml	N/A
Phenols,Recoverable	28 days	G	500 ml	Cool, 4°C, H_2SO_4 to pH<2
Phosphorus, Ortho	48 hours	P, G	100 ml	Filter, Cool, 4°C
Phosphorus, Total	28 days	P, G	100 ml	Cool, 4°C, H_2SO_4 to pH<2
Radiological Tests				
Alpha, Beta & Radium	6 months	P, G	4 L	Cool, 4°C, HNO_3 to pH<2
Solids, Total	7 days	P, G	100 ml	Cool, 4°C

Aqueous (cont)

Parameter	Holding Time	Container	Volume	Preservative
Solids, Total Dissolved	7 days	P, G	100 ml	Cool, 4°C
Solids, Total Suspended	7 days	P, G	100 ml	Cool, 4°C
Solids, Volatile Suspended	7 days	P, G	100 ml	Cool, 4°C
Sulfate	28 days	P, G	100 ml	Cool, 4°C
Total Organic Carbon	28 days	P, G	100 ml	Cool, 4°C, H_2SO_4 to pH<2
Halogenated Volatiles	14 days	40 ml vials	2x40 ml	Cool, 4°C3
Purgeable Aromatics	14 days[4]	40 ml vials	2x40 ml	Cool, 4°C, HCl to pH<2
Phenols by GC/MS	7 days/40 days[5]	G	1 L	Cool, 4°C
Pesticides/PCBs	7 days/40 days[5]	G	1 L	Cool, 4°C
Polynuclear Aromatics	7 days/40 days[5]	G	1 L	Cool, 4°C
Acid/Base-Neutral Extractables	7 days/40 days[5]	G	1 L	Cool, 4°C

Solid

Parameter	Holding Time	Container	Volume	Preservative
Metals (except Hg)	6 months	P, G	100 g	Cool, 4°C
Mercury	28 days	P, G	100 g	Cool, 4°C
Halogenated Volatile Organics	14 days	G	10 g/10 ml methanol, 10 g/10 Ml DI water	Methanol and deionized water preserved in field[6]
Halogenated Volatile Organics	14 days	Encore Samplers	Three 5 gram samples	Must be frozen within 48 hours
Purgeable Aromatics	14 days	G	10 g/10 ml methanol, 10 g/10 Ml DI water	Methanol and deionized water preserved in field[6]
Phenols	14 days/40 days[5]	G	100 g	Cool, 4°C
Pesticides/PCBs	14 days/40 days[5]	G	100 g	Cool, 4°C
Polynuclear Aromatics	14 days/40 days[5]	G	100 g	Cool, 4°C
Acid/Base-Neutral Extractables	14 days/40 days[5]	G	100 g	Cool, 4°C

NOTES:

P = Plastic
G = Glass

Holding times in red indicate 48 hours or less holding times.

1. If residual chlorine is present, add 0.6 gm. ascorbic acid.

2. Maximum holding time is 24 hours when sulfide is present. Test with lead acetate paper prior to pH adjustment. Remove sulfide with addition of lead nitrate until a negative spot test is obtained. Filter and add NaOH to pH>12.

3. If samples contain residual chlorine, add 0.008% sodium thiosulfate at the time of sampling.

4. With pH adjustment; without, holding time is 7 days.

5. Seven days prior to extraction. Samples must be analyzed within 40 days after extraction.

6. Encore samplers may be used, but must be received in lab and extracted within 48 hours.

5. References

DER-10, Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation. May 3, 2010.

Analytical Service Protocol, New York State Department of Environmental Conservation. July 2005.

New Jersey Department of Environmental Protection, Field Sampling Procedures Manual, August 2005.

Connecticut Department of Environmental Protection, Guidance for Collecting and Preserving Soil and Sediment Samples for Laboratory.

Determination of Volatile Organic Compounds, Version 2.0 February 28, 2006.

STANDARD OPERATING PROCEDURE

SC-002 Sample Handling

---

1. Objective

Sample handling involves the collection and shipping of environmental samples to a laboratory for chemical analysis. The overall objective of sample handling is to ensure that samples are properly:

- labeled and documented;
- preserved;
- packaged; and
- transported to laboratories.

2. Execution

- Prior to mobilizing to the field, select a shipper or arrange for a courier for sample delivery to the laboratory. If using a shipper (i.e., FedEx, or UPS) determine the time constraints for pickup requests, the location and hours of the nearest shipping office, and any size/weight restrictions.
- Label all laboratory glassware with waterproof ink prior to collecting the respective samples. The label should have an adhesive and be placed on the jar or bottle, not on the cap.
- Record the following information on the label and in the field notebook (see *Field Notebook* SOP FD-001): project number, sample identification (i.e., MW201 or SS-2), date, and time (military time) of collection, sampler's initials, and preservative, if present.
- If sample jars are not pre-preserved, add preservative as appropriate.
- At each sampling location, samples must be collected in order of volatility, most volatile first. Samples collected for volatile analysis must be placed in sample containers immediately upon retrieval of the sample.
- Aqueous samples for volatile analysis must be collected without air bubbles. Soil samples for volatile analysis should be compacted to eliminate as much headspace as possible. Other laboratory glassware should also be filled when possible. Care must be taken to avoid getting soils on the threads of sample jars, which can cause a faulty seal.
- If compositing of samples is performed in the field, specify basis for composite (i.e., volume, weight, spoon recovery, etc.) and record procedure for compositing sample in the field book.
- Once samples have been collected, place samples in a cooler with ice or a blue pack and start the chain of custody (COC) form (SOP FD-003, *Sample Handling and Chain of Custody*).

- For shipping, individually wrap each sample bottle with bubble packing or suitable packing material and place the wrapped bottles in the cooler with sufficient packing material between samples to avoid breakage.
- Place a layer of packing material above and below the sample bottles. Place blue ice packs or ice bags on top of the packing material. Fill the remaining space in the cooler with packing material to eliminate the possibility of vertical movement of samples.
- Place the completed and signed COC form in a plastic bag and place on top of the packing material in the cooler.
- Fill out the appropriate shipping or courier forms and attach to the top of the cooler. If necessary, place the proper shipping labels on the cooler. Have the courier sign the COC form (or write pickup by FedEx, UPS, etc., with date and time). Place a custody seal on the cooler.
- All samples should be submitted as soon as possible. It is preferable for samples to be mailed prior to returning to the office.
- A copy of the waybills must be kept by the field supervisor to track shipments if necessary.

3. Notes

- At all times, follow safety procedures as defined in the site-specific Work Plan and Health and Safety Plan.
- Field personnel must be aware of analyses which have short holding times and schedule sampling events and shipping accordingly. Shipment of samples for analyses with short holding times must be planned in advance. Refer to the project work plan, quality assurance project plan, or state/federal regulations for holding time and preservative information.
- In general, glassware for aqueous samples contains preservatives, (i.e., HNO3, HCl, etc). When collecting the sample, take care not to overfill the container, thus flushing the preservative out of the bottle.
- Never composite samples for volatile organic compounds (VOCs) in the field. Collect individual aliquots and direct the laboratory to perform compositing.
- Collection of aqueous samples should not be performed over the opening of a monitoring well. Preservatives from overfilling or a marker pen or other objects could fall into the well.
- If the recharge volume for a monitoring well is low, completely fill all volatile vials and then collect the minimum sample volume required for each remaining analysis.
- During subsurface soil sampling, if the recovery from the split-spoon sample is inadequate, if appropriate, resample the bottom of the borehole to obtain proper sample volume.

- Laboratories will homogenize and test the contents of the sample container, unless directed otherwise. Samples should not contain rocks, twigs, leaves, etc., unless these materials are of interest.

4. References

DER-10, Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation. May 3, 2010.

Analytical Service Protocol, New York State Department of Environmental Conservation. July 2005.

New Jersey Department of Environmental Protection, Field Sampling Procedures Manual, August 2005.

Connecticut Department of Environmental Protection, Guidance for Collecting and Preserving Soil and Sediment Samples for Laboratory.

Determination of Volatile Organic Compounds, Version 2.0 February 28, 2006.

5. Attachments

Attachment A – General Guidelines for selecting equipment on the basis of construction material and target analyte(s)

Attachment A

Table 2. General Guidelines for selecting equipment on the basis of construction material and target analyte(s)

[✔, generally appropriate for use shown; Si, silica; Cr, chromium; Ni, nickel; Fe, iron; Mn, manganese; Mo, molybdenum; CFC, chlorofluorocarbon; B, boron]

Construction material for sampling equipment		Target analyte(s)	
Material	**Description**	**Inorganic**	**Organic**
		Plastics[1]	
Fluorocarbon ploymers[2] (other varies available for differing applications)	Chemically inert for most analytes	✔ (potential source of fluoride)	✔ (Sorption of some organics)
Polypropylene	Relatively inert for inorganic analytes	✔ (not appropriate for Hg)	**Do not use**
Polypropylene (linear)	Relatively inert for inorganic analytes	✔ (not appropriate for Hg)	**Do not use**
Polyvinyl chloride (PVC)	Relatively inert for inorganic analytes	✔ (not appropriate for Hg)	**Do not use**
Silicone	Very porous. Relatively inert for most inorganic analytes	✔ (potential source of Si)	**Do not use**
		Metals	
Stainless steel 316 (SS 316)	SS-316-metal having the greatest corrosion resistance. Comes in various grades. Used for submersible pump casing.	✔ (Potential source of Cr, Ni, Fe, and possible Mn and Mo) **Do not use** for surface water unless encasted in plastic.	✔ Do not use if corroded[3]
Stainless steel 304	Similar to SS-316, but less corrosion resistant	**Do not use**	✔ Do not use if corroded[3]
Other metals: brass, iron, copper, aluminum, galvanized and carbon steels	Refrigeration-grade copper or aluminum tubing are used routinely for collection of CFC samples	**Do not use**	✔ Routinely used for CFCs Do not use if corroded[3]
		Glass	
Glass, borosilicate (laboratory grade)	Relatively inert. Potential sorption of analytes	✔ **Do not use** for trace element analyses. Potential source of B and Si	✔

[1] Plastic used in connection with inorganic trace-element sampling should be uncolored or white. Tubing used for trace metal sampling should be cleaned by soaking in 5-10 percent HCl solution for 8-24 hours, rinsing with reagent water (metals free) and allowed to air dry in mercury-free environment. After drying, the tubing is doubled-bagged in clear polyethylene bags, serialized with a unique number, and stored until used.

[2] Fluorocarbon polymers include materials such as Teflon™, Kynar™, and Tefzel™ that are relatively inert for sampling inorganic or organic analytes. Only fluoropolymer should be used for samples that will analyzed for mercury because mercury vapors can diffuse in or out of other materials, resulting in either contaminated or biased results.

[3] Corroded/weathered surfaces are active sorption sites for organic compounds.

GEI CONSULTANTS, INC.
110 Walt Whitman Road, Suite 204
Huntington Station, New York

SOP No. SC-003
Revision No.0
Effective Date: November 2010

STANDARD OPERATING PROCEDURE

SC-003 Investigation Derived Waste

---

1. Objective

The objective is to provide guidelines for the proper management of Investigation Derived Waste (IDW) resulting from site investigation activities. This Standard Operating Procedure (SOP) addresses IDW generated during field tasks typically performed for environmental site investigations. The intent of this SOP is to provide a set of guidelines for proper assessment and handling of these IDWs.

2. Execution

- Determine the suspected contamination type and impacted media anticipated based on previous investigations, current analytical data, and/or site history.
- Consider the following issues when selecting IDW management option(s):
    i. anticipated volume of IDW to be generated during on-site activities
    ii. potential contaminants and their concentrations
    iii. location of the nearest populations and the likelihood and/or degree of site access
    iv. potential exposures to workers
    v. potential for environmental impacts
    vi. community concerns
    vii. potential storage areas
    viii. regulatory constraints
    ix. potential on-site treatment options
- Select IDW Management Option(s) prior to the commencement of field activities that will generate waste materials.
- In addition to the issues considered above for the selection of IDW management strategies/disposal options, more specific considerations/guidelines include:

2.1. Test Pit Excavation

- Segregate contaminated soil from uncontaminated soil using visual and/or field screening methods.
- Use appropriate barrier (plastic sheeting) for temporary stockpiling of contaminated soil adjacent to test pit.
- Backfill test pits with uncontaminated soil.
- For situations where returning contaminated soil to the test pit is deemed protective by the project manager, backfill soil in the same order as the soil was excavated from the test pit.

- For contaminated soil pile, collect representative sample(s) for test pit(s) for waste disposal characterization
- Ensure that the pile is appropriately covered with polysheeting and secured until disposed offsite.

2.2. Boring/Monitoring Well Installation

- For auger borings, segregate contaminated soil (determined by visual and/or field screening methods) from uncontaminated soil during drilling. Segregate residual contaminated soil from split-spoon sampling.
- Auger cuttings or sediment generated by drive and wash may be spread around the ground surface at the boring location if deemed appropriate by the project manager. IDW may be placed in an appropriate area or container pending characterization and appropriate disposal. (A useful rule of thumb is to assume generation of one 55-gallon drum of cuttings for each 20 feet drilled with 7-¼-inch-inner diameter [ID] augers).
- Segregate contaminated drilling fluid from uncontaminated fluid for rotary wash borings.
- Drilling fluid management options include pouring the drilling fluid on the ground in the Area of Concern (AOC) or containerizing the fluid in drums or tanks.

2.3. Water Development/Sampling

- Contaminated groundwater removed from wells by pumping or bailing for the purpose of well development and sampling should be containerized at the project manager's discretion.

2.4. Decontamination Fluids

- Decontamination fluids should be containerized in drums or tanks.

2.5. Disposable Personal Protective Equipment (PPE)

- Disposable PPE must be managed like any other IDW. It should only be removed from the site with the project manager's approval, and may be disposed of as ordinary rubbish only if it has not come into contact with hazardous materials.

3. Notes

- The preferred IDW management option is to return the IDW to its source. However, this is not always an option.
- The IDW selected must be in accordance with state/federal regulations.

- National Grid contracts directly with the transportation and disposal contractor for the disposal of IDW, should disposal be necessary.

4. References

Guide to Management of Investigation - Derived Wastes (April 1992), United States Environmental Protection Agency, Publication 9345.3-03FS.

Standard References for Monitoring Wells, Massachusetts Department of Environmental Protection, Publication No. WSC-310-91.

Connecticut Department of Environmental Protection Connecticut's RCRA "Contained-In" Policy, Updated June 2005

GEI CONSULTANTS, INC.
110 Walt Whitman Road, Suite 204
Huntington Station, New York

SOP No. SC-004
Revision No.0
Effective Date: November 2010

STANDARD OPERATING PROCEDURE

SC-004 Head Space VOC Screening

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1. Objective

To obtain a site-specific indication of the volatile organic compounds (VOC) concentrations present in soil. This information can be used: 1) to segregate soil based on degree of contamination, 2) to identify samples for quantitative analysis of VOCs, or 3) as a qualitative method to evaluate the presence or absence of VOCs in soil.

2. Execution

- A photoionization detector (PID) or flame ionization detector (FID) instrument is used to measure VOCs in jar head space (JHS) screening. Select the appropriate instrument, lamp, and calibration gas for the site-specific contaminants. Calibrate the instrument in accordance with the manufacturer's instructions before JHS screening begins. Record the type of calibration gas, detector, and lamp in the field notebook.
- Note the highest VOC concentration that the instrument measures in air in the work area before performing JHS screening. Record this as the initial background concentration.
- Half-fill a clean, glass jar with the soil. Use a clean trowel or soil spatula. Quickly cover the open top with one or two sheets of clean, aluminum foil and screw on the cap to tightly seal the jar. Label the sample location and depth from which the sample was collected on the jar.
- Allow headspace development for at least 10 minutes at an ambient temperature of 50°F or greater. Vigorously shake the jar for 15 seconds at the beginning and end of the headspace development period. When ambient temperatures are below 50°F, place the jar in a heated van or building during the headspace development period.
- After headspace development, remove the screw cap to expose the foil seal. Quickly puncture the foil seal with the instrument's sampling probe and insert it to a point at about one-half of the headspace depth.
- Record the highest VOC concentration that the instrument displays as the JHS concentration. The highest concentration should occur between 2 and 5 seconds after probe insertion.

3. Notes

- The instruments may work poorly in the rain and in freezing temperatures. PIDs may not function in high-humidity conditions. Under such conditions, operate the instrument in a heated vehicle or building.

- Prevent water and soil particles from entering the tip of the instrument probe. Use a filter on the instrument's probe.
- Measure background VOC conditions and perform JHS screening away from non-site-related VOC sources, such as vehicle and heavy equipment exhaust.
- The VOC concentration on the instrument's display may vary when the air contains high VOC concentrations or high moisture.
- JHS screening is a guide that helps the screener to segregate soils into broadly defined categories. JHS screening results may differ by orders of magnitude from laboratory testing results.

4. References

Interim Remediation Waste Management Policy for Petroleum Contaminated Soils. (April 1994), Massachusetts Department of Environmental Protection, Policy #WSC-94-400.

STANDARD OPERATING PROCEDURE

SC-005 SiteLAB™ UVF-3100 Ultraviolet Fluorescence (UVF) detection method

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1. Objective

To establish standard procedures for the field analysis of petroleum hydrocarbons in soil and water using the SiteLAB™ UVF-3100 Ultraviolet Fluorescence (UVF) detection method.

Ultraviolet Fluorescence is a very selective detection method useful for testing many types of environmental contaminants. The principle of operation relies on the electronic configuration of the molecular structure for each contaminant. When a hydrocarbon molecule is exposed to certain wavelengths of light, the molecule emits energy at a specific wavelength. The light energy emitted by an environmental sample exposed to a UV source is directly proportional to the concentration of hydrocarbons present. The fluorescence response of each sample is then quantified using a 5 point linear calibration curve. A specific range of target compounds can be quantified by first selecting the appropriate wavelengths of light to be detected by the UVF-3100 and then using certified standards sensitive to the wavelengths of interest, to establish the linear range of the calibration curve. The UVF-3100 can be calibrated to detect the following types of hydrocarbon ranges:

- Volatile Petroleum Hydrocarbons (C9-C10 molecular weights) including benzene, toluene ethylbenzene and xylene (BTEX).
- Gasoline Range Organics (C5-C10) including BTEX.
- Extractable Petroleum Hydrocarbons (C11-C22).
- Extractable Diesel Range Organics (C10-C40) (weathered Diesel).
- Polycyclic Aromatic Hydrocarbons (PAH Mix).
- #2 Fuel Oil.
- #6 Fuel Oil.
- Motor Oil Range Organics.
- Polychlorinated Biphenyls (PCBs).

After calibrating the instrument and performing the sample extraction step, the UVF-3100's actual analysis time is less than 5 seconds.

2. Execution

- On receipt of the instrument, inspect all shipping cartons to ensure that all components have been received and verify that the unit is operational.
- On site, assemble the unit according to the manufacturer's instructions. Install the UVF-3100 software onto the field notebook computer.

- The UVF-3100 is equipped with an internal battery. However, the AC adapter may be needed for extended operation. Be prepared to switch to AC power if necessary.
- Operate the UVF-3100 for 20 minutes prior to use to ensure that the instrument is operating at full performance.
- Select the applicable standards based on the target hydrocarbon range (i.e., BTEX, PAHs, etc.).
- Calibrate the UVF-3100 in accordance with the instructions provided with the appropriate calibration kit. PROPER CALIBRATION OF THE INSTRUMENT IS CRITICAL.
- For optimal use of the UVF-3100, approximately 20 samples (maximum of 20 samples) should be screened during each run.
- Extract samples using the SiteLAB™ UVF Analytical Test Kit (Product Number EXTR010-20).
- Sample extracts can be stored for up to three months if kept refrigerated.
- Field personnel should be familiar with both the sample extraction and the calibration procedure before attempting to record data.
- Operate instrument as per manufacturer’s instructions.
    1. Select the appropriate optical filter for the specific test to be run.
    2. Select the proper wavelength for the specific test to be run.
    3. Perform the 5-point calibration using the appropriate standards.
    4. Perform the sample extraction procedure.
    5. Make any necessary dilutions.
    6. Analyze the samples and record the results on the record sheet included with the extraction kit. Include test run number, Sample ID, Fluorescence, Sample Concentration, and Dilution Factor on the sheet.
    7. Calculate result by multiplying the sample result by the dilution factor.
    8. Repeat for each sample. Make addition dilutions if necessary.
- **Sample dilution** – Samples exhibiting a yellowish color should be diluted until a minimal yellow tint is observed. Analyze both the diluted sample and the undiluted sample for comparison. Follow dilution procedure outlined in the manual. Addition methanol may be necessary for further dilution.
- **Field duplicate** – a duplicate sample should be collected from a sample location suspected of being contaminated with the target hydrocarbon and extracted in a manner identical to the original sample.

Field duplicates should be taken at a frequency of one per twenty samples or one per weekly sampling whichever is the greater.

3. References

Interim Remediation Waste Management Policy for Petroleum Contaminated Soils. (April 1994), Massachusetts Department of Environmental Protection, Policy #WSC-94-400.

Innovative Technology Verification Report, Field Measurement Technologies for Total Petroleum Hydrocarbons in Soil United States Office of Research and EPA/600/R-01/080.

Environmental Protection Development September 2001, Agency Washington, DC 20460
siteLAB® Corporation, siteLAB® Analytical Test Kit UVF-3100A.

Section 6

SOLID MATRIX SAMPLING (SM)

GEI CONSULTANTS, INC.
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Huntington Station, New York

SOP No. SM-001
Revision No.0
Effective Date: November 2010

STANDARD OPERATING PROCEDURE

SM-001 Soil Sampling Techniques Including Split-Spoon

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1. Objective

This Standard Operating Procedure (SOP) is used primarily to collect surface, shallow subsurface, and stockpile soil samples. Surface soils are generally classified as soils between the ground surface and 6 to 12 inches below ground surface (bgs). The shallow subsurface interval may be considered to extend from approximately 12 inches bgs to a site-specific depth at which sample collection using manual methods becomes impractical.

2. Execution

2.1. At-Depth Sampling

When sampling at depth, utilize the procedures outlined in the following SOPs for the drilling method used:

Hollow Stem Auger (split spoon): SOP DM-002
Sonic Drilling: SOP DM-003
Geoprobe or Direct Push (macrocore): SOP DM-005

2.2. Surface Soil Sampling

Collection of samples from near-surface soil can be accomplished with tools such as spades, shovels, trowels, and scoops. Surface material is removed to the required depth and a stainless steel or plastic scoop is then used to collect the sample. This method can be used in most soil types but is limited to sampling at or near the ground surface. Accurate, representative samples can be collected with this procedure depending on the care and precision demonstrated by the sample team member. A flat, pointed mason trowel to cut a block of the desired soil is helpful when undisturbed profiles are required.

- Carefully remove the top layer of soil or debris to the desired sample depth with a pre-cleaned spade.
- Using a pre-cleaned, stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which came in contact with the spade.
- If volatile organic analysis is to be performed, transfer the sample directly into an appropriate labeled sample container with a stainless steel lab spoon, or equivalent and secure the cap tightly.
- Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval.

- Either place the sample into appropriate labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval or location into the homogenization container and mix thoroughly.
- When compositing is complete, place the sample into appropriate labeled containers and secure the caps tightly.
- Label, preserve, and store the sample in accordance with SOP SC-002 *Sample Handling*.

2.3. Stockpile Sampling

- Collection of samples from stockpiles can be accomplished with tools such as spades, shovels, trowels, and scoops. Surface material from the stockpile is removed and a stainless steel or plastic scoop is then used to collect the sample.
- Using a pre-cleaned, stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which came in contact with the spade.
- If volatile organic analysis is to be performed, transfer the sample directly into an appropriate labeled sample container with a stainless steel lab spoon, or equivalent and secure the cap tightly.
- Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling stockpile.
- When collecting composite samples, place a sample from another sampling location into the homogenization container and mix thoroughly.
- When compositing is complete, place the sample into appropriate labeled containers and secure the caps tightly.
- Label, preserve, and store the sample in accordance with SOP SC-002 *Sample Handling*.

3. References

ASTM D1585-98, "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils". 1998.

United States Environmental Protection Agency, SOP 2012 “Soil Sampling”, Revision 0.0, February 18, 2000.

STANDARD OPERATING PROCEDURE

SM-002 VOC Soil Collection and Preservation Method (if necessary)

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1. Objective

To establish a standard for preserving soil samples for analysis of Volatile Organic Compounds (VOCs).

2. Execution

The soil sample collection procedure for determination of VOCs is a two-step process.

- Step 1 – Collect an undisturbed soil sample from the subsurface, or expose the targeted area from where a sub-sample for lab analysis will be collected.
- Step 2 – Collect a representative sub-sample from the undisturbed sample or directly from the exposed surface.

If samples are to be analyzed for VOCs, they should be collected in a manner that minimizes disturbance of the sample. Samples for VOC analysis are not homogenized. Preservatives may be required for some samples with certain variations of Method 5035. Consult the method or the principal analytical chemist to determine if preservatives are necessary.

When the soil sample is collected for VOC analysis, it must be placed within the laboratory container immediately. It must not be allowed to sit exposed for more than 5 minutes. In addition, the sample must not be exposed to extreme weather conditions (i.e., rain, extreme sunlight, wind, etc.).

Sub-samples are a portion of the undisturbed sample that will be sent to the lab for VOC analysis. Sub-samples must be obtained utilizing a small diameter core sampler. Some of the acceptable small diameter core samplers include: a 10 milliliter (ml) plastic disposable syringe, a Purge and Trap Soil Sampler, En Core Samplers, or an Easy Draw Syringe. The En Core Sampler is the only small diameter core sampler that can be used to collect the sample, store the sample, and transport the sample to the lab.

The procedure for the collection of sub-samples is as follows:

- Once the sampling interval has been selected, trim off the exposed surface of the matrix, with a decontaminated trowel or spatula, to expose a fresh surface. Then sample immediately.
- Push the En Core sampler into the matrix to collect a volume of material that will yield the required mass of sample (wet weight) as determined by the analytical method.

- Push the En Core sampler into the material at an angle as many times as is needed to obtain the required sample weight.
- Wipe the exterior of the sampler clean.
- Seal the En Core sampler as explained in the manufacturer's instructions.
- Collect the required number of En Core samplers based on the chosen preservation and analytical methods, as discussed in the section on soil preservation methods below.
- Collect a separate sample for head space screening and moisture content determination.
- Make sure that the threads of the En Core sampler are free of particles (by cleaning with a paper towel).
- Mark the samplers with a permanent marker and not an adhesive label (due to weight considerations).
- Once the samples have been collected, sealed, and labeled, place the samples into an iced cooler. It is recommended to place each sample container in separate zip lock bag.

If collecting VOC soil samples during drilling, please refer to SM-001: *Soil Sampling Techniques Including Split-Spoon* for detailed information.

2.1. Preservation of Soil Samples

When collecting soil samples for determination of VOCs, three types of samples may be required:

- High concentration sample (Section 2.2 below).
- Low concentration sample (Section 2.3 below).
- Synthetic Precipitation Leaching Procedure/Toxicity Characteristic Leaching Procedure (SPLP/TCLP) sample (Section 2.4 below).

2.2. Two options for the collection of a suspected "high" concentration sample

- Collect one 10 gram sample in a pre-weighted vial containing 10 ml methanol.
- Use an "En Core" sampler.

2.2.1. Option 1 – Methanol Preservation Method

Supplies include: two pre-weighed vials (per sample) with 10 ml methanol, and a sampling device to collect a 10 gram sample.

Sampling Procedure:

- Label vials using permanent marker.
- Scrape away surface to be sampled to expose fresh soil.

- Collect the sample using the sampling device and extrude the sample into the preserved vial. Wipe the threads and cap clean and seal the vial.
- Store the sample in an iced cooler.
- Collect a separate sample for percent solids and head space sampling.

2.2.2. Option 2 – En Core Sampling Method

Supplies needed: One 5 or 10 ml En Core sampler.

Sampling Procedure:

- Label the En Core sampling container.
- Locate the sampling area, scrape a fresh face, collect the sample quickly, and clean and seal the sampler.
- Place sampler in a clean zip lock bag and place on ice.
- Collect separate samples in separate containers for percent solids and head space sampling.
- Samples must be frozen, or preserved, or analyzed within 48 hours (coordinated with the lab).

Option 2 (En Core Sampler) is preferred due to possible problems with minimum detection levels when using the methanol method.

2.3. Four different options for the collection of “low” concentration samples for VOC analysis

- Collect two vials each of 5 grams of sample into a pre-weighted 40 ml vial with 5 ml of water and a magnetic stirrer.
- Collect two vials each of 5 grams of sample into a pre-weighted 40 ml vial with a magnetic stirrer.
- Collect two 5 gram En-Core type samples.
- Collect two vials each of 5 grams of sample into a pre-weighted vial containing sodium bisulfate with a magnetic stirrer.

2.3.1. Option 1 – Collection in Volatile Organic Compound (VOC) vials containing water

Supplies required: an electronic field balance, two VOC 40 ml vials pre-weighted and containing 5 ml of water, a magnetic stirrer, and a sampling device.

Sampling procedure:

- Label vials using permanent marker.
- Select the area to be sampled.
- Test sample and weigh to verify the amount of sample needed.
- Scrape a clean surface to be sampled.

- Collect the sample using the sampling device and extrude the sample into one of the two vials containing water. Wipe the threads and cap clean and seal the vial.
- Repeat the last step for the second vial.
- Weigh the vials and record the weights.
- Store the sample in an iced cooler.
- Collect a separate sample for percent solids and head space sampling.

2.3.2. Option 2 – Collection in empty VOC vials

Supplies required: electronic field balance, two VOC 40 ml vials pre-weighted, a magnetic stirrer, and a sampling device.

Sampling Procedure:

- Label vials using permanent marker.
- Select the area to be sampled.
- Test sample and weigh to verify the amount of sample needed.
- Scrape a clean surface to be sampled.
- Collect the sample using the sampling device and extrude the sample into the vial. Wipe the threads and cap clean and seal the vial.
- Repeat the last step for the second vial.
- Weigh the vials and record the weights.
- Store the sample in an iced cooler.
- Collect a separate sample for percent solids and head space sampling.
- Samples must be frozen or analyzed within 48 hours.

2.3.3. Option 3 – Collection in VOC vials preserved with Sodium Bisulfate

Supplies required: electronic field balance, two VOC vials with 5 ml of sodium bisulfate, a magnetic stir bar, and a sampling device.

Sampling Procedure:

- Label vials using permanent marker.
- Select the area to be sampled.
- Test sample and weigh to verify the amount of sample needed.
- Scrape a clean surface to be sampled.
- Collect the sample using the sampling device and extrude a 5 gram sample into the vial containing the sodium bisulfate. Wipe treads and cap and seal the vial.
- Repeat the last two steps for the second vial.
- Weigh the vial and record the weight.
- Store the sample in an iced cooler.
- Collect a separate sample for percent solids and head space sampling.

2.3.4. Option 4 – Collection of the sample with an En Core Sampler

Supplies required: two 5 gram En Core samplers.

Sampling Procedure:

- Label samplers using permanent marker.
- Select the area to be sampled.
- Scrape a clean surface to be sampled.
- Collect the sample using one En Core devise, wipe the contact areas clean and seal, and place into a re-sealable zip lock bag.
- Repeat the last two steps with the second En Core device.
- Store the sample in an iced cooler.
- Collect a separate sample for percent solids and head space sampling.
- Samples must be frozen or analyzed within 48 hours.

2.4. Collection of samples being analyzed for VOCs by the TCLP or SPLP method

Supplies required: a 25 gram En Core Sampler.

Sampling Procedure

- Label sampler using permanent marker.
- Select the area to be sampled.
- Scrape a fresh surface to be sampled.
- Collect the sample using one En Core devise, wipe the contact areas clean and seal, and place into a re-sealable zip lock bag.
- Store the sample in an iced cooler.
- Samples must be frozen or analyzed within 48 hours.

To determine percent solids, approximately 20 grams of soil sample must be collected in a separate glass or plastic sampling container. The percent solids sample is **NOT** to be taken from the VOC samples.

3. Holding Times

- Field investigators should note that the holding time for an un-preserved VOC soil/sediment sample is 48 hours. Arrangements should be made to ship the soil/sediment VOC samples to the laboratory by overnight delivery the day they are collected so the laboratory may preserve and/or analyze the sample within 48 hours of collection.

STANDARD OPERATING PROCEDURE

SM-003 Soil Classification

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1. Objective

To describe and classify soil samples collected in the field in a consistent and useful manner. GEI has adopted the (ASTM) Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) D2488..

2. Execution

- Describe soil samples according to the ASTM Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) D2488 (see Attachment A – Visual Manual Descriptions).
- Identify and record the soil in terms of the major and minor constituents (i.e., sand gravel, silt, clay), group symbol, group name, sample structure, plasticity and dilatancy for fine-grained soils, color, local or geologic name if known (e.g., glacial till), odor, presence of iron or other staining, and presence of organic matter, shells, debris, or other unusual characteristics of the same.
- If a soil split-spoon sample contains more than one soil type (for example, the upper portion is silty sand and the lower portion is clay) describe each type separately, and obtain separate jars of each type.
- Record sampler type, blow counts, soil description, etc., on the boring log.
- One modification to the ASTM standard: Use "widely graded" and "narrowly graded" instead of "well-graded" and "poorly graded."
- Based on the percent volume, the following descriptions should be used:
    1. “and” = 35-50%
    2. “some” = 20-35%
    3. “little” = 10-20%
    4. “trace” = 1-10%

3. Notes

- Some soil characteristics, such as plasticity and dilatancy, are difficult to identify in the field during extremely cold or wet weather. The field classification should be verified in the office after the samples have returned to room temperature if samples were collected during extreme weather conditions.

- The ASTM Standard Test Method for Classification Soils for Engineering Purposes, D2487 may be used in conjunction with the Visual-Manual Method to confirm the soil classification.

4. References

Annual Book of ASTM Standards (1993), Section 4, v. 4.08 Soil and Rock; Building Stones; Geosynthetics, D2488-90, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), American Society of Testing Materials (ASTM).

5. Attachments

Attachment A – Visual Manual Descriptions with example boring log

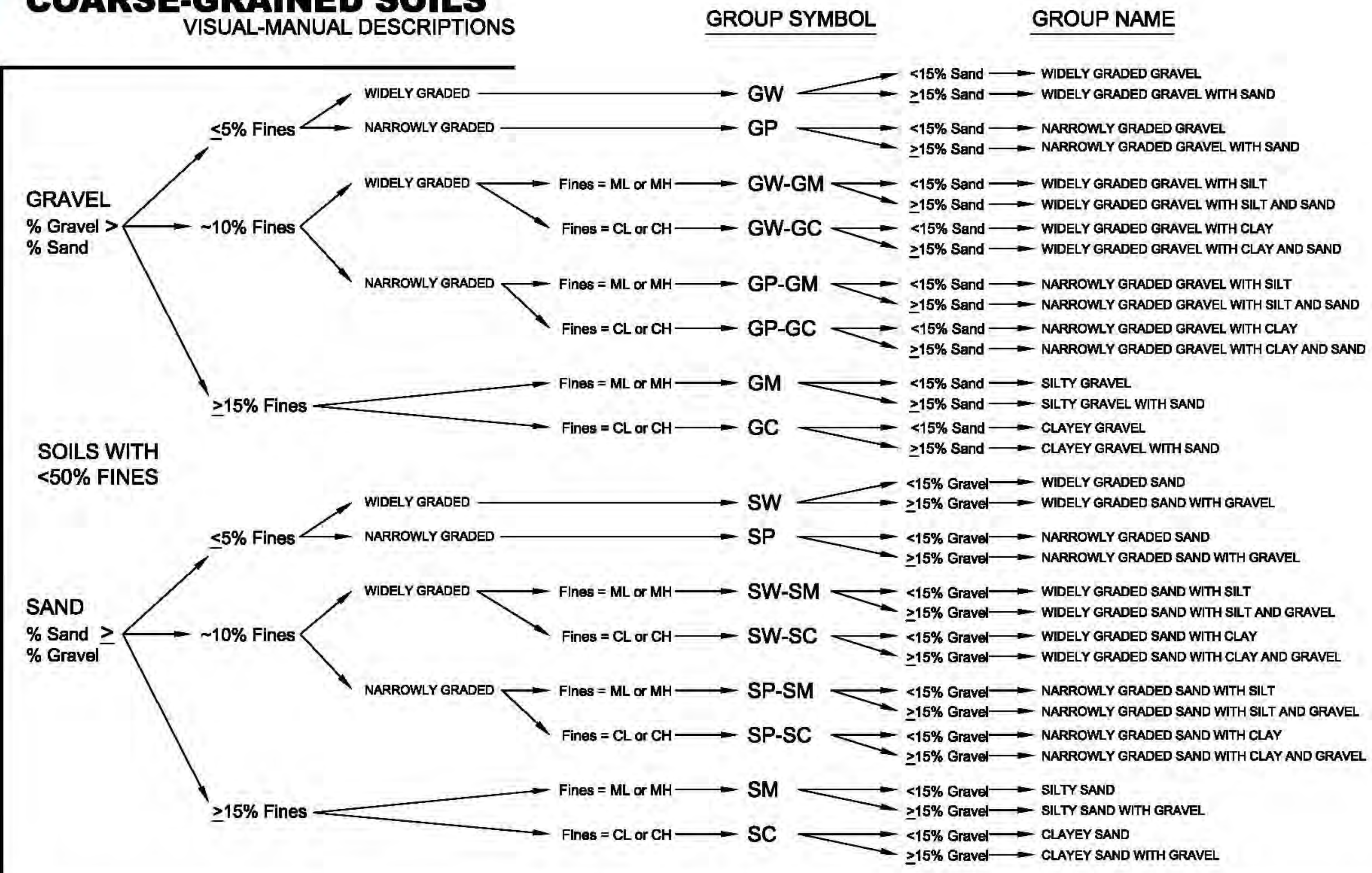
Attachment A

GEI Consultants

COARSE-GRAINED SOILS
VISUAL-MANUAL DESCRIPTIONS

TYPICAL SOIL COLORS

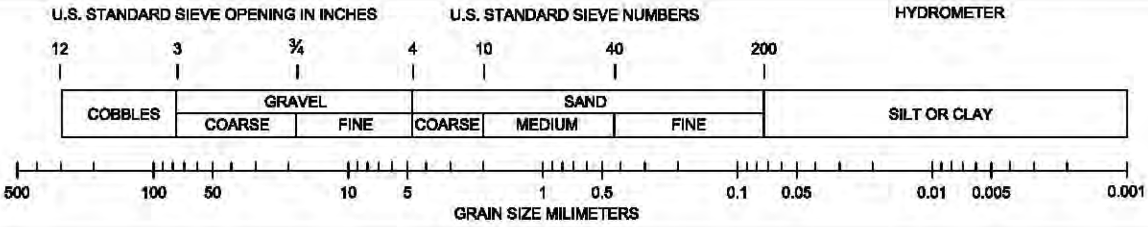
- 🟨 YELLOW
- 🟩 OLIVE
- 🟫 LIGHT BROWN
- 🟫 BROWN
- 🟫 REDDISH BROWN
- 🟥 RED
- ⬜ GRAY
- ⬛ BLACK



GROUP SYMBOL — GROUP NAME

SOILS WITH <50% FINES

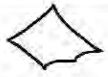
- GRAVEL % Gravel > % Sand
  - ≤5% Fines
    - WIDELY GRADED → GW
      - <15% Sand → WIDELY GRADED GRAVEL
      - ≥15% Sand → WIDELY GRADED GRAVEL WITH SAND
    - NARROWLY GRADED → GP
      - <15% Sand → NARROWLY GRADED GRAVEL
      - ≥15% Sand → NARROWLY GRADED GRAVEL WITH SAND
  - ~10% Fines
    - WIDELY GRADED
      - Fines = ML or MH → GW-GM
        - <15% Sand → WIDELY GRADED GRAVEL WITH SILT
        - ≥15% Sand → WIDELY GRADED GRAVEL WITH SILT AND SAND
      - Fines = CL or CH → GW-GC
        - <15% Sand → WIDELY GRADED GRAVEL WITH CLAY
        - ≥15% Sand → WIDELY GRADED GRAVEL WITH CLAY AND SAND
    - NARROWLY GRADED
      - Fines = ML or MH → GP-GM
        - <15% Sand → NARROWLY GRADED GRAVEL WITH SILT
        - ≥15% Sand → NARROWLY GRADED GRAVEL WITH SILT AND SAND
      - Fines = CL or CH → GP-GC
        - <15% Sand → NARROWLY GRADED GRAVEL WITH CLAY
        - ≥15% Sand → NARROWLY GRADED GRAVEL WITH CLAY AND SAND
  - ≥15% Fines
    - Fines = ML or MH → GM
      - <15% Sand → SILTY GRAVEL
      - ≥15% Sand → SILTY GRAVEL WITH SAND
    - Fines = CL or CH → GC
      - <15% Sand → CLAYEY GRAVEL
      - ≥15% Sand → CLAYEY GRAVEL WITH SAND
- SAND % Sand ≥ % Gravel
  - ≤5% Fines
    - WIDELY GRADED → SW
      - <15% Gravel → WIDELY GRADED SAND
      - ≥15% Gravel → WIDELY GRADED SAND WITH GRAVEL
    - NARROWLY GRADED → SP
      - <15% Gravel → NARROWLY GRADED SAND
      - ≥15% Gravel → NARROWLY GRADED SAND WITH GRAVEL
  - ~10% Fines
    - WIDELY GRADED
      - Fines = ML or MH → SW-SM
        - <15% Gravel → WIDELY GRADED SAND WITH SILT
        - ≥15% Gravel → WIDELY GRADED SAND WITH SILT AND GRAVEL
      - Fines = CL or CH → SW-SC
        - <15% Gravel → WIDELY GRADED SAND WITH CLAY
        - ≥15% Gravel → WIDELY GRADED SAND WITH CLAY AND GRAVEL
    - NARROWLY GRADED
      - Fines = ML or MH → SP-SM
        - <15% Gravel → NARROWLY GRADED SAND WITH SILT
        - ≥15% Gravel → NARROWLY GRADED SAND WITH SILT AND GRAVEL
      - Fines = CL or CH → SP-SC
        - <15% Gravel → NARROWLY GRADED SAND WITH CLAY
        - ≥15% Gravel → NARROWLY GRADED SAND WITH CLAY AND GRAVEL
  - ≥15% Fines
    - Fines = ML or MH → SM
      - <15% Gravel → SILTY SAND
      - ≥15% Gravel → SILTY SAND WITH GRAVEL
    - Fines = CL or CH → SC
      - <15% Gravel → CLAYEY SAND
      - ≥15% Gravel → CLAYEY SAND WITH GRAVEL




ROUNDED


SUBROUNDED

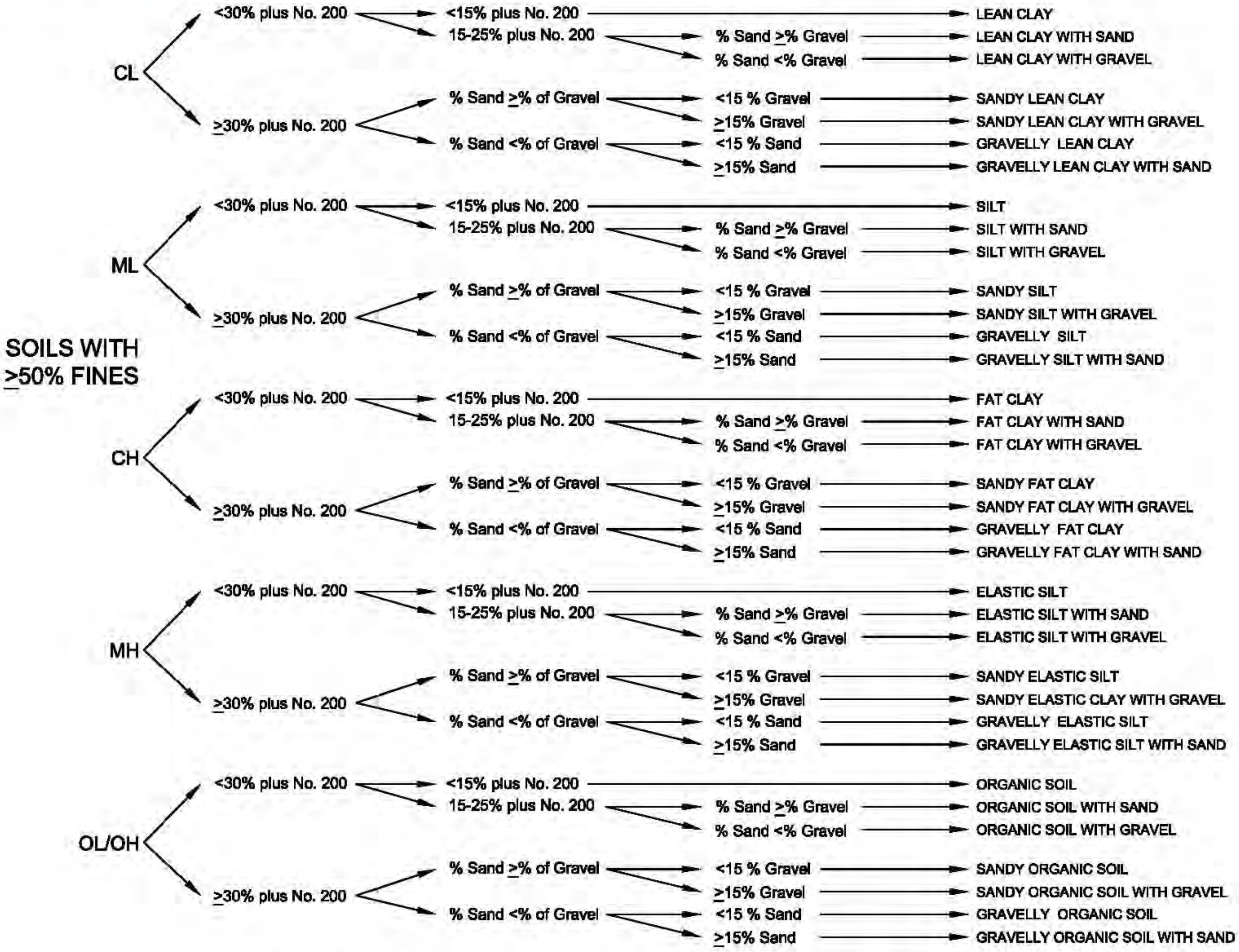

SUBANGULAR


ANGULAR

1. GROUP NAME and (SYMBOL)
2. Structure , if any. (stratified layer thicknesses, lenses, varves, gradational changes)
3. Describe sand, gravel and fines components, with percentages, in order of predominance. Include max gravel size. For test pits give percent cobbles and boulders, by volume, and include max size.
4. Color
5. Sheen, odor, roots, ash, brick, cementation, reaction with HCL, etc.
6. "Fill," local name or geologic name, if known

FINE-GRAINED SOILS

VISUAL-MANUAL DESCRIPTIONS



ID OF INORGANIC FINE SOILS FROM MANUAL TESTS

Symbol	Name	Dry Strength	Dilatancy	Toughness*
ML	Silt	None to low	Slow to rapid	Low or thread cannot be formed
CL	Lean Clay	Medium to high	None to slow	Medium
MH	Elastic Silt	Low to medium	None to slow	Low to medium
CH	Fat Clay	High to very high	None	High

CRITERIA FOR DESCRIBING PLASTICITY

Description	Criteria
Nonplastic ML	A 1/8-in. (3 -mm) thread cannot be rolled at any water content
Low Plasticity ML, MH	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit *
Medium Plasticity MH, CL	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 Plasticity CH	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

* Toughness refers to the strength of the thread near plastic limit. The lump refers to a lump of soil drier than the plastic, similar to dry strength.

1. GROUP NAME and (SYMBOL)
2. Describe fines, sand, and gravel components, in order of predominance. Include plasticity of fines. Include percentages of sand and gravel.
3. Color
4. Sheen, odor, roots, ash, brick, cementation, torvane and penetrometer results, etc.
5. "Fill," local name or geologic name, if known

PEAT

Peat refers to a sample composed primarily of vegetable matter in varying stages of decomposition. The description should begin: PEAT (PT) and need not include percentages of sand, gravel or fines.

BORING LOCATION Maple Ave Sidewalk
DATE START/FINISH 2/14/07 - 2/15/07
B101
GROUND ELEVATION (NGVD)
DRILLED BY Geologic: M. Costigan
GROUNDWATER EL. DATE
LOGGED BY T. Kahl/M. Yako TOTAL DEPTH (FT) 25
PG. 1 OF 1

EL. FT.	DEPTH FT.	SAMPLE TYPE and NO.	SAMPLE BLOWS PER 6 IN.	SAMPLE PEN IN.	SAMPLE REC IN.	PID JAR HS / REMARKS	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
							FILL	4" pavement
	2.5	S1	13-9 17-14	24	0	0.5 ppm		S1: Redrove 0.5 to 3.5 ft. Recovery 11": WIDELY GRADED SAND (SW) ~85% sand, ~10% gravel to 1", <5% nonplastic fines, brown. Contains brick fragments and ash. Fill.
	5					hard drilling 3 to 4 ft, possible boulder		
		S2	7-7 11-13	24	8	2.0 ppm		S2: NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) ~65% mostly fine sand, ~25% gravel to 3/4 inch ~10% non-plastic fines, brown. Fill.
	7.5	S3	9-10 2-1	24	16	0.0 ppm		S3 (0-10"): Similar to S2.
	10						ORGANICS	S3 (10"-16")": ORGANIC SILT (OL) ~100% slightly plastic fines, dark gray, organic odor, contains white shell fragments.
	12.5	S4	WOH 1-2 1	24	15	0.0 ppm		
	15					hard drilling at 15.5 ft		S4: Similar to S3, bot 6".
	17.5	S5	20-35 50/3"	15	8	Top of rock ~19 ft. Roller bit to 20 ft.	TILL	S5: SILTY SAND WITH GRAVEL (SM) ~60% mostly fine sand, ~25% slightly plastic fines, ~15% gravel to 1/2 inch, olive. Glacial Till.
	20 22.5	C1	RQD 70%	60	54	lost ~10 gallons drill fluid from 23 to 25 ft	ROCK	C1: SCHIST, hard, slight weathering at joint surfaces, joints at ~30 degrees from horizontal and generally parallel to foliation, gray. Marlborough Formation.
	25 27.5 30							Bottom of Boring 25 ft Truck-mounted drill rig. 4-inch casing to 19 ft. Safety-hammer with rope and cathead for SPT. Backfilled with drill cuttings.

BLOWS PER 6 IN.–140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN–PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC–RECOVERY LENGTH OF SAMPLE
RQD–LENGTH OF SOUND CORES > 4 IN./ LENGTH CORED, %
S–SPLIT SPOON SAMPLE
U–UNDISTURBED SAMPLES, UF–FIXED PISTON
UO–OSTERBERG
⊻ GROUNDWATER

NOTES:
1: Groundwater at 10 ft depth at start of day 2/15/07.

PROJECT 07999-0
DATE

GEI Consultants

EXAMPLE SOIL DESCRIPTIONS

SANDY SILT (ML) ~60% slightly plastic fines, ~40% mostly fine sand, 1" thick layer of fine to medium sand with <20% fines, gray.

LEAN CLAY (CL) ~90% moderately plastic fines, ~10% fine sand, olive. Boston Blue Clay. Sv = 0.5, 0.5, 0.8 tsf, Qp = 1.0, 1.5, 1.6 tsf

Stratified CLAYEY SAND (SC) and WIDELY GRADED SAND (SW) SC layers 1 to 2 inches thick consist of fine sand with ~30% moderately plastic fines, gray. SW layers 1 to 4 inches thick consist of fine to coarse sand, ~10% gravel to 1/2 inch, <5% fines, brown. Hydraulic Fill.

EXAMPLE ROCK DESCRIPTIONS

(0-9"): GRANITE, hard, one piece, joint surface slightly weathered, pink.
(6-60"): PHYLLITE, joints ~ 45° generally parallel to foliation, 9" to 44" moderate to severe jointing and joint weathering. 44" to 60" single piece, green-gray.

ARGILLITE, medium hard, moderately weathered joints, gray. Cambridge Argillite.

GEOPROBE AND ROTOSONIC

When SPTs are not performed, note sample density (sands) or stiffness (clays) in description.

CRITERIA FOR DESCRIBING DILATANCY OF FINE-GRAINED SOILS

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.

SPT: Standard Penetration Test

30-inch drop with 140-lb hammer
1 3/4 to 2 1/4 turns around cathead
2-inch O.D. split spoon sampler

ENV'L TERMINOLOGY FOR SOIL DESCRIPTIONS

- **Ash** - Typically silt-size to medium sand-size.
- Do not use the term "cinders." This is not a technical term. Instead, use "ash," "burnt wood," "burnt material," or a similar term.
- **Coal-like material** - If it looks like coal but you aren't sure.
- **Clinker** - Vitrified (glass-like) or heat-fused material. Often burned impurities in coal. Often looks like pumice, but heavier.
- **Slag** - Similar to clinker, but normally refers to residue from metal ore processing.

- **Sheen** - Iridescent petroleum-like sheen. Not to be used for a "bacterial sheen," which can be distinguished by its tendency to break up on the water surface at angles. Petroleum sheen will be continuous and will not break up.
- **Stained** - Use with a color ("brown-stained") to indicate that the soil is stained a color other than its natural (unimpacted) color.
- **Coated** - Soil grains are coated with NAPL (oil, tar, etc.). There is not enough NAPL to saturate the pore spaces. ("Split spoon sampler coated with brown oil." "Soil grains coated with gray substance with slight gasoline-like odor.")
- **Saturated** - The entire sample pore space is saturated with NAPL. If you use this term, be sure it is not water saturating the pore spaces. Depending on viscosity, the NAPL may drain from a soil sample. ("Sample saturated with green, sticky substance.")
- **Blebs** - Discrete sphericals of NAPL in a soil matrix that was not visibly coated or saturated. ("Occasional blebs of reddish-brown tar.")
- **Oil** - Exhibits a petroleum odor, different from MGP odors.
- **Tar** - Exhibits an MGP odor (e.g. naphthalene-like odor).

- **Odors** - Use terms such as "naphthalene-like odor" or "petroleum-like odor." Use modifiers (strong, moderate, slight) to indicate odor intensity.

GEI CONSULTANTS, INC.
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STANDARD OPERATING PROCEDURE

SM-004 Test Pit Excavation

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1. Objective

The test pit is used to characterize geologic strata, collect representative soil samples, and provide good visual access to subsurface structures that may be source areas.

2. Execution

- Complete utility markout procedures in accordance with PM-001.
- Have contractors steam clean equipment before beginning field activities.
- In certain locations, arrangements must be made to cut pavement.
- Excavate the designated area using a backhoe or excavator to required dimensions. Place excavated material that has suspected and/or visible contamination on a plastic liner away from the excavation.
- During excavation, monitor ambient air for Volatile Organic Compounds (VOCs) or other contaminants of concern. Record readings in field notebook (see SOP FD-001, *Field Notebook*).
- Describe sidewall strata, test pit dimensions, and soil classifications on test pit log (see SOP SM-003, *Soil Classification*). Record the presence and size of existing obstructions and any existing foundations. Take photographs of excavation sidewalls (SOP FD-004 *Photo Documentation*).
- Record technical information on test pit log form, not in a field book. Use the field book to record daily activities and test pit locations.
- Detect and describe boundary between fill and natural soil.
- Label sample bottles (see SOP SC-002, *Sample Handling*).
- If required in the work plan, collect soil samples from the test pit sidewalls and bottom at designated depths, at strata changes, or based upon field screening using equipment (backhoe bucket, stainless steel remote sampler, etc.) designated in the field plan. Do not enter a test pit unless side slopes satisfy Occupational Safety and Health Administration (OSHA) regulations and other health and safety concerns have been addressed.
- Transfer sample to the appropriate glassware with a decontaminated stainless steel trowel or spatula (see SOP QA-001, *Equipment Decontamination*).
- Store samples on ice in a cooler (see SOP SC-002, *Sample Handling* and SOP FD-003, *Chain of Custody*).

- Screen soil samples for VOCs or other contaminants of concern and record results in the field notebook.
- Measure dimensions of excavation and record in the field notebook.
- Sketch dimension and location of the test pit relative to a site reference point and record in the field notebook. Note the sample locations by number on a cross-section sketch and plan view sketch.
- Backfill excavation as soon as possible with material designated in field plan. Segregate contaminated soil as necessary (see SOP SC-003, *Investigation Derived Waste*). Replace soil in lifts as it was removed originally. Properly identify segregated material and secure as designated in the field plan.

3. Notes

- At all times, follow safety procedures as defined in the site-specific Health and Safety Plan.
- NEVER CLIMB INTO THE EXCAVATION TO COLLECT A SOIL SAMPLE unless the excavation is shored or the sidewalls are sloped in accordance with OSHA regulations and all proper personal protective safety precautions have been considered and implemented.
- Terminate excavation if the flow of ground water into the excavation adversely affects the stability of the excavation (i.e., slumping). Make sure to note in the field notebook the depth to ground water.
- Terminate excavation if drums, tanks, or other potential sources of contamination are observed. Record visible drum markings, labels, and any other pertinent information on the test pit log and in the field notebook. Photograph drums and materials.
- Do not leave an open excavation unattended without isolating it from passerby and vehicular traffic.

4. References

Earth Manual (1968), United States Department of the Interior, Bureau of Reclamation, United States Government Printing Office, Washington, D.C., pp. 134-139.

OSHA Standards for Excavations, Department of Labor, Federal Register, 29 CFR Part 1926, Aug. 9, 1994.

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SOP No. SM-005
Revision No.0
Effective Date: November 2010

STANDARD OPERATING PROCEDURE

SM-005 Underground Storage Tank (UST) Removal and Closure Process

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1. Objective

To provide a standardized approach for observing Underground Storage Tank (UST) removals that addresses the environmental issues associated with the removal. Consult local regulations and New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER)-10, Technical Guidance for Site Investigation and Remediation dated May 3, 2010 to ensure proper closure procedures in addition to this standard operating procedure (SOP).

2. Execution

- Verify that all appropriate parties (contractors, National Grid, fire department, Town, County fire marshal and Health Department, NYSDEC Bulk Petroleum Storage Section [10 day notice], local entities, etc.) have been contacted and notified regarding the intended UST removal(s). Verify, with the contractor or National Grid that all necessary permits have been obtained by the appropriate parties prior to tank removal.
- Comply with Utility Markout SOPs PP-002 and PP-003.
- Prepare a site diagram/sketch detailing location of tank(s), structures, the location of any known fill and vent pipes, adjacent properties, buildings, utilities (where known), and any adjacent surface water(s). Record information in the field notebook (see SOP FD-001, *Field Notebook*).
- Observe/verify/confirm with the removal contractor that all liquids have been removed from the tank and associated piping. All exposed product lines should be drained, disconnected, and capped with sorbent padding to catch any leakage (recording contractors' activities).
- Observe/verify/confirm with contractor that the tank has been rendered free of explosive vapors.
- Request that any pavement or blacktop on top of the tank area is removed and segregated away from excavation and soil stockpile areas.
- As soil is removed from excavation, initiate soil screening and segregation procedures as directed by SOP SM-004, *Test Pit Excavation* and the site-specific Field Plan.
- If a spill is discovered, contact National Grid immediately prior to reporting the spill to the NYSDEC Spill Hotline (800-457-7362).
- Once the tank is exposed, observe the tank, piping, and other tank features for corrosion, holes, etc. Photograph tank, piping, and

excavation floor and sidewalls in accordance with SOP FD-004, *Photo Documentation*.

- After the tank and associated piping is removed or capped, continue field screening and soil excavation. The excavation floor and sidewalls should be examined for any physical evidence of soil or groundwater contamination and field screened (see SOP SC-004) with an appropriate and calibrated tool along transects spaced no more than 5 feet apart, so that sampling may be biased to the suspected location of greatest contamination.
- If there is no evidence of a discharge, confirmation soil samples for laboratory analysis should be collected (see SOP SM-001) immediately after tank removal, as follows:
    1) If there is no groundwater in the excavation, discrete center line soil samples from the bottom of the excavation are required as follows:
        - a) At a frequency equal to the total length of the tank in feet divided by five (minimum of one sample).
        - b) Samples are to be spaced equidistantly.
        - c) The outermost samples obtained should be greater than 2.5 feet from each respective end of the tank.
        - d) If the total length of a tank in feet is not evenly divisible by five, one additional sample should be obtained for any fraction remaining.
        - e) A minimum of one groundwater sample(s) must be collected within 25 feet hydraulically down gradient from the tanks that are not co-located if the product stored is gasoline and groundwater is within 20 feet of the surface.
    2) If groundwater in the excavation and the contents of the UST have ever had a density less than or equal to water, soil samples should be collected as follows:
        - a) One sample biased based upon field screening to the suspected location of greatest contamination should be collected near or above the water table from each excavation sidewall for every 30 linear feet of sidewall (minimum of one sample per sidewall).
        - b) For heating oil tanks of 550 gallon capacity or less, one sample biased to the suspected location of greatest contamination may be collected from one excavation sidewall near or below the water table and one at the bottom of the excavation.
        - c) Where seasonal fluctuations in the water table elevation can submerge and smear product over a range of several feet, additional samples should be considered in this smear zone.

        d) A sample of the water in the excavation should also be collected.
    3) If groundwater in the excavation and the contents of the UST had a density greater than water, soil samples should be collected as follows:
        a) Grab samples should be collected in the excavation at a depth from 0 to 2 feet beneath the tank in accordance with sampling scheme (1) above.
        b) These samples should be field screened.
        c) The four samples with the highest field screening results should be submitted for the appropriate laboratory analysis.
        d) A sample of water in the excavation should also be collected.

- If there is evidence of a discharge, excavation should continue, at National Grid and/or the Project Manager's direction, until all contaminated soil is removed or until further excavation is not feasible. Once excavation is complete and if no groundwater is encountered, confirmation soil sample should be collected to demonstrate that contamination has been removed, as follows:
    1) A minimum of five soil samples should be collected, consisting of four sidewall and one bottom sample for each 15 linear feet of trench.
    2) The samples should be biased based upon field screening toward the suspected location of greatest contamination.
    3) If there is evidence of further contamination but there is insufficient soil to conduct a soil remedial action or any portion of the tank is located within or immediately above the groundwater table, a groundwater sample should be collected.
- If there is any evidence of groundwater contamination, including without limitation a sheen or odor or if groundwater is within 20 feet of the surface, a groundwater sample should be collected and soil samples collected as follows:
    1) A minimum of five soil samples should be collected, consisting of four sidewall and one bottom sample for each 15 linear feet of trench.
    2) The samples should be biased based upon field screening toward the suspected location of greatest contamination.
    3) If there is evidence of further contamination but there is insufficient soil to conduct a soil remedial action or any portion of the tank is located within or immediately above the groundwater table, a groundwater sample should be collected.

- Backfill excavation according to the site-specific work plan guidelines and/or applicable state requirements (clean backfill, excavated materials).
- If contaminated soil is excavated, it should be stockpiled on and covered with polyethylene sheeting.
- All waste derived from the above activities should be properly disposed off-site consistent with regulatory requirements.

3. Notes

- At all times, follow safety procedures as defined in the site-specific Health and Safety Plan.
- Ensure that the excavation does not undermine adjacent structures, footings, etc.
- Maintain all manifests.
- Trucks pumping flammable liquids should always be properly grounded to eliminate any spark hazard.
- At no time should any personnel enter the tank without implementation of a confined space safety plan.
- The site-specific plan should specify the responsibilities of GEI, National Grid, and the contractor.

4. References

DER-10, Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation. May 3, 2010.

GEI Technical Manual, dated July, 1987.

Removal and Disposal of Used Underground Storage Tanks, API.

Recommended Practice 1604 (1987), American Petroleum Institute, Washington, D.C.

Tanks and Containers (1989), Massachusetts Board of Fire Prevention, 527 CMR 9.00.

Management Procedures for Excavated Soils Contaminated With Virgin Petroleum Oils (1989), Massachusetts DEP BWSC, Policy #WSC-400-89.

Spill Technology and Remediation Series (STARS) Memo #1 (August 1992), NYSDEC.

Section 7

GROUNDWATER (GW)

STANDARD OPERATING PROCEDURE

GW-001 Water Level Measurement

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1. Objective

The purpose of this Standard Operating Procedure (SOP) is to set guidelines for the determination of the depth to water in an open borehole, cased borehole, monitoring well, or piezometer.

2. Execution

- Prior to mobilizing onto a site, notification requirements must be followed.
- Prior to collecting water level measurements, all wells should be opened to the atmosphere and allowed to equilibrate prior to collecting groundwater elevation measurements.
- All groundwater level measurements need to be performed in the shortest possible timeframe (no more than four hours).
- Groundwater levels are measured using a decontaminated electronic groundwater level indicator, which has a cable divided into incremental measurements of 0.01 feet and two conductors forming a probe. When groundwater is encountered, the circuit is completed and a light, meter, or audible buzzer is activated. The depth to groundwater is then measured from this point to the reference mark on the inner casing of the monitor well.
- All groundwater-level measurements should be made from the same marked reference point at the top of the inner well casing. A licensed surveyor must mark the reference point.
- If no discernable survey mark is observed on the inner casing, the groundwater-level measurement should be read from the highest point of the inner casing.
- If no survey mark is observed on the inner casing, it should be noted with the ground water-level data and the highest point of the casing must be marked for future reference.
- Measurements should be made three to four times to confirm the measurement. Each time a measurement is made, it should be determined to the nearest one-hundredth of a foot (0.01).
- Certain situations may necessitate that all water level measurements at a given site should be collected within a shorter than 24-hour period. These situations may include:
  1. The magnitude of the observed changes between wells appears too large.
  2. Changes in atmospheric pressure.
  3. Aquifers which are tidally influenced.

4. Aquifers affected by river stage, impoundments, and/or unlined ditches.
5. Aquifers stressed by intermittent pumping of production wells.
6. Aquifers being actively recharged due to precipitation events.
7. Occurrence of pumping.

- All well measurements should be performed the same day, prior to the evacuation of any wells which may influence groundwater elevations in the area of the investigation.
- The following items should be recorded on field data sheets while collecting groundwater level measurements:
    1. Diameter of protective outer casing.
    2. Security and integrity of the well.
    3. The number of the well.
    4. Inner diameter and construction material of the inner well casing.
    5. Total depth of the well from the top of the inner casing or surveyor’s mark, if present (measured to 0.01 foot).
    6. Depth from the top of the inner casing to ground water (recorded to 0.01 foot accuracy).
    7. Thickness of non-aqueous phase liquids (NAPL) product, if any. (See SOP GW-002, *NAPL Measurement*.)
    8. Calculation of the linear feet of water in the well by subtracting the depth to ground water from the total depth of the well.
    9. Calculation of the water table elevation in the well by subtracting the depth to ground water from the top-of-casing elevation.

3. Notes

- Do not measure the total-well-depth with an electronic groundwater level indicator.
- Groundwater levels should be obtained from all wells in a network prior to sampling the first well.
- All wells should be measured.
- Local water body elevations may need to be measured. Check site-specific work plan for this requirement.
- Weak batteries in electronic groundwater-level indicators frequently produce weak or gradual auditory and/or visual responses, making it difficult to accurately determine when the probe of the unit has come in contact with ground water. As such, it is recommended that electronic groundwater-level indicators be tested before they are brought out into the field.

- Note that electronic groundwater-level indicators will not respond to distilled water, so distilled water should not be used to test these units.
- Wells that are not plumb may result in probe contact with the side of the well casing providing a false measurement. Once the probe has come in contact with groundwater in the well, water may be trapped by capillary action between the probe and the well casing. If this happens, the unit may continue to signal even after the probe has been raised above the ground water surface. The deeper the well, the more likely this problem may occur. To correct this, the cable should be raised several feet above the water and shaken to remove water from the probe. A new groundwater-level measurement should then be collected. If the signals from the unit are not abrupt or reproducible, the probe may need to be reeled up to the surface and dried off before re-attempting another measurement.
- Accumulation of sediment, organic material, or floating debris on the probe may also result in gradual or non-reproducible readings. Wells that are constructed with metal inner casings may lead to difficulties in collecting reproducible groundwater-level measurements because the inner sides of the well casing are conductive.
- In some cases, a rubber grommet or metal centralizer may need to be placed on the probe so that the probe is not allowed to come in contact with the inner casing. Groundwater-level-measuring equipment should be properly decontaminated between wells and piezometers to avoid cross contamination.
- Once a well has been located and properly identified, the field measurements listed below should be noted in a field logbook. Be certain that the proper well is being measured. The misidentification of a sampling point in the field will result in erroneous data that may result in incorrectly constructed contour maps.

4. References

U. S. EPA Environmental Response Team Standard Operating Procedures SOP: 2043,"Water Level Measurement" REV: 0.0, 10/03/94.

U. S. EPA Environmental Response Team Standard Operating Procedures SOP: 2044," Monitor Well Development" REV: 0.1, 10/23/01.

5. Attachments

Attachment A – Monitoring Well Sampling Record

Attachment A

Monitoring Well Sample Data Form

Project: National Grid - ______ **Well ID:** ______ **Date:** ______

Total Well Depth (from top of casing): ______

Depth to Water (from top of casing): ______

Well Diameter: ______

Pump Intake Depth: ______

Sampling Crew: ______

Purge Time: *Start:* ______ *Finish:* ______

Purging Method: ______

Sampling Method: Low Flow

Sample Time: *Start:* ______ *Finish:* ______

Sample Analysis: ______

Purge Data

Sample Time	Flow Rate *(lpm/gpm)*	Volume Purged *(liters/gals.)*	pH *(std. Units)*	Conductivity *(mS/cm)*	Turbidity *(NTU)*	Dissolved Oxygen *(mg/l)*	Temperature *(Cel.)*	Salinity *(%)*	ORP *(mV)*	Comments/Observations
										Well Headspace PID =

Final Stabilization Data

Sample Time	Flow Rate *(lpm/gpm)*	Volume Purged *(liters/gals.)*	pH *(std. Units)*	Conductivity *(mS/cm)*	Turbidity *(NTU)*	Dissolved Oxygen *(mg/l)*	Temperature *(Cel.)*	Salinity *(%)*	ORP *(mV)*	Comments/Observations

GEI Consultants

STANDARD OPERATING PROCEDURE

GW-002 Non-Aqueous Phase Liquid (NAPL) Measurement

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1. Objective

To obtain accurate and repeatable measurement of the thickness of Non-Aqueous Phase Liquids (NAPL) contained in monitoring wells. This method can be applied to light non-aqueous phase liquids (LNAPL) and dense non-aqueous phase liquids (DNAPL).

2. Execution

Two procedures for measuring NAPL are provided below using a clear bailer and Interface Probe. Neither method is ideal, however, due to difficulties associated with the Interface Probe, use of the clear bailer is the preferred method to identify and estimate thickness of floating product in monitor wells.

2.1. Clear Bailer (LNAPL Measurement)

- Determine depth to the surface level of the LNAPL layer utilizing an interface probe.
- Record depth.
- Lower a clear bailer into the well and slowly into the product, being careful not to submerge the bailer.
- Raise the bailer and measure product thickness.
- Once the product thickness is known, the depth to ground water may be determined (see calculation below).
- This method has inaccuracies because successful use of the bailer is dependent upon the expertise of the operator and assumes the check valve does not leak upon retrieval.

2.2. Interface Probes (LNAPL Measurement)

- Decontaminate Interface Probe prior to use.
- Check battery and replace if necessary.
- Check the unit is functioning correctly. Note: De-ionized water will not provide a correct reading.
- Measure the hydrocarbon/air interface first by going from air to the LNAPL surface to prevent dripping hydrocarbons from enhancing the thickness reading.
- Record the reading.
- Measure the hydrocarbon/water reading by lowering the Interface Probe past the LNAPL layer quickly minimizing the contact time of the probe within the hydrocarbon phase.

- DNAPL can also be measured by quickly lowering the Interface Probe past the LNAPL layer and to the bottom of the well noting any audio or visual indications of DNAPL.
- The optical sensor on interface probes may become damaged if solvents are used to clean product from the probes.
- The optical sensor may become smeared when used to measure product, rendering pinpoint accuracy to an estimate at best.
- Close attention to decontamination procedures will improve accuracy, operational life, and reduce the risk of cross contamination with other wells.

2.3. Graduated Tape (DNAPL Measurement)

- Outfit a measuring tape with a narrow cylindrical weight that is heavy enough to sink through a viscous DNAPL.
- Open the well box or unlock the protective casing
- Lower the tape slowly through the water column in the well. When the tape reaches the bottom, stop releasing tape and measure the total well depth. Any extra tape released after the bottom of well was encountered will give a false reading of the DNAPL thickness. Repeat this procedure, if necessary.
- While extracting the tape, use absorbent rags and/ or GOJO Wipes to clean the tape. When the DNAPL line of demarcation is encountered on the measuring tape, record the thickness of DNAPL in the well.
- Clean the DNAPL from the tape over the well so excess DNAPL flows back into the well. This can lessen or eliminate the need to clean DNAPL from in or around the well box.
- Clean up any DNAPL in or around the well box.
- Repeat these steps as necessary to clean the tape and clean up the area around the well box.
- Decontaminate tape in accordance with SOP QA-001.
- Dispose of waste in accordance with SOP SC-003.
- Secure the well box or close and lock the protective casing.

3. Notes

- When measuring DNAPL, care must be taken when encountering the well bottom so a false measurement is not recorded.
- When a LNAPL thickness is measured in a monitoring well, it will usually exhibit an apparent thickness rather than an actual thickness. This apparent thickness is caused when LNAPL from within and above the capillary fringe migrates into the monitoring well causing the ground water-level to become depressed below

the surrounding capillary fringe area. As a result, LNAPL will continue to flow into the well until equilibrium is reached causing an apparent LNAPL thickness, which is greater than the actual thickness**.**

- LNAPL thickness can be affected by fluctuations in the water table. In some cases, an LNAPL's thickness may decrease when the water table rises, while its thickness increases as the water table drops. In other cases, fluctuating water tables may cause sudden appearances and disappearances of LNAPL layers.
- Monitoring points with LNAPLs can pose a problem when measuring the level of ground water. Floating LNAPLs can depress the ground water-level in a monitoring well or piezometer and distort the measurement. Therefore, the Corrected Depth (CD) formula shown below should be applied to ground water-level measurements in monitoring points where LNAPLs are present:

$$\textbf{CDTW = Static DTW – (PT x G)}$$

CDTW = Corrected Depth to Ground water
DTW = Depth to Ground Water (Static)
PT = Measured Product Thickness
G = Specific Gravity (density of free product / density of water)

4. References

U. S. EPA Environmental Response Team Standard Operating Procedures SOP: 2043,"Water Level Measurement" REV: 0.0, 10/03/94.

STANDARD OPERATING PROCEDURE

GW-003 Low Flow (Low Stress) Groundwater Sampling

---

1. Objective

Provide a method to collect groundwater samples that accurately and precisely represent the aquifer conditions. Low-flow purging is limited to wells that, with sustained pumping, exhibit no continuous drawdown.

2. Background for Implementation

- Stabilization of indicator field parameters is used to indicate that conditions are suitable for sampling to begin. Achievement of turbidity levels of less than 5 nephelometric turbity units (NTUs), and stable drawdowns of less than 0.3 feet are recommended.
- It is recommended that low-flow sampling be conducted when the air temperature is above 32°F (0°C). If the procedure is used below 32°F, special precautions (e.g., insulation) will need to be taken to prevent the groundwater from freezing in the equipment.
- Direct sunlight and hot ambient air temperatures may cause the groundwater in the tubing and flow-through-cell to heat up. When sampling under these conditions, the sampler will need to shade the equipment from the sunlight (e.g., umbrella, tent, pipe insulation, etc.).
- The tubing exiting the monitoring well should be kept as short as possible to avoid sunlight or ambient air from heating up the groundwater. Tubing lengths greater than 6 feet should be fitted with 0.5-inch diameter pipe insulation.

3. Execution

- Complete site-access notification requirements prior to mobilization.
- Wait at least one week following well development before sampling.
- Record all activities in the field notebook (see SOP FD-001, *Field Notebook*) and on Attachment A – Monitoring Well Sample Data Form. Use a separate form for each sampling location and event.
- Calibrate the photoionization detector (PID), pH, temperature, specific conductance (SC), turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) meters and record data on Attachment B – Portable Equipment Calibration Log.
- Check the well, the lock, and the locking cap for damage or evidence of tampering.
- Record observations.

- Remove well cap and, if appropriate, measure VOCs at the rim of the well with a PID or flame ionization detector (FID) instrument and record the reading in field notebook or well logs.
- Being careful to not disturb the water column, slowly and gently measure the depth to water with a water level probe and/or oil water interface probe. Do not measure depth to well bottom at this time (wait until sampling has been completed). Measure water level to the nearest 0.01 foot from the top of casing or the highest point (or "V" notch) on the polyvinyl chloride (PVC). If the top of casing cannot be used, note the reference location. Mark the datum point with an indelible marker and note reference location in field book.
- Check newly constructed wells for the presence of light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL) before the initial sampling event.
- If LNAPL is present, the tubing intake should be at the mid-point of the well screen. Initial purge water should not be sent through the field parameter meter flow cell but sent directly to the purge water container. After the initial column of purge water is poured, the field parameter meters may be placed inline and the collection of data may be started.
- If DNAPL is present, the tubing intake should be placed approximately 1 foot below the water table or to the approximate depth below the known drawdown depth (refer to previous sample logs).
- Calculate the well volume (V_w [gallons]) using the measured depth to water ($Depth_{water}$ [feet]), total well depth ($Depth_{total}$ [feet]), and well diameter:

  $$V_w = n \times (Depth_{total} – Depth_{water})$$

  1-inch well: n = 0.04
  2-inch well: n = 0.16
  4-inch well: n = 0.65
  6-inch well: n = 1.47

- Slowly and gently insert the pump intake tubing to the middle of the saturated screened interval, open borehole, or to the pre-determined sampling depth. The pump intake must be kept at least 2 feet above the bottom of the well to prevent disturbance or suspension of any sediment or DNAPL present in the bottom of the well. Record the depth of the pump intake.
- Start the pump on the lowest setting and increase slowly until flow begins. Adjust the pumping rate so that drawdown in the well is minimal (0.3 feet or less, if achievable). Use a pumping rate between

100 to 1,000 milliliters per minute (mL/min). Measure rates with a graduated container.

- Purge 1.5 well volumes at low flow rates checking for DNAPL migration. If no DNAPL migration is observed during the last 15 minutes of purging, begin collecting field data. If DNAPL migration occurs during the last 15 minutes of purging, abort sampling and document on sample log.
- Place decontaminated flow-cell inline with tubing and connect calibrated Horiba U-22 Multiparameter Water Quality Meter, or equivalent. Place flow-cell in shade or insulate.
- While purging, record water levels every five minutes, or as appropriate. A steady state flow rate will be maintained that results in a stabilized water level with a drawdown of 0.3 feet or less, if achievable.
- During purging, monitor and record, every five minutes, the water quality indicator parameters that include: pH, temperature, SC, turbidity, DO, and ORP.
- Purging is complete when, after three consecutive measurements, the water quality parameters have stabilized as follows:
    1. pH (+/- 0.1 standard units)
    2. temperature (3%)
    3. SC (3%)
    4. turbidity (10% for values greater than 5 NTU; if three turbidity values are less than 5 NTU, consider the values as stabilized)
    5. DO (10% for greater than 0.5 milligram per liter [mg/L] or 3 consecutive values less than 0.5 mg/L)
    6. ORP (+/- 20 millivolt [mV] or 10%, whichever is greater)
- Containerize purge water in tanks or 55 gallon steel drums.
- Collect the samples.
- Following purge, disconnect the flow-through cell and fill all containers from the discharge end of the tubing. Collect samples at a flow rate equal to the steady state purge rate.
- Fill sample containers directly from the sampling device in order of decreasing volatility (i.e., Volatile Organic Compounds [VOC] samples will be collected first; see SOP SC-002, *Sampling Handling*).
- Label each sample collected and store samples in a cooler (SC-002, *Sampling Handling*).
- Secure the well cap and manhole cover and restore well area to pre-sampling conditions.

4. Notes

- Prior to the field activities, obtain available information on well construction for use in field investigation (i.e., screen and riser material, well diameter and depth, screened interval, optimum sampling depth, etc.).

- If using dedicated equipment, to the extent achievable install equipment into well at least 24 hours before sample collection to minimize disturbance of the water column and/or suspension of sediments or NAPL on bottom.
- To minimize the potential of cross-contamination between wells, dedicated, in-place pumps (and tubing) can be used.
- If the water quality indicator parameters do not stabilize after 2 hours, then either continue purging or, contact the Project Manager.
- All sample containers are to be filled with minimal turbulence by allowing the groundwater to flow from the tubing gently down the inside of the container.
- Be aware of any preservatives in the sample bottles and handle with care, in accordance with the Health and Safety Plan.

5. References

Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samles From Monitoring Wells (January 19, 2010), USEPA Region-1, EQASOP-GW 001.

Standard Reference for Monitoring Wells (April 19, 1991), Massachusetts DEP, DEP Publication No. WSC-310-91.

Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures (1996), R.W. Puls and M.J. Barcelona, U.S. Environmental Protection Agency, EPA/540/S-95/504.

Reproducible Well-Purging Procedures and VOC Stabilization Criteria for Ground Water Sampling (1994), M.J. Barcelona, H. A. Wehram, and M.D. Varljen, Ground Water, Vol. 32, No. 1, 12-22.

Low-Flow Purging and Sampling of Ground Water Monitoring Wells with Dedicated Systems (1995), R.W. Puls, and C.J. Paul, Groundwater Monitoring and Review, Summer 1995 116-123.

Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling, (1998), Ground-Water Sampling SOP, Final, U.S. Environmental Protection Agency, Region II, March 16, 1998.

RCRA Ground-Water Monitoring: Draft Technical Guidance, (1993), U.S. Environmental Protection Agency, EPA/530-R-93-001.

To Filter, or Not to Filter, That is the Question, (1997), Special Topics Subcommittee Letter Report EPA-SAF-EEC-LTR-97-011, April 29, 1997,

Meeting, U.S. Environmental Protection Agency, Science Advisory Board Environmental Engineering Committee, September 5, 1997.

Should Filtered or Unfiltered Groundwater and Surface Water Samples be Collected for the Risk Assessment?, (1995), MCP Q&A: Subparts I and J, Special #4, Bureau of Waste Site Cleanup, Massachusetts Department of Environmental Protection (DEP), February, 1995.

6. Attachments

Attachment A – Monitoring Well Sample Data Form
Attachment B – Portable Equipment Calibration Log

Attachment A

Monitoring Well Sample Data Form

Project: National Grid - ______ **Well ID:** ______ **Date:** ______

Total Well Depth (from top of casing): ______

Depth to Water (from top of casing): ______

Well Diameter: ______

Pump Intake Depth: ______

Sampling Crew: ______

Purge Time: *Start:* ______ *Finish:* ______

Purging Method: ______

Sampling Method: Low Flow

Sample Time: *Start:* ______ *Finish:* ______

Sample Analysis: ______

Purge Data

Sample Time	**Flow Rate** *(lpm/gpm)*	**Volume Purged** *(liters/gals.)*	**pH** *(std. Units)*	**Conductivity** *(mS/cm)*	**Turbidity** *(NTU)*	**Dissolved Oxygen** *(mg/l)*	**Temperature** *(Cel.)*	**Salinity** *(%)*	**ORP** *(mV)*	**Comments/Observations**
										Well Headspace PID =

Final Stabilization Data

Sample Time	**Flow Rate** *(lpm/gpm)*	**Volume Purged** *(liters/gals.)*	**pH** *(std. Units)*	**Conductivity** *(mS/cm)*	**Turbidity** *(NTU)*	**Dissolved Oxygen** *(mg/l)*	**Temperature** *(Cel.)*	**Salinity** *(%)*	**ORP** *(mV)*	**Comments/Observations**

GEI Consultants

Attachment B

Portable Equipment Calibration Log

Date: ______________________

Equipment Information

Equipment Type: ______________________

Manufacturer and Model: ______________________

Identification Number: ______________________

Calibration Information

Time	Parameter	Initial Reading	Calibration Value	Lot No.	Expiration	Final Reading

Notes:

Record information for all calibrated parameters.

If performing zero and span calibration, use a separate line for each.

Comments/Observations

STANDARD OPERATING PROCEDURE

GW-004 pH and Temperature Measurement

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1. Objective

The objective of this Standard Operating Procedure (SOP) is to provide standard methods for determining the pH and temperature of liquids using a combination pH/temperature meter.

2. Execution

- Calibrate the meter according to the equipment manufacturer's instructions at the beginning of each day of use. Calibration for pH shall be performed using at least two buffer solutions from various ranges. Solutions chosen should be similar in pH to the expected level of the samples or liquids tested (pH 7 and four buffer solutions are preferred in most cases for ground or surface water measurements). Record data on Attachment A – Portable Equipment Calibration Log.
- Calibration is checked every two hours or every five monitoring locations, whichever occurs first, and at the end of the day by measuring the two calibration solutions used. The reading and times are recorded. If the readings are outside +/– 0.2 pH units, the meter must be recalibrated.
- Immediately prior to testing a sample, decontaminate testing beaker or container and probe assembly with one rinse of sample solution. Do not use methanol to rinse the probe. Methanol rinses could damage the probe.
- Gently shake the probe and beaker to remove excess solution. Visually inspect the bottom of the probe to ensure that liquid or sediment is not trapped between outer casing and probe.
- Pour the sample into the testing container and insert both temperature and pH probe. Stir sample for 30 seconds using both probes. Let the probes equilibrate in the sample solution for another 30 seconds. Measure and record the temperature. A reading has stabilized if pH units have not changed +/– 0.1 pH units during a five second period.
- Record pH to the nearest 0.1 unit and temperature to the nearest whole number.

3. Notes

- At all times, follow safety procedures as defined in the site-specific Health and Safety Plan.

- Coatings and particulates may affect the response of the probe; more thorough cleaning with distilled water and gently wiping the probe surface may be required to clean the surface of the probe.
- Temperature affects both the response of the instrument to pH and the actual pH of the sample. The Automatic Temperature Compensation (ATC) function compensates for the variation in the response of the meter only. Therefore, the pH must always be reported with temperature.
- The probe is a fragile thin glass bulb surrounded on three sides by a plastic casing. Care must be taken in handling the probe to avoid breakage.
- Buffer solutions should not be used past their expiration date.

4. References

Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).

5. Attachment

Attachment A – Portable Equipment Calibration Log

Attachment A

Portable Equipment Calibration Log

Date: ____________________

Equipment Information

Equipment Type: ____________________

Manufacturer and Model: ____________________

Identification Number: ____________________

Calibration Information

Time	Parameter	Initial Reading	Calibration Value	Lot No.	Expiration	Final Reading

Notes:

Record information for all calibrated parameters.

If performing zero and span calibration, use a separate line for each.

Comments/Observations

GEI CONSULTANTS, INC.
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SOP No. GW-005
Revision No.0
Effective Date: November 2010

STANDARD OPERATING PROCEDURE

GW-005 Turbidity Measurement

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1. Description

A nephelometer/turbidimeter is used in comparing the turbidity of liquids by viewing light through them and determining how much light is eliminated. Turbidity readings are required to be read using a portable (e.g. Horiba or Hach) instrument outside the flow-through cell.

2. Execution

- Turn the meter "ON".
- Calibrate the meter according the manufacture’s specifications and record data on Attachment A – Portable Equipment Calibration Log.
- Rinse the sample cell three times with organic free or de-ionized water.
- Fill the cell to the fill line with organic free or de-ionized water and then cap the cell.
- Use a non-abrasive lint-free paper or cloth (preferably lens paper) to wipe off excess water and streaks.
- Open the cover and insert the cell (arrow to the front) into the unit and close the cover.
- Press "READ" and wait for the 'light bulb' icon to go off. Record the reading.
- Using the Gelex standards, repeat steps above. Record all measurements (note anomalies).
- Collect a representative sample or use a portion of the sample that is collected for pH, temperature, or conductivity analysis, and pour off enough to fill the cell to the fill line (about 15 milliliters [ml]) and replace the cap on the cell.
- Wipe off excess water and any streaks with a soft, lint-free cloth (lens paper).
- Press “I/O” and the instrument will turn on. Place the meter on a flat, sturdy surface. Do not hold the instrument while making measurements.
- Insert the sample cell in the instrument so the diamond or orientation mark aligns with the raised orientation mark in the front of the cell compartment. Close the lid.
- Select manual or automatic range selection by pressing the range key.

- Select signal averaging mode by pressing the "Signal Average" key. Use signal average mode if the sample causes a noisy signal (display changes constantly).
- Press Read. The display will show "---- NTU" and then the turbidity in nephelometric turbidity units (NTUs). Record the result after the lamp symbol turns off.
- Rinse the cell with de-ionized water.
- Perform an operational check.
- Periodically check the turbidity meter during the day by using the Gelex secondary standards provided.
- Perform a post calibration at the end of the day and record all measurements.

3. Notes

- Turbidity measurements are reported in NTUs. It is important to note that if the turbidity measurements are for National Pollutant Discharge Elimination System (NPDES) reporting purposes, all values above 40 NTU must be diluted with turbidity free water and calculated by multiplying by a dilution factor.

4. References

Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).

STANDARD OPERATING PROCEDURE

GW-006 Specific Conductance Measurement

---

1. Objective

The objective of this Standard Operating Procedure (SOP) is to provide standard methods for determining the conductivity of waters using a field conductivity meter.

2. Execution

- Calibrate the meter according to equipment manufacturer’s instructions at the beginning of each day of use and record data on Attachment A – Portable Equipment Calibration Log. Calibration shall be performed using a standard KCl solution of 0.20 mS/cm (200 uS/cm, S=mho).
- Calibration is checked at the beginning of the day immediately prior to sampling, after five sampling locations or two hours (whichever occurs first), and at the end of the day. If the readings are outside +/- 0.02 mS/cm, the meter must be recalibrated. Initial calibration should be conducted under the same conditions (i.e., temperature, and location) of field testing.
- Immediately prior to testing a sample, decontaminate testing beaker or container and probe assembly with one distilled water rinse, and one sample solution rinse.
- Gently shake the probe and beaker to remove excess solution.
- Pour sample into the testing container and insert probe. Stir sample with the probe for approximately 10 seconds. Let the probe equilibrate in the sample solution for another five seconds. Measure conductivity and record in the field notebook.
- Record conductivity to the nearest whole number.

3. Notes

- At all times, follow safety procedures as defined in the site-specific Health and Safety Plan.
- Coatings and particulates may affect the probe’s response; more thorough cleaning using a weak alconox solution and double distilled water rinse and gently wiping the probe surface may be required to clean the surface of the probe.
- If contaminated, (e.g., stained, conductance >750 mhos/cm), rinse probe with clean water immediately after measuring sample to minimize fouling of probe.
- Calibration solutions should not be used past their expiration date and must be discarded after three months of use.

4. References

Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).

5. Attachment

Attachment A – Portable Equipment Calibration Log

STANDARD OPERATING PROCEDURE

GW-007 Dissolved Oxygen Measurement

---

1. Objective

To accurately quantify dissolved oxygen (DO) in water.

2. Execution

Typically, the Horiba U-22 Multiparameter Water Quality Meter is used to measure groundwater DO during low-flow purging activities. However, a Hach DO test kit may be utilized, as necessary.

Horiba U-22 Multiparameter Water Quality Meter

1) Calibrate meter in accordance with manufactures specifications.
2) Calibrate the meter according to equipment manufacturer's instructions at the beginning of each day of use and record data on Attachment A – Portable Equipment Calibration Log.
3) In accordance with SOP GW-003, connect decontaminated meter inline with purge/sample tubing utilizing decontaminated flow-cell.
4) Record DO readings during monitoring well purging in accordance with SOP GW-003

Hach DO Test Kit

High Range Test (1 to 20 milligrams per liter [mg/L])

1) Fill the DO bottle (round bottle with glass stopper) with sampling water by allowing the sample water to overflow the bottle for 2 to 3 minutes. Avoid turbulence and bubbles in the sample while filling.
2) Incline the bottle slightly and insert the stopper with a quick thrust to avoid trapping air bubbles. If bubbles become trapped, discard the sample and repeat the test.
3) Remove the stopper and add the contents of one DO 1 Reagent Power Pillow and one DO 2 Reagent Powder Pillow. Stopper the bottle carefully to avoid trapping air bubbles. If bubbles become trapped, discard the sample and repeat the test.
4) Shake the bottle vigorously to mix. Flocculant (floc) precipitate will form. Brownish-orange precipitate indicates oxygen is present.
5) Wait for floc to settle to approximately half the bottle volume. Floc will not settle if high concentrations of chloride are present. In this case, wait 4 to 5 minutes before proceeding.
6) Shake the bottle vigorously again.
7) Wait for the floc to settle halfway. Floc will not settle if high concentrations of chloride are present. In this case, wait 4 to 5 minutes before proceeding.

8) Remove the stopper and add the contents of one DO 3 Reagent Powder Pillow. Stopper the bottle carefully to avoid trapping air bubbles. If bubbles become trapped, discard the sample and repeat the test.
9) Shake the bottle vigorously to mix. Floc will dissolve and the sample will turn yellow if oxygen is present.
10) Fill plastic tube full (to the top) with prepared sample.
11) Save the rest of the prepared sample for the Low Range Test, if necessary.
12) Pour the contents of the tube into a square mixing bottle.
13) Add Sodium Thiosulfate Standard Solution one drop at a time to the mixing bottle. Count each drop. Swirl to mix after each drop. Add drops until the sample becomes colorless.

Low Range Test (0.2 to 4 milligrams per liter [mg/L])

1) Use the prepared sample left from Step 11 of the High Range Test. Pour off the contents of the DO bottle until the level reaches the 30 ml mark on the bottle.
2) Add Sodium Thiosulfate Standard Solution one drop at a time to the DO bottle. Count each drop. Swirl the bottle after each drop is added. Add drops until the sample becomes colorless.
3) Multiply by 0.2 the number of drops of titrant used. This is the total mg/L.

3. Notes

- Collecting measurements from samples in containers will alter the gaseous content of the sample.
- Freshwater can hold more oxygen than saltwater. The dissolved salt forces dissolved gas out of water thereby lowering the solubility of water. A known relationship between salinity and dissolved oxygen concentration allows for a correction for salinity.

4. References

Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).

5. Attachment

Attachment A – Portable Equipment Calibration Log

STANDARD OPERATING PROCEDURE

GW-008 Temporary Groundwater Sampling Points

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1. Description

A well point is a small diameter (1-2 inch) probe constructed of continuously wrapped stainless steel or wrapped stainless steel gauze screen over perforated carbon steel pipe. They may be used as a screening tool to collect ground water samples and piezometric data to aid in the optimal placement of monitor wells. No filter or gravel pack is used in the installation.

2. Execution

2.1. Installation

- The well point can be placed with the use of a conventional hollow-stem auger rig, slide hammer, jack hammer, rotary hammer, or by hand.
- The well point may be driven through the unsaturated zone only in known "clean" soils. Driving the well point through contaminated soil may carry some contamination with the point resulting in analytical sample results which are biased high. In contaminated unsaturated zones, the well points must be placed with the aid of a hollow-stem auger.
- If the well point is to be installed in an oversized (20% larger than the well point) pre-drilled hole, the hollow-stem augers or bull drive point must be advanced to a point which is just above the targeted sample zone. The well point is then placed in the hole and advanced beyond the bottom of the hole by hammering or pushing into place. The use of pre-drilled holes will reduce clogging of well point screens when driving.
- After sample collection, the well point is removed by back hammering or pulling the tool out with the rig hydraulics.
- If the well point is to be left as a permanent installation, it must be constructed and permitted as per local regulatory monitor well requirements.
- If the well point is used for piezometeric data, a survey mark must be made on top of the casing as a reference point for water level measurements.

2.2. Sampling Procedures

2.2.1. Development

Development of a well point is not required except when performing vertical profile sampling. The well point must be developed by one of the standard methods used for well development prior to sampling. If an air lift development technique is used, the air outlet must be at a minimum of two feet above the screen. Operations must be continuous and not pulsed. The air lift pipe shall not be placed within the screen and only the double pipe method shall be used.

2.2.2. Purging

Purging of the well point is required.

2.2.3. Sampling

The acquisition of ground water samples and piezometric data must be performed by one of several recommended methods described in the associated SOP.

3. References

Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).

Ground Water and Wells. Johnson Division, UOP Inc.; St. Paul, Minn. 1982. p277-294.

Ground Water Manual - A Water Resources Technical Publication; U.S. Dept. of Interior, Bureau of Reclamation. Government Printing Office,Washington DC 1977.

STANDARD OPERATING PROCEDURE

GW-009 Potable Well Sampling

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1. Objective

To collect a sample representative of a drinking water supply and to reduce the bias of system related variables (pumps, piping, holding tanks, etc.).

2. Execution

- When sampling potable water supplies, conduct an initial survey to get a general overview of the water system and its operation.
- Note how the configuration of the system relates to the type of sample that you want to collect (raw water, finished/treated water, or an intermediate sampling point).
- Inquire as to whether any treatment units are installed on the system. Softening (pH adjustment), iron removal, turbidity removal, and chlorination, are often used; these may give misleading analyses depending upon the parameters of interest.
- Home carbon filters used for the removal of organics have become increasingly popular. Basement and outside faucets may by-pass such treatment systems.
- Important considerations to record are:
    1. Well driller and date drilled.
    2. Construction of well and casing depth.
    3. Well and pump location.
    4. Well depth and pump capacity (if available).
    5. Storage tank capacity.
    6. Treatment or conditioning unit (if any).
    7. Plumbing arrangement.
    8. Possible sample collection points.
    9. Distance of well to any septic systems or underground storage tanks.
    10. Aesthetic information (color, odor, observed suspended material).
- Obtain the name(s) of the resident or water supply owner/operator, the resident's exact mailing address, and the resident's home and work telephone numbers. The information is required so that the residents or water supply owner/operators can be informed of the results of the sampling program.
- For long term monitoring projects which include sample collection from domestic wells, a specific tap or faucet should be designated as the target sample access point for consistency and data comparability of future samples.

- The sample should be collected from a tap or spigot located at or near the well head or pump house and before the water supply is introduced into any storage tanks or treatment units.
- If the sample must be collected at a point in the water line beyond a pressurization or holding tank, a sufficient volume of water should be purged to provide a complete exchange of fresh water into the tank and at the location where the sample is collected.
- Home faucets, particularly kitchen faucets, usually have a screen (aerator) installed on the discharge. The screen must be removed prior to sampling for bacteria, or for volatile organics, since the screen tends to aerate the water and some organics may be lost. Also, when sampling for bacteria, do not take a sample from a swivel faucet since the joint may harbor a significant bacterial population.
- If the sample is collected from a tap or spigot located just before a storage tank, spigots located inside the building or structure should be turned on to prevent any backflow from the storage tank to the sample tap or spigot. It is generally advisable to open several taps during the purge to ensure a rapid and complete exchange of water in the tanks.
- Purge the system for at least 15 minutes when possible. After purging for several minutes, measure the turbidity, pH, specific conductivity, and temperature of the water. Continue to monitor these parameters until three consistent readings are obtained. If possible, obtain three consistent readings after the 15 minute purge.
- After three consistent readings have been obtained, samples may be collected.
- When sampling for bacterial content, the sample container should not be rinsed before use due to possible contamination of the sample container or removal of the thiosulfate dechlorinating agent (if used).
- When filling any sample container, care should be taken that no splashing drops of water from the ground or sink do not enter into either the bottle or cap.
- When sampling at a water treatment plant, samples are often collected from the raw water supply and the treated water after chlorination.

3. Notes

- Homeowners’ plumbing systems should not be altered, except for removal of the faucet screen (aerator) with permission of the homeowner.
- Under no circumstance shall a pump be pulled from a homeowner’s well unless the removal is authorized by the homeowner and is carried out by a licensed pump installer. Pump installers are trained professionals with experience in the electrical and plumbing aspects

of well pumps. In addition pump installers are trained in the proper chlorination of wells after work is completed and will advise homeowners of any precautions to take to avoid excess rust from entering their system.

- When sampling industrial wells, it is desirable to sample as close to the well source as possible. Samples should be taken directly from the well head whenever possible. This will eliminate treatment interference, possible changes in quality within the lines, and mixing of water from other wells, etc. Large capacity wells, which are *on-line* during the visit, can be sampled immediately. Wells, which are *off-line*, must be pumped to waste prior to sampling. Pumping fifteen minutes or more is suggested.

4. References

Standard Methods for the Examination of Water and Wastewater, 18th Edition, Method 4500-H. American Public Health Association (1992).

Ground Water and Wells. Johnson Division, UOP Inc.; St. Paul, Minn. 1982. p277-294.

Ground Water Manual - A Water Resources Technical Publication; U.S. Dept. of Interior, Bureau of Reclamation. Government Printing Office,Washington DC 1977.

STANDARD OPERATING PROCEDURE

GW-010 Slug Tests

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1. Objective

To determine the horizontal hydraulic conductivity of distinct geologic horizons using wells or piezometers.

Slug tests can be performed on single monitoring wells to estimate the hydraulic conductivity of the aquifer. The approximate horizontal hydraulic conductivity of a given aquifer zone may be determined by first adding or removing a known volume (slug) to or from the well, then observing and recording the subsequent rate of water level fall or rise within the well. The resulting data will be used to determine the hydraulic conductivity of the aquifer test zone using an appropriate analytical solution method. A slug bar or bailer of known volume will be used to alter the water levels in the wells.

Falling head tests are to only be performed in fully-penetrating wells (well screened completely below the water table). Rising head tests can be performed in both fully- and partial-penetrating wells.

2. Execution

2.1 Setup

- Determine the way that water levels will be recorded. If the geologic materials in the test zone are expected to be only slightly permeable (e.g., a glacial till or clay), then accurate measurements may be recorded manually with an electronic water level indicator. If the geologic materials in the test zone are expected to be moderately- or highly-permeable (e.g., outwash sands), then use a pressure transducer attached to an automatic data logger. The remainder of this Standard Operating Procedure (SOP) assumes that an automatic data logging system is being used to perform the test.
- Check to see if test equipment functions prior to leaving for the site.
- Decontaminate the transducer and cable. Do not use a transducer in wells containing non-aqueous-phase liquid (NAPL).
- Make initial water level measurements and test wells from the least contaminated to the most contaminated, and from low to high expected permeability, where possible.
- The static water level (i.e., depth to water) in the well to be tested will be manually measured and recorded using an electronic water level indicator. All measurements taken during the test will be recorded in the field log book.

- The pressure transducer should be installed as far below the deepest point of insertion of the slug bar or bailer as possible. The transducer should be allowed to thermally equilibrate for 15 to 30 minutes (to allow instrumentation wiring to expand/contract) before measurements are taken.
- Secure the transducer cable at ground surface with tape or weight to keep the transducer at a constant depth.
- Cover sharp edges of the well casing with duct tape to protect the transducer cables.
- Transducer measurement setup: For wells screened in sand and silty sand, a linear setting of one reading per second is generally used. In coarser soil where full recovery may occur over a few seconds, a linear setting for more frequent readings will be necessary. If a transducer is used for silt and clay, a linear setting of one reading per minute, or a logarithmic setting, should be used to avoid risk of exceeding the memory capacity of the transducer.

2.2 Field Procedure – Rising Head Test

- Log the initial water level on the attached form (Attachment A).
- Fully submerge the slug bar or bailer into the water column of the well.
- The water level in the well should be allowed to return to static condition after both the slug and transducer have been inserted. The transducer readout on the PC or Rugged Reader should indicate the height of water above the transducer.
- When the water level in the well has returned to static condition, the transducer should be started ("Start Test" if using Win Situ software). Periodically view graphical data on PC or Rugged Reader during test, to confirm adequate data collection.
- Rapidly remove the slug bar or bailer from the water column and well. Avoid moving or pulling up the transducer cable with the slug.
- The transducer should continue to record water levels until the water level has recovered to within 15 percent of the original static water level relative to the initial test displacement (85 percent recovery), or until one hour has elapsed.
- Data stored in the transducer should be transferred to and stored on the project directory for analysis.

2.3 Field Procedure – Falling Head Test

- Log the initial water level on the attached form.
- The water level in the well should be allowed to return to static condition after the transducer has been inserted. The transducer readout on the PC or Rugged Reader will indicate the height of water above the transducer.

- When the water level in the well has returned to static condition, begin recording transducer readings ("Start Test" if using Win Situ software).
- Fully submerge the slug bar or bailer into the water column of the well.
- Periodically view graphical data on PC or Rugged Reader during test, to confirm adequate data collection. The transducer should continue to record water levels until the water level has recovered to within 15 percent of the original static water level relative to the initial test displacement (85 percent recovery), or until one hour has elapsed.
- Data stored in the transducer should be transferred to and stored on a portable computer for analysis.

3. Quality Control

The time required for a slug test to be completed is a function of the volume of the slug, the hydraulic conductivity of the formation, and the type of well completion. The slug volume should be large enough that a sufficient number of water level measurements can be made before the water level returns to equilibrium conditions. Two bailers connected in series can be used to increase the slug volume, provided the water column is deep enough.

If the well is to be used as a monitoring well, precautions should be taken that the wells are not contaminated by material introduced into the well.

Heavy contamination such as NAPL will damage the transducer. Gauge recovery manually in these instances.

Where possible, take periodic water level readings manually during recovery. The manual data can be used for calculations, if needed, to correct for transducer noise or movement.

Where possible, take more than one pressure transducer to site. This will provide backup and allow testing of multiple wells simultaneously.

4. Calculations

The simplest interpretations of piezometer recovery are that of Hvorslev (1951) and Bouwer and Rice (1976). The analyses assume a homogenous, isotropic medium in which soil and water are incompressible. Spreadsheets and software are available to calculate hydraulic conductivity from slug test data according to the methods below.

Hvorslev's expression for hydraulic conductivity (K) is:

$$K = \frac{r^2 \ln (L/R)}{2 L T_0} \qquad \text{for } L/R > 8$$

where:
K = hydraulic conductivity [ft/sec]
r = casing radius [ft]
L = length of open screen (or borehole) [ft]
R = filter pack (borehole) radius [ft]
T_0 = Basic Time Lag [sec]; value of t on semi-logarithmic plot of H-h/H-H_0 vs. t, where H-h/H-H = 0.37 $_0$
H = initial water level prior to removal
of slug
H_0 = water level at t = 0
h = recorded water level at t > 0

(Hvorslev, 1951; Freeze and Cherry, 1979)

The Bouwer-Rice expression for hydraulic conductivity (K) is:

$$K = \frac{r^2 \ln(R_e/R)\ln(h_o/h_t)}{2\,L\,t}$$

where:
r = casing radius [ft]
t = time of drawdown measurement since start of test [sec]
h = drawdown of water in well at time = t [ft]
h_o = drawdown of water in well at t = 0 (initial drawdown) [ft]
L = length of open screen (or borehole) [ft]
R_e = effective radius (radius of influence) [ft]
R = gravel pack radius [ft]

Both the Hvorslev and Bouwer-Rice methods can be applied for partially-penetrating wells. Hvorslev is generally applicable only to fully penetrating wells.

5. References

U. S. EPA ENVIRONMENTAL RESPONSE TEAM STANDARD OPERATING PROCEDURES SOP: 2043,"Water Level Measurement" REV: 0.0, 10/03/94.

U. S. EPA ENVIRONMENTAL RESPONSE TEAM STANDARD OPERATING PROCEDURES SOP: 2046,"Slug Tests" REV: 0.0, 10/03/94.

Hvorslev, M.J., "Time Lag and Soil Permeability In Ground-water Observations," U.S. Army Corps of Engrs. Waterways Experiment Station Bulletin No. 36, 1951.

Bouwer, H., “The Bouwer and Rice Slug Test – An Update,” Ground Water, vol. 27(3), 304, 1989.

Freeze, R. Allen and John A. Cherry, 1979. Groundwater, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Butler, James J., Jr., “The Design, Performance, and Analysis of Slug Tests”, Kansas Geological Survey, Lewis Publishers, 1997.

Butler, James, J., Jr. “Improving the Quality of Parameter Estimates Obtained from Slug Tests”, Ground Water, Vol. 34, No. 3, May-June 1996.

Sanders, Laura L., “A Manual of Field Hydrogeology”, Prentice-Hall, Inc., 1998.

6. Attachments

Attachment A – Slug Test Data Form

Attachment A

Attachment A. Slug Test Data Form

SITE ID: ________________

SLUG TYPE (solid/bailer/pumped)

LOCATION/WELL ID __________

SLUG DIAMETER: _____________

DATE: _______________________

SLUG LENGTH: _______________

FIELD PERSONNEL: ______________

____

METHOD:

RISING HEAD ____________

FALLING HEAD __________

DATALOGGER TYPE:

____

____

COMMENTS:

____

____

==

SETUP

Time _______________

Depth to Water - Initial Static (before installing troll/slug) ___________

Confirm well recovers to static after installing slug, or note otherwise

____

==

MANUAL CONFIRMATORY MEASUREMENTS

ELAPSED TIME (min.)	DTW	ELAPSED TIME	DTW

Form based on:
USEPA, 1994; Sanders, 1998.

STANDARD OPERATING PROCEDURE

GW-011 Open Standpipe Piezometer Construction and Installation

---

1. Objective

The objective of this standard operating procedure (SOP) is to standardize the installation of open standpipe piezometers for geotechnical evaluations. This SOP assumes the piezometers will be constructed from threaded, flush-joint polyvinyl chloride (PVC) pipe; the piezometer tip will either be constructed from a factory-slotted pipe or a porous stone. Piezometer dimensions (riser diameter, riser length, piezometer tip length, and slot-diameters for screened tip or pore size for porous tips) and filter sand gradation will be specified in the Work Plan.

2. Execution

All measurements taken during the installation are to be recorded on the GEI Open Standpipe Piezometer Installation Report Form.

- Using a weighted tape, measure and record the depth of the completed soil boring before beginning the piezometer installation.
- Measure the depth to groundwater in the borehole over a 10 to 15 minute period to observe that the groundwater elevation has approximately stabilized. Compare the saturated soil depth estimated from split-spoon samples to the measured water level in the borehole.
- Choose the riser length so that the piezometer tip (slotted section or porous stone) is located in the appropriate zone as specified in the Work Plan or determined by the Project Manager (PM) or their designee.
- If the borehole is deeper than the desired piezometer depth, then fill the base of the borehole with sand. Pour at least 12 inches of clean filter sand into the borehole. As sand is added to the borehole, slowly extract the casing or augers to maintain the sand level at or near the bottom of the casing or augers. The bottom of the casing or augers should not extend more than 6 inches above the top of the filter sand at any time. Allow the filter sand enough time to settle. Measure and record the depth to the top of the filter sand to the nearest 0.1 foot.
- Assemble the piezometer including the riser, screen, silt trap, etc. Install and secure a bottom cap. The bottom cap should be secured with either a threaded coupling and/or stainless steel screws.
- Temporarily cover the top of the riser pipe and lower the complete piezometer plus riser into the borehole allowing the base to rest on the filter sand placed previously. Make sure that the piezometer is centered in the borehole.
- Pour sand around the piezometer, frequently checking the depth to confirm that the sand is not bridging. As sand is added to the

borehole, slowly extract the casing or augers to maintain the sand level at or near the bottom of the casing or augers. The bottom of the casing or augers should not extend more than 6 inches above the top of the filter sand at any time.

- Add enough filter sand to fill the annulus between the piezometer and the borehole to a height of approximately 2 feet above the top of the slotted or porous section of the piezometer tip. Record the depth to the top of the filter sand to the nearest 0.1 foot.
- Slowly pour bentonite chips into the annulus between the piezometer riser and the borehole. As bentonite is added to the borehole, slowly extract the casing or augers to maintain the bentonite level at or near the bottom of the casing or augers. Frequently check the level of the bentonite in the borehole to ensure that the bentonite is not bridging.
- Place bentonite to form a minimum 3-foot-thick seal above the filter sand pack. Record the depths to the top and bottom of the bentonite seal to the nearest 0.1 foot. If the seal extends above the water table, use at least 5 gallons of potable water to hydrate the bentonite.
- Before removing the casing or augers, lower a tremie pipe to the bottom of the borehole, and begin to pump bentonite-cement grout into the borehole. Grout should be mixed in approximately the following proportions: 7.5 gallons water to one 94-pound bag of cement to 2-4 pounds of pulverized bentonite. The grout must be mixed using the pump on the rig to ensure proper mixing.
- As grout is added to the borehole, slowly extract the casing or augers to maintain the grout level at or near the bottom of the casing or augers. The bottom of the casing or augers should not extend more than 6 inches above the top of the grout at any time.
- Continue pumping grout to fill the borehole. The driller should use caution to ensure that grout does not enter the piezometer riser. Protective surface casing will consist of either a flush-mounted road box or a steel guard pipe. If a road box is to be used for surface casing, measure the length of the road box. Fill the grout so that the level reaches 4 to 6 inches below the bottom of the roadbox length. Fill the annular space with filter sand for drainage.
- If a steel guard pipe is used as protective casing, place the protective surface casing in the grout before it sets. The base of the guard pipe must extend at least 3.5 feet below the ground surface (below the frost line), and have a stick-up of no more than 3 feet above the ground surface.
- Cut the piezometer riser flat and place a mark or "V"-notch or an arrow on the casing with an indelible marker at one point for surveying and groundwater measurements. Cut the riser so that the top of the riser is 3 to 6 inches below the top of the protective casing.

- In areas of high traffic or areas of parking lots and/or roadways where plowing occurs, set the road box flush with the ground surface to avoid damage to the piezometer. Additional protection such as steel pole bumpers around the guard pipe may be necessary.
- Place a vented, locking cap on the piezometer pipe.
- All piezometer locations should be photo documented in accordance with SOP FD-004, *Photo documentation*.
- Label the protective casing with a paint pen and tape out the location to nearby landmarks so that the piezometer may be located in the future. Make sure to enter this information in the field notebook. If possible, place a brightly colored stake or other identifier adjacent to the piezometer.
- Develop the piezometer (see SOP DM-009, *Monitoring Well Development*).

3. Notes

- If drilling mud is used to advance the borehole, the drilling mud MUST be Revert or other biodegradable drilling mud approved by the PM.
- At all times, follow safety procedures as defined in the site-specific Health and and Safety Plan.
- Site-specific conditions must be evaluated to determine appropriate materials.
- Do not screen across different hydrostratigraphic units if possible (for example, outwash sands and till) unless specified in the Work Plan or approved by the PM.
- If the formation is composed of a material that is uniformly coarser than the filter sand, the grain size of the filter sand must be increased. Consideration should also be given to changing the slot size on the well screen. Differences in average grain size should generally not be greater than a factor of two to four times. Gradation of filter sand used is to be reviewed and approved by the PM or their designee.
- Do not use borehole/auger cuttings for backfill during monitoring well installation. If the cuttings are suspected to contain contamination which was identified during drilling, cuttings are to be containerized for later characterization and not used for filter pack materials.
- Do not screen across a confining layer (e.g., silt or clay). Backfill all confining layers with hydrated bentonite or grout.

4. References

Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

Nielsen, D.M. (1993), “Correct Well Design Improves Monitoring,” Environmental Protection, July, pp. 38-49.

STANDARD OPERATING PROCEDURE

GW-012 Vibrating Wire Piezometer Construction and Installation

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1. Objective

The objective of this standard operating procedure (SOP) is to standardize the installation of vibrating wire piezometers for geotechnical evaluations. This SOP assumes the piezometers will be supplied by the manufacturer ready for installation and accompanied by factory calibration data. Piezometer details (installation depth and cable length) will be specified in the Work Plan.

2. Execution

- All measurements taken during the installation, including the manufacturer's serial number and calibration data are to be recorded on Attachment B, Well Construction Form.
- Using a weighted tape, measure and record the depth of the completed soil boring before beginning the piezometer installation.
- Measure the length of the cable required to set the piezometer tip at the depth specified in the Work Plan or determined by the Project Manager (PM) or their designee. Make a mark on the cable with a permanent marker or electrical tape at a distance from the piezometer tip equal to the planned installation depth. Record the distance from the piezometer tip to the mark to the nearest 0.05 feet. This mark should line up with the top of the borehole when the piezometer tip is lowered to the correct depth. Place an additional mark 5 feet above the initial mark. The additional mark can be used to determine the final piezometer depth in the event that the first mark becomes obscured.
- Place the piezometer in a piece of slotted polyvinyl chloride (PVC) pipe or a porous filter bag filled with filter sand, and attach the PVC or bag to the piezometer cable. This will aid in removing slack from the instrument cable during installation.
- If the borehole is deeper than the bottom of the desired sand filter zone depth, slowly fill the borehole with bentonite chips to a depth of approximately 2 feet below the planned piezometer tip elevation. Take a borehole depth measurement after adding bentonite to make sure the bentonite did not bridge.
- Slowly raise the casing or augers and simultaneously pour clean filter sand in the borehole to maintain the level of the filter sand near the bottom of the casing or augers. The bottom of the casing or augers should not be raised more than 6 inches above the top of the filter sand at any point during the installation.
- Continue placing sand until the level of the sand is approximately 6 inches below the planned piezometer tip elevation.

- Lower the piezometer into the borehole to a point just above the water level in the casing, and allow the piezometer to stabilize thermally. Thermal stabilization usually takes about five to 15 minutes. Thermal stabilization is assumed to have occurred once the piezometer reading has stopped changing while the piezometer is suspended in the borehole.
- Obtain the initial zero reading from the piezometer using a read-out box. Record the zero reading and the temperature reading. If the read-out box does not have a temperature read-out, use an ohm meter to measure the resistance across the thermistor. This resistance can be converted to a temperature reading. Compare the measured zero reading to the factory zero reading. The zero reading should be within 20 digits of the factory zero reading after barometric and temperature corrections are made.
- Lower the piezometer in the borehole to the planned installation depth, and allow the piezometer to thermally stabilize for 15 to 20 minutes.
- Measure the depth to the water level in the borehole using a water level indicator, determine the height of the water column above the piezometer tip, and estimate the water pressure at the piezometer tip (height of water column times the unit weight of water). Record the measured water level and estimated water pressure.
- Take a piezometer reading to verify that the vibrating wire piezometer is reading correctly. Calculate the temperature-corrected pressure head. Record the piezometer reading, temperature, and pressure head. The piezometer is reading correctly if the measured pressure head approximately equals the estimated water pressure at the piezometer tip, calculated based on the measured water level. The piezometer reading should be within 0.5% of the estimated water pressure.
- Raise the piezometer 5 to10 feet, measure the water level in the borehole, and calculate the water pressure at the piezometer tip. Take a piezometer reading, and calculate the temperature-corrected pressure head. Record the piezometer reading, temperature, and pressure head. Compare the pressure head from the piezometer with the estimated water pressure. Again, the piezometer reading should be within 0.5% of the estimated water pressure.
- Lower the piezometer tip back to the planned installation depth, measure the water level in the borehole, and calculate the water pressure at the piezometer tip. Take a piezometer reading, and calculate the temperature-corrected pressure head. Record the piezometer reading, temperature, and pressure head. Compare the pressure head from the piezometer with the estimated water pressure. Again, the piezometer reading should be within 0.5% of the estimated water pressure.

- Tie off the piezometer cable to prevent the cable from falling into the borehole while the casing or augers are removed. The cable should be kept free of slack during the casing or auger removal and backfilling of the borehole.
- Remove the drill casing or augers from the borehole slowly at a maximum of 6-inch intervals. As the casing or augers are raised, the driller should slowly add filter sand to maintain the level of the filter sand near the bottom of the casing or augers. As the driller pours the sand into the borehole, take frequent measurements of the depth to the top of the sand. Do not let the sand "bridge" in the borehole.
- Using the marks placed on the cable at the start of the installation, confirm that the piezometer is installed to the correct depth.
- Continue slowly removing the casing or augers and slowly add adequate filter sand to surround the piezometer and fill the borehole to a height of approximately 2 feet above the piezometer tip and record the depth to the nearest 0.1 foot.
- Confirm that the piezometer is installed to the correct depth.
- Measure the water level in the borehole.
- Place at least 3 feet of bentonite chips above the filter pack to create a seal. Record the depths of the top and bottom of the bentonite seal to the nearest 0.1 foot.
- Before removing the drill casing or augers from the borehole, lower a tremie pipe to the bottom of the borehole, and pump bentonite-cement grout through the tremie pipe until good quality, undiluted grout return is observed at the ground surface. Grout should be mixed in approximately the following proportions: 7.5 gallons of water to one 94-pound bag of cement to 2-4 pounds of pulverized bentonite. The grout must be mixed using the pump on the drill rig or other high shear mixer to ensure proper mixing.
- After grouting the borehole and removing the drill casing or augers, place the protective surface casing in the grout before it sets. The protective surface casing will be either a flush-mounted road box or a steel guard pipe. If a steel guard pipe is used, the base of the guard pipe must extend at least 3.5 feet below the ground surface (below the frost line), and have a stick-up of no more than 3 feet above the ground surface.
- Confirm that the piezometer is installed to the correct depth.
- Record a second set of readings to verify that the piezometer continues to operate as expected. Coil any excess cable inside the protective surface casing. The cable must be accessible from the top of the protective surface casing.
- Place concrete in the annular space between the protective casing and the borehole up to the ground surface. Slope the concrete radially away from the protective casing at the ground surface to promote

surface water runoff. In areas of high traffic or areas of parking lots and/or roadways where plowing occurs, set the road box FLUSH with the ground surface to avoid damage to the road box.

- If the piezometer is installed in a high-traffic area with a guard pipe, additional protection such as steel pole bumpers around the guard pipe may be necessary.
- All piezometer locations should be photo documented in accordance with SOP FD-004, *Photo Documentation*.
- Label the protective surface casing with a paint pen and tape out the location to nearby landmarks so that the piezometer may be located in the future. Enter this information in the field notebook. If possible, place a brightly colored stake or other identifier adjacent to the surface casing.

3. Notes

- At all times, follow safety procedures as defined in the site-specific Health and Safety Plan.
- Site-specific conditions must be evaluated to determine appropriate materials.
- The gradation of the filter sand should be selected based on the gradation of the formation material. The gradation of the filter sand is to be reviewed and approved by the PM or their designee.
- Do not use drill cuttings for backfill during piezometer installation. If the cuttings are suspected to contain contamination which was identified during drilling, cuttings are to be containerized for later characterization.

4. References

Dunnicliff, J. (1988), Geotechnical Instrumentation for Monitoring Field Performance,John Wiley and Sons, Inc.

Instruction Manual, Model 4500 Vibrating Wire Piezometer (2005), Geokon, Inc.

5. Attachments

Attachment A - GEI Pressure Calculation and Temperature Correction Sheet

Attachment B - Well Construction Form

Pressure calculation and Temperature correction Sheet

Vibrating Wire Piezometer

Pressure = (Initial Reading – Current Reading) x Linear Gage Factor

Or

$$P = (R_0 - R_1) \times G$$

Temperature Correction = (Current Temp. – Initial Temp.) x Thermal Factor

Or

$$P_T = (T_1 - T_0) \times K$$

Corrected Pressure = Pressure + Temperature Correction

Or

$$P_{corrected} = ((R_0 - R_1) \times G) + ((T_1 - T_0) \times K)$$

1	2	3

Note: If the Linear Gage Factor with the units of psi/digit and the Thermal Factor with the units of psi/°C are used, the calculated pressures will be in units of psi. To convert from psi to feet of water, multiply by 144 and divide by 62.4.

Estimated water pressure at piezometer tip = height of water above tip x unit wt. of water
Unit weight of water = 62.4 lb/ft^3

Note: The height of water must be in units of feet. The water pressure will be in units of feet of water.

<u>Calculation Results</u>:

1.) Initial Calculation – Planned installation depth:

Temperature-corrected pressure head: ______________________________

Estimated water pressure at piezometer tip: ______________________________

2.) Second Calculation – Raise piezometer 5 to 10 feet:

Temperature-corrected pressure head: ______________________________

Estimated water pressure at piezometer tip: ______________________________

3.) Third Calculation – Lower piezometer back to planned installation depth:

Temperature-corrected pressure head: ______________________________

Estimated water pressure at piezometer tip: ______________________________

Section 8

Surface Water Sampling (SW)

STANDARD OPERATING PROCEDURE

SW-001 Surface Water Sampling

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1. Objective

This Standard Operating Procedure (SOP) is applicable to the collection of representative surface water samples from streams, rivers, lakes, ponds, lagoons, and surface impoundments. It includes samples collected from depth as well as samples collected from the surface. These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent upon site conditions, equipment limitations, or limitations imposed by the procedure. Location, equipment, and sampling situations will dictate the applicable method of sample collection for each point. Representative surface water samples will be collected from one of these four techniques.

- Kemmerer bottle
- Van Dorn sampler
- Direct method
- Peristaltic pump

2. Materials

Equipment needed for collection of surface water samples may include (depending on technique chosen):

- Kemmerer bottles
- Van Dorn sampler
- Line and messengers
- Peristaltic pump
- Teflon™/polyethylene tubing
- Laboratory provided sample bottles
- Resealable plastic bags
- Ice
- Coolers, packing material
- Chain of custody records, custody seals
- Decontamination equipment/supplies
- Maps/plot plan
- Safety equipment
- Tape measure
- Survey stakes, flags, or buoys and anchors
- Camera
- Field data sheets/field notebook/waterproof pen
- Permanent marker
- Sample bottle labels
- Paper towels

- Secchi Disk – Illustration provided as Figure 1
- Personal Protection Equipment (PPE)
- Global Positioning System (GPS) survey equipment

3. Execution

3.1. Pre-Sampling Procedures

Ensure that all samples are collected using adequate protective clothing and safeguards in accordance with the site-specific Health and Safety Plan (HASP).

3.1.1. Sample Location

A GPS navigation system, or a location map with field measured points if GPS is not available, will be used to identify and record sample location coordinates. If required, the proposed locations may be adjusted based on sample location access and obstructions.

3.1.2. Water Quality Data

Water quality data will be collected during sampling from the sample depth interval using an appropriate instrument to measure pH, specific conductance (SC), temperature, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP). In addition, water clarity will be measured at each sample location using a Secchi Disk. The water quality meter will be calibrated daily in accordance with manufacturer's specifications.

3.2. Sample Collection

3.2.1. Kemmerer Bottle

A Kemmerer bottle will be used in most situations to collect representative samples at the specific depths that are required. A picture of the Kemmerer bottle is provided as Figure 2. Sampling procedures are as follows:

- Prior to sample collection, the Kemmerer bottle will be properly decontaminated. The sampling device will be set so that the upper and lower stoppers are pulled away from the body of the sampler, allowing the surface water to enter tube.
- Lower the pre-set sampling device to the predetermined depth while avoiding disturbance of the bottom sediments.
- When the Kemmerer bottle is at the required depth, send the weighted messenger down the suspension line, closing the sampling device.
- Retrieve the sampler and discharge the first 10-20 milliliters (ml) from the drain to clear potential contamination from the valve.
- This procedure may be repeated if additional sample volume is needed to fulfill analytical requirements. Subsequent grabs may be composited or transferred directly to appropriate sample containers.

3.2.2. Van Dorn Sampler

A Van Dorn sampler will be used to collect surface water from a very specific sampling depth or from a shallow water body. A picture of the Van Dorn sampler is provided as Figure 3. Since the sampler is suspended horizontally, the depth interval sampled is the diameter of the sampling tube. The sampling procedure is as follows:

- Prior to sample collection, the Van Dorn Sampler will be properly decontaminated. The sampling device will be set so that the end stoppers are pulled away from the body allowing surface water to enter the tube.
- Lower the pre-set sampling device to the predetermined depth. Avoid disturbance of the bottom.
- When the Van Dorn Sampler is at the required depth, send the weighted messenger down the suspension line, closing the sampling device.
- Retrieve the sampler and discharge the first 10-20 ml from the drain to clear potential contamination from the valve.
- This procedure may be repeated if additional sample volume is needed to fulfill analytical requirements. Subsequent grabs may be composited or transferred directly to appropriate sample containers.

3.2.3. Direct Method

For surface water samples collected within the top 6-inches of the water column, the direct method will be utilized to collect water samples directly into unpreserved the sample container(s).

- Analytical samples that require field preservation will be transferred from the unpreserved container to a laboratory pre-preserved sampling container.
- Samples will be collected in a downstream to upstream direction. In shallow locations, collect the sample under the water surface while pointing the sample container upstream; the container must be upstream of the collector.
- Avoid disturbing the sediment surface during collection. The sample container will be held below the surface to avoid the collection of floating debris.

3.2.4. Peristaltic Pump

A peristaltic pump will be used to collect surface water from a very specific sampling depth or from a remote location that cannot be accessed with other sampling methods. Since the tubing can be weighted and suspended vertically, the depth interval sampled is the opening of the sampling tubing. The sampling procedure is as follows:

- Prior to sample collection, the tubing weights will be thoroughly decontaminated. Clean, disposable Teflon™ or polyethylene tubing will be cut to the predetermined sampling depth. The outside of the tubing will be marked with appropriate gradations to determine actual sample depth. The tubing will be affixed to an YSI, *In-situ* Troll 9000 or similar water quality meter to ensure water quality measurements are representative of the sample interval conditions.
- Lower the tubing and water quality meter to the predetermined sample depth. Avoid disturbance of the bottom.
- When the tubing is at the required depth, turn on the peristaltic pump.
- Discharge the two submerged tubing volumes from the pump to obtain a representative surface water sample.

3.2.5. Sample Interferences

Proper sampling procedures will be used to collect samples in accordance with this 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.

- 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 SOP QA-001, *Equipment Decontamination*.
- Improper Sample Collection: Typical improper sample collection techniques include:
    i. Improper decontamination of sampling equipment.
    ii. Use of sampling equipment or sample containers that are not compatible with the contaminants of concern or the laboratory analytical method.
    iii. Excess sediment in the sample due to disturbance of the sediments by sampling equipment.
    iv. Sample collection in an obviously disturbed or non-representative area.
    v. Sample collection during a period of increased surface water velocity that causes significant re-suspension of sediments (i.e., tidal influences, storm surge).

3.2.6. Quality Assurance/Quality Control (QA/QC)

QA/QC procedures that may apply to the these activities include QA/QC laboratory samples including blind duplicate, matrix spike and matrix spike duplicate (MS/MSD) samples, and field blank samples. QA/QC samples may be detailed in the Work Plan and the Draft Quality Assurance Project Plan (QAPP). Prior to collection of the QA/QC samples, equipment will be decontaminated in accordance with procedures described in SOP QA-001, *Equipment Decontamination*.

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 as indicated in the QAPP.

4. References

Wilde, F.D., D.B. Radtke, J. Gibs and R.T. Iwatsubo. 1998. National Field Manual for the Collection of Water-Quality Data – Selection of Equipment for Water Sampling. U.S. Geological Survey Techniques of Water – Resources Investigations, Book 9, Chap. A2, variously paged.
http://water.usgs.gov/owq/FieldManual/index.html and
http://water.usgs.gov/owq/FieldManual/mastererrat.html

U.S. Environmental Protection Agency. 1984. Characterization of Hazardous Waste Sites – A Methods Manual: Volume II. Available Sampling Methods, Second Edition. EPA/600/4-84-076.

U.S. Environmental Protection Agency. 2002. U.S. EPA Environmental Response Team, Standard Operating Procedures #2013, Surface Water Sampling. EPA, 12/17/02.

5. Attachments

Figures 1, 2, and 3

Figures

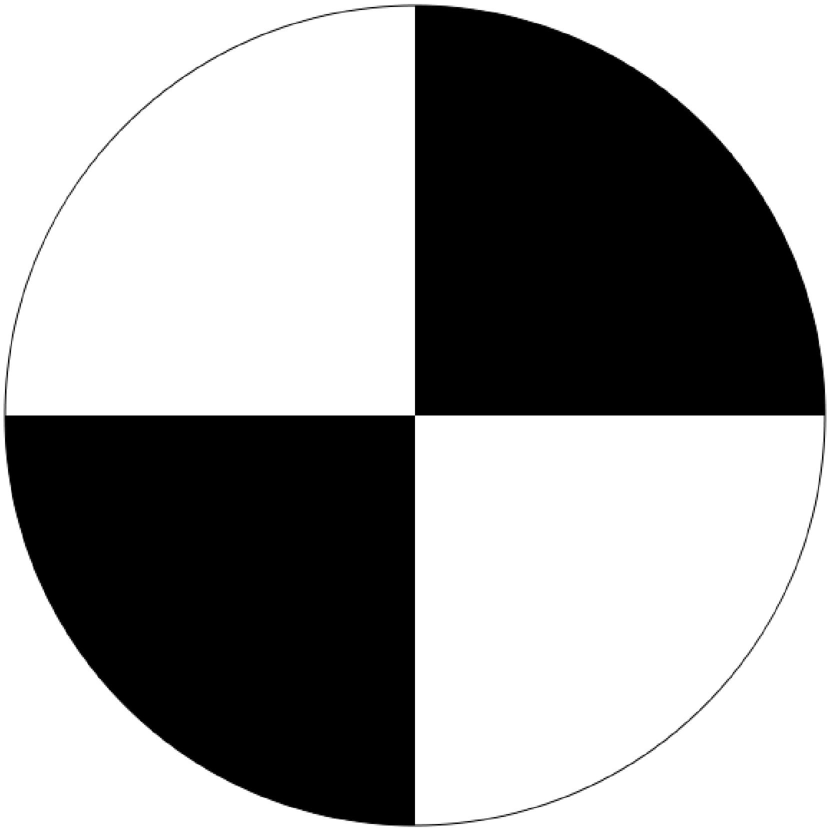

Figure 1 - Secchi Disk

Figure 2 – Kemmerer Bottle

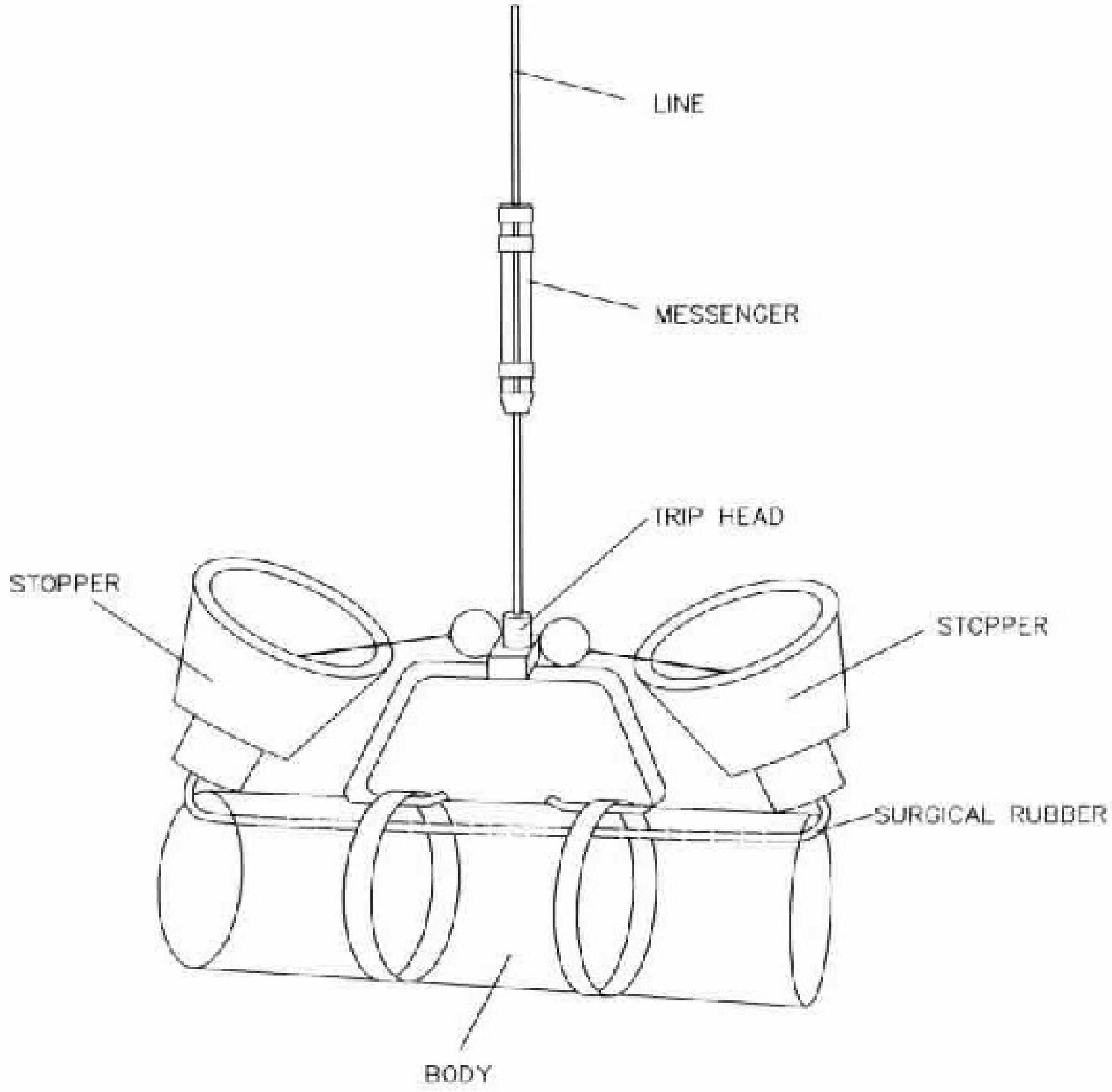

Figure 3 - Van Doran Sampler

Section 9

SEDIMENT SAMPLING (SS)

SUMMARY GUIDANCE

SS-001 Water Safety

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1. Objective

The safe deployment and return of personnel during field activities while aboard a boat.

2. Execution

Boat safety practices will be conducted in general accordance with guidance provided in the United States Army Corps of Engineers (USACE) Safety and Health Requirements Manual (EM) 385-1-1. Personnel will board the boat at specified locations to be determined and agreed upon prior to field deployment. The following safety practices shall be adhered to:

- Every employee shall wear a Personal Flotation Device (PFD) at all times when underway aboard any boat less than 25 feet except when that boat is equipped with a fully enclosed cabin and the employee is inside. Boats under 25 feet must also, at a minimum, have Coast Guard approved PFDs on board for each person and at least one throwable flotation device, such as a seat cushion.
- For every boating activity, a trip plan must be filed with on-shore project personnel who will take appropriate action if personnel on the boat do not return as planned.
- Daily voice-radio communications with an appropriate base must be maintained.
- The consumption of alcoholic beverages and the use of illegal drugs shall not be permitted at any time aboard boats.
- Firearms shall not be kept in a loaded condition except when carried by law enforcement personnel.
- Contractors working in an exposed marine location shall monitor the National Oceanic and Atmospheric Administration (NOAA) marine weather broadcasts and shall use other local commercial weather forecasting services as may be available.
- For retrieving a person overboard, the boat operator will throw a life ring and line. For retrieving a person overboard, the support boat will also be equipped with a life ring attached to approximately 90 feet of rope. The support boat will be equipped with an ABC rated fire extinguisher(s).
- Emergency procedures for fire and man overboard will be reviewed on the first day of operations and any time a change of personnel occurs.

3. References

United States Army Corps of Engineers, Safety and Health Requirements Manual (EM), 385-1-1.November 3, 2003 – Section 19 Floating Plant and Marine Activities.

STANDARD OPERATING PROCEDURE

SS-002 Ponar or Shipek Grab Sampler

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1. Objective

Surficial sediment samples will be collected from the upper 6 inches (approximate) using a Ponar or Shipek type grab sampler. These devices are relatively easy to handle and operate, readily available, moderately priced, and versatile in terms of the range of substrate types they can effectively sample. Both samplers provide sufficient sample volume (7.5 or 3 cubic liters, respectively) to allow sub-sampling for multiple analytes.

2. Materials

Equipment needed for collection of sediment samples may include (depending on technique chosen):

- Ponar/Shipek Sampler
- Stainless steel sampling tools
- Laboratory provided sample bottles
- Resealable plastic bags
- Ice
- Coolers, packing material
- Chain of custody records, custody seals
- Decontamination equipment/supplies
- Maps/plot plan
- Safety equipment
- Tape measure
- Camera
- Field data sheets/field notebook/waterproof pen
- Permanent markers
- Sample bottle labels
- Paper towels
- Personal Protection Equipment (PPE)
- Global Positioning System (GPS)

3. Execution

- Prior to sample collection, the grab sampler will be decontaminated.
- When deploying the grab sampler, the speed of descent should be controlled, with no “free fall” allowed. In deep waters, use of a winching system is recommended to control both the rate of descent and ascent.
- The sampler will be carefully lowered the last few feet to minimize dispersal of fine material due to a sampler-induced shock wave.

- At the time of the sample collection, the sample location will be surveyed with GPS survey equipment.
- After the sample is collected, the sampling device should be lifted slowly off the bottom and raised to the surface at a slow and steady rate.
- Prior to sampling directly from the grab sampler, the overlying water will be removed by opening the jaws of the Ponar slightly and allowing the water to drain. If the overlying water is turbid, then the suspended solids will be allowed to settle, if possible, prior to draining.
- Where sampling directly from the sampler is not possible or feasible, the sampler will be slowly opened over a sample platform. The sampler will be placed such that the sample may be deposited with minimal disturbance.
- Photograph the sample in color with a digital camera. SOP FD-004, *Photo Documentation* provides further guidance on photo documentation.
- Sediments will be described in accordance with the soil description procedure listed below in SOP SM-003, *Soil Classification*, if necessary.
- Place sediment samples into pre-cleaned laboratory provided jars for the appropriate analyses as determined in the Work Plan. Label each jar with the unique grab sample identification number and depth of the sample.
- Place the sample containers into plastic sealable bags or bubble wrap and place them in an iced cooler until transfer shipment to the analytical laboratories. Add the sample to the chain of custody form.

4. References

U.S. Environmental Protection Agency, Office of Water, Office of Science & Technology. 2001. Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. EPA-823B-01-002, October 2001.

State of Ohio, Environmental Protection Agency, Division of Surface Water. 2001. Sediment Sampling Guide and Methodologies, Second Edition. November 2001.

ASTM, 2003. D4823-95 (2003) Standard Guide for Core Sampling Submerged, Unconsolidated Sediments. ASTM International, West Conshohocken, PA. August 2003.

Newfield's Environmental Forensics Laboratory, 2005. Geochronologic Sample Handling Procedure.

STANDARD OPERATING PROCEDURE

SS-003 Sediment Sampling Using Vibracore Equipment

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1. Objective

Fine-grained sediments, such as sands, silts and clays can be collected using Vibracore (VC) equipment for depths of up to 10 feet below the top of sediments. The VC equipment utilizes an air powered piston vibrator to drive the core pipe into the unconsolidated sediments. A disposable lexan liner is placed within the core pipe to collect each sample. A new liner is inserted in the core pipe for each sample.

2. Materials

Equipment needed for collection of sediment samples may include (depending on technique chosen):

- Vibracore sampler
- Stainless steel sampling tools
- Laboratory provided sample bottles
- Resealable plastic bags
- Ice
- Coolers, packing material
- Chain of custody records, custody seals
- Decontamination equipment/supplies
- Maps/plot plan
- Safety equipment
- Tape measure
- Camera
- Field data sheets/field notebook/waterproof pen
- Permanent markers
- Sample bottle labels
- Paper towels
- Personal Protection Equipment (PPE)
- Global Positioning System (GPS)

3. Execution

- Sample from downstream to upstream locations so that disturbed sediment will not affect subsequent sampling locations.
- If sediment samples are being collected for laboratory analysis, the sampling equipment (i.e., cutting shoe, retainer, and sampling barrel) shall be decontaminated prior to the collection of samples at each location. Decontamination shall be conducted according to procedures that are outlined in any work plan(s) associated with the site.

- The drilling contractor shall measure the depth of the water column (depth to top of sediments). The drilling contractor shall also record the latitude, longitude, and elevation of the sample location by means of the GPS. This information will be recorded by the GEI field representative along with a written description of the location (including sketch if appropriate). If GPS is not available, sampling locations will be marked with a labeled stake, buoy, flagging, or other device. When marking locations in navigable waterways, the appropriate regulatory agencies will be informed and proper precautions will be taken to prevent any navigational hazards before, during, and after sampling.
- Prior to coring at each sampling location, the VC watercraft shall be moored in a multi-point fashion.
- The VC drilling contractor will collect sediment samples using 3-inch diameter steel pipe in lengths of 5-feet or 10-feet. A 2-5/16-inch outer diameter (1/16-inch thick) lexan liner is placed into the core barrel. The apparatus is vibrated into the sediments, where penetration rates will vary depending on the sediment type. When the projected/ specified depth is reached, the core will be retrieved.
- If sufficient room on the VC watercraft is available, the GEI field representative will log the core and collect analytical samples from the core onboard. Otherwise, core samples shall be delivered to the field representative at a shore side landing area as soon as practical after acquisition.
- The GEI field representative will identify and record the recovery and the type of sediment in terms of the major and minor constituents (i.e., sand, gravel, silt, and clay) and choose the proper group name and Unified Soil Classification Symbol (USCS). Standard Operating Procedure (SOP) SM-003, *Soil Classification*, provides further guidance on GEI's soil classification and description methodology. Sediment samples shall be described according to the American Society for Testing and Materials (ASTM) Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) D2488-90. Estimates of the percentage of each constituent will be recorded and listed in order of predominance.
- The sample structure shall be recorded (i.e., laminated, stratified, homogenous). Note attributes such as cementation, color and mineralogy (if it can be determined).
- Screening for Volatile Organic Compounds (VOCs) will be conducted on sediments throughout the core. A photoionization detector will be used for this process. Only relatively undisturbed portions of the core will be screened. The results of the screening will be recorded. Screening should be performed in accordance with SOP SC-004, *Head Space VOC Screening*.

- The presence of iron-staining, or other staining, presence of organic matter, shells, debris or detritus will be recorded. Any odors (i.e., tar-like vs. gasoline-like vs. fuel oil-like, etc.) will be recorded. Any visual impacts will be recorded (i.e., sheens vs. dense non-aqueous phase liquid [DNAPL] vs. staining vs. oil blebs).
- Analytical samples will be selected based on any criteria stipulated in the associated site-specific work plan. Analytical samples shall be collected with stainless steel spatulas (or similar) that have been decontaminated according to QA-001. The samples shall be contained in laboratory provided jars or glassware and kept cool. The sample identification, date, time, and associated details will be recorded. Pertinent information regarding the samples will be recorded on a chain of custody form.

4. References

Annual Book of ASTM Standards (1993), Section 4, v. 4.08 Soil and Rock; Building Stones; Geosynthetics, D2488-90, Standard Practice for Description and Indentification of Soils (Visual-Manual Procedure), American Society for Testing and Materials (ASTM).

STANDARD OPERATING PROCEDURE

SS-004 Remote Sediment Sampling

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1. Objective

A remote sampler will be used to collect surficial sediment samples at shallow depths where either Ponar / Shipek or Vibracore methods are inaccessible.

2. Materials

Equipment needed for collection of sediment samples may include (depending on technique chosen):

- Remote sampler (stainless steel or Teflon scoop attached to a telescoping pole or other similar device)
- Stainless steel sampling tools
- Laboratory provided sample bottles
- Resealable plastic bags
- Ice
- Coolers, packing material
- Chain of custody records, custody seals
- Decontamination equipment/supplies
- Maps/plot plan
- Safety equipment
- Tape measure
- Camera
- Field data sheets/field notebook/waterproof pen
- Permanent markers
- Sample bottle labels
- Paper towels
- Personal Protection Equipment (PPE)
- Global Positioning System (GPS)

3. Execution

- Prior to sample collection, the remote sampler will be thoroughly decontaminated.
- The remote sampler is extended to the location of the sediment sample targeted for collection.
- Once a sufficient volume of material is collected in the scoop, then the sampler should be retrieved slowly to avoid the loss of extremely fine material as the sampler passes through the water column.
- Photograph the sample in color with a camera. Standard Operating Procedure (SOP) FD-004, *Photo Documentation*, provides further guidance.

- Sediments will be described in accordance with the soil description procedure listed below in SOP SM-003, *Soil Classification*, if necessary.
- Place sediment samples into pre-cleaned laboratory provided jars for the appropriate analyses as determined in the work plan. Label each jar with the unique grab sample identification number and depth of the sample.
- Place the sample containers into plastic sealable bags or bubble wrap and place them in an iced cooler until transfer shipment to the analytical laboratories. Add sample to the chain of custody form.
- This process may be repeated if additional sample volume is necessary.

4. References

U.S. Environmental Protection Agency, Office of Water, Office of Science & Technology. 2001. Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. EPA-823B-01-002, October 2001.

State of Ohio, Environmental Protection Agency, Division of Surface Water. 2001. Sediment Sampling Guide and Methodologies, Second Edition. November 2001.

ASTM, 2003. D4823-95 (2003) Standard Guide for Core Sampling Submerged, Unconsolidated Sediments. ASTM International, West Conshohocken, PA. August 2003.

Newfield's Environmental Forensics Laboratory, 2005. Geochronologic Sample Handling Procedure.

Section 10

AIR SAMPLING AND MONITORING (AR)

SUMMARY GUIDANCE

AR-001 General Guidance on Community Air Monitoring Methods

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1. Objective

The purpose of a community air monitoring plan is to provide early detection in the field of potential short-term emissions in order to protect human health by measuring air quality at the perimeter of a work area.

Specifically, the objectives of a community air monitoring plan (CAMP) are to:

- Provide an early warning system to alert the contractor conducting ground-intrusive activity, GEI staff, New York State Department of Environmental Conservation (NYSDEC), and National Grid that concentrations of total volatile compounds (TVOC) or dust in ambient air are approaching Action Limits due to site activities.
- Provide potential contingency measures to be enacted by the contractors that are designed to reduce the off-site migration of contaminants if established Action Limits are approached or exceeded.
- Determine whether construction or engineering controls are effective in reducing ambient air concentrations to below Action Limits and make appropriate and necessary adjustments.
- Develop a permanent record that includes a database of perimeter air monitoring results, equipment maintenance, calibration records, and other pertinent information.

For reference, Appendix 1A, NYSDOH Generic Community Air Monitoring Plan, of the *New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation dated May 3, 2010*, has been included as Attachment A.

2. Execution

During ground-intrusive activities, perimeter air monitoring may be conducted using a combination of fixed-station, moveable tripod-mounted, and/or handheld air monitoring equipment (as appropriate). Monitoring will be performed for TVOC and dust along the site perimeter. Odor may also be monitored along the site perimeter.

Monitoring for TVOC and dust will be performed using real-time sampling equipment. TVOC concentrations will be monitored and recorded using an organic vapor analyzer and dust will be measured and recorded as respirable particulate matter less than 10 microns (PM-10) using a portable aerosol monitor equipped with a PM-10 impactor to measured dust. If tripod mounted units are used, readings will be checked manually on a predetermined periodic basis. If a fixed-station system is used, readings will be recorded by a centralized data logger system station once per minute. Supplemental perimeter monitoring for TVOC, dust, and odor will occur along the perimeter of the project site on an as-needed basis using handheld equipment. Each approach is detailed below.

Fixed Station Monitoring

Real-time air monitoring for TVOCs and particulates will be conducted upwind and downwind of the work area along the Site perimeter during intrusive activities. Instruments will be positioned to monitor the vicinity around the active work zone based on a particular day's activities. Real-time monitors will continuously gather data. The air monitoring system consists of potentially several air monitoring stations, one meteorological tower, and one central computer system. The central computer system will be located in the project trailer or other appropriate work area.

The real-time fixed air monitoring stations will be positioned between the work zone and the largest number of potential off-site receptors. Therefore, the placement of the fixed air monitoring stations is based on the need to document all potential off-site migration on the perimeter, but also recognizes the potential off-site receptors and the location of the proposed construction activities.

Each real-time air monitoring station contains the following:

1. Station enclosure
2. An organic vapor analyzer
3. A particulate monitor
4. A radio telemetry device

Each monitoring station is housed in a weather-tight NEMA-4 type enclosure. Each monitoring station will continuously measure and record TVOC and dust at a rate of one sample per minute and calculate 15 minute time-weighted running averages.

In addition to the air monitoring stations, a Campbell Scientific, Inc. Met Data1 meteorological monitoring system, or equivalent, will be established onsite. The meteorological system will continuously monitor temperature, relative humidity, wind speed, and wind direction at a rate of one sample per minute and calculate 15 minute time-weighted running averages. Wind direction and wind speed will be displayed on the central computer in real-time to determine upwind and downwind stations for assessing Alert Level, Response Level, and Action Levels. Wind socks and/or flags will be placed at locations around the site, as necessary, to obtain real-time site-specific wind direction.

All TVOC, dust, and meteorological data will be stored in dataloggers located within each monitoring station. Stored analytical data along with system performance data from each station will be sent in real-time, via radio telemetry, to the Site central computer system for monitoring and analysis. In the event of severe weather or power loss at the site, data recording and/or recovery may be affected.

Tripod-Mounted Monitoring

Tripod mounted stations are a less intensive equipment option then fixed station monitoring during site investigations or remediation. Instruments will be positioned along the Site perimeter to monitor the air based on a particular day’s ground intrusive activities, generally at up to three locations. Real-time monitors will continuously gather data during periods of intrusive activity during working hours. The equipment will be manually read on a predetermined periodic cycle during the work activity.

The readings will be collected at a minimum of 15-minute intervals during periods of intrusive activities. Wind direction will be determined by using a wind sock or flagging placed on a pole at the Site.

Each air monitoring station would include the following:

1. Station tripod and enclosure
2. An organic vapor analyzer
3. A particulate monitor

Each monitoring station will continuously measure and record TVOC and dust. All TVOC and dust data will be stored in dataloggers located within each monitoring station. Data from each piece of equipment will be downloaded daily at the completion of intrusive activities and stored on a central computer system. The location of each station, the work zone, and the wind direction will be noted daily. At each monitoring station location, the 15-minute average value of TVOC and dust will be recorded. The 15-minute average value of TVOC and dust data from the upwind and downwind station will be compared and resultant downwind concentration will be calculated and recorded.

Supplemental and Perimeter “Walk-Around” Monitoring

Supplemental “walk-around” perimeter monitoring for TVOC and PM-10 will occur along the perimeter of the project site on an as-needed basis using handheld equipment. Specific site conditions that may trigger walk-around perimeter monitoring include:

- Visible dust.
- Detection of TVOC or dust at an air monitoring station at concentrations exceeding an Alert Level, Response Level, and Action Levels.
- Direction by the construction manager, National Grid, or NYSDEC.

Fifteen-minute average TVOC and dust readings will be collected continuously at a downwind location between the work area and the nearest receptors.

When a triggering condition is observed during ground intrusive activity, the supplemental downwind perimeter monitoring will occur continuously until the conditions that triggered the monitoring have subsided.

Visible Dust

In addition to measured dust levels, the CAMP requires monitoring of visible dust conditions. If visible airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind dust levels do not exceed the Action Level concentration of 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

3. References

DER-10, Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation. May 3, 2010.

4. Attachments

Attachment A – NYSDOH Generic Community Air Monitoring Plan

Attachment A

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

> **Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.
>
> **Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

STANDARD OPERATING PROCEDURE

AR-002 Perimeter Air Monitoring Method (Airlogics™ Classic/Lite Air Monitoring Station)

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1. Objective

The main objective of this SOP is to protect human health by measuring air quality at the perimeter of a site area.

Perimeter air monitoring is typically required during invasive site activities such as drilling, excavation, and trenching. The two main types of perimeter air monitoring include monitoring utilizing fixed data collection points and monitoring utilizing mobile data collection points.

2. Materials

Based on the requirements of the site-specific work plan, one of the two monitoring station setups below may be utilized for perimeter air monitoring activities.

<u>Classic Monitoring Station:</u>

1. PhotoVac Gas Chromatograph (GC), or equivalent
2. Thermo MIE Data RAM 4000 (DR-4) real time aerosol monitoring, or equivalent

<u>Lite Monitoring Station:</u>

1. PhotoVac 20/20 Photo-ionization Detector (PID), or equivalent
2. Dust Trak aerosol monitor, or equivalent

3. Execution

Prior to any invasive site activities, perimeter air monitoring stations must be set up, properly calibrated, activated, and programmed for data logging.

Supplemental perimeter and walk-around monitoring for Total Volatile Organic Compounds (TVOC), Respirable Particulate matter less than 10 microns (PM-10), and odor may occur along the perimeter of the project site on a regular and as-needed basis. The use of supplemental air monitoring will be determined by the site-specific work plan. Specific site conditions that may trigger walk-around perimeter or work zone monitoring include:

- visible dust;
- odor complaints;
- detection of TVOCs and/or PM-10 at levels approaching or exceeding action levels; or
- direction by the site oversight consultant or client.

When a triggering condition is detected, the walk-around perimeter and work zone monitoring will occur continuously until the conditions that triggered the monitoring have subsided. Additional temporary monitoring points may be established due to changing site or meteorological conditions.

Perimeter air monitoring, in the absence of any specific triggering criteria, will be conducted on a regular basis 24 hours a day for large excavations, and during daily working hours for smaller intrusive activities (soil borings, well installations, etc.). Particular attention will be given to the direction of any residences.

Station Installation

- On receipt of the unit, inspect all containers to ensure that all components have been received and verify that the unit is operational.
- On site, assemble the unit according to AirLogic's instructions and manufacturer's specifications. Check all power cords and tubing for crimps, cracks, and breaks. The station should be placed on a sturdy platform or even ground level.
- The station should be strategically placed according to the work plan or objectives of the study and located free of any obstructions to ambient air flow.
- The Classic station requires 120 volt AC power. The electrical outlet should be protected by a ground fault interrupter and water proof electrical connectors should be used. The Lite station requires an unobstructed view for solar panels and will be angled appropriately for optimal solar power.
- Operate the sampler for 10 minutes to ensure that the motor is operating at full performance.
- Calibrate the station in accordance with the instructions provided with the instruments. Proper calibration of the unit is critical.
- Field personnel should be familiar with both the station and the calibration procedure before working on site.

Sampling Procedure

For Classic Stations:

DataRAM™:

Daily startup procedures for the DataRAM™ include zeroing and performing a span check on the instrument. Before startup, the DataRAM™ should be fully charged and the power selector switch on the rear panel should be in the "on" position.

All of the necessary attachments should be assembled prior to zeroing the DataRAM™. Attachments include the inlet heater, omnidirectional inlet, and PM2.5/PM10 impactor. Please consult the DataRAM™ instruction manual for details on use of the attachments.

Each MIE DataRAM™ is programmed to operate under the predetermined operating conditions as described in the appropriate Work Plan. (The MIE DataRAM™ is capable of monitoring total suspended particulate matter, particulate matter less than 10 microns [PM-10], and particulate matter less than 2.5 microns [PM-2.5]). The DataRAM™ can be programmed to collect continuous real-time data, or can collect "averaged" real-time data. These various options should be addressed prior to field operations and must be referenced in an approved work plan.

DataRAM™ calibration:

1. Press EXIT to get out of the current screen.
2. When Terminate Run is highlighted, hit ENTER.
3. In the MAIN MENU screen; go down to Zero/Intilize then hit ENTER.
4. After the DataRam™ finishes zeroing out it will read READY; then hit EXIT.
5. In the MAIN MENU, highlight START Test and press ENTER. This will restart the testing.

PhotoVAC GC Voyager calibration:

1. Hit Enter/Menu button to see the menu. Locate the log button; hit DELETE; hit ALL, then hit YES.
2. Hit Enter/Menu button; Select SETUP; Hit MODE; Hit AUTO cycle down to turn it off; hit ENTER then EXIT VOC-GC hit down to turn it off; hit ENTER then EXIT.
3. Unscrew the bolt connection to the GC; Take out the ISOBUTYLENE back; connect the tubing from the bag to the GC; Open the valve to 1 full turn; Hit START to run a test; Hit NO when ask to Acknowledge ALARM.
4. After the ISO testing; Hit DISPLAY; Hit the GC mode; Do the same for BTEX like the ISO test but this test is for 500 sec.
5. Before each test; Hit Library then hit CALC then hit YES; this will calibrate to the former cal limits.

6. Hit DISPLAY for VOC mode; Make sure you take out the bag and reconnect the metal connector back to the GC; Hit ENTER to start a test then as the test is running.
7. Hit Enter/Menu button; Select SETUP; Hit MODE; Hit AUTO cycle down to turn it on; hit ENTER then EXIT VOC-GC hit down to turn it on; hit ENTER then EXIT.
8. Lock up the station and move to the next one.
9. The calibration sheets are saved as:
   (site name)_cal_sheets_MMDDYY.

For Lite Stations:

DustTrak Calibration:

1. Press Sampling Mode button until out of logging on screen.
2. When it's not logging, remove the tubing connected to the antennae, insert the zero filter in the inlet.
3. Hold Calibrate button until countdown reaches '0' then release and hit Sample button to allow calibration.
4. The screen will countdown from 60 sec and it will flash '1.00'.
5. Press sample and record reading.
6. Remove filter and replace tubing and hit sampling mode to start logging.
7. Resume monitoring.

PhotoVac 2020 PID:

Note: This piece of equipment uses a 10 parts per million (ppm) calibration gas and no other type is suggested.

1. Press Cal button and remove the tubing connected to the antennae, insert the carbon filter in the inlet.
2. Hit the Right button for Next.
3. After finish zeroing, remove the carbon filter and attached the ISO bag to the inlet.
4. Hit the right button twice to begin calibrations.
5. After it is done, the screen will tell you the status of the lamp and if it needs replacement.
6. The screen will go back to reading and record highest ppm, remove bag, and replace tubing.

7. Resume monitoring, and lock up the station.
8. Record all data onto calibration sheet or field book.

After finishing calibrations, check the station to verify that it has power and the radio transmitter is functioning properly. Verify that all equipment is data-logging. Once this is compete, secure the station and move to the next.

At the site, the air temperature, wind direction, and wind speed will be monitored, if necessary, and recorded using a weather station.

Note, alert and action limits are site specific. Before the start of work, refer to the site work plan and/or project manager for perimeter air monitoring parameters.

4. References

DER-10, Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation. May 3, 2010.

Code of Federal Regulations, 40 CFR 50, Appendix J, Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere.

Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods (Interim Edition), Addendum to Section 2.11 Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere (High-Volume Sampler Method), US Environmental Protection Agency, Office of Research and Development, Washington, D.C. EPA/600/R-94/038b April 1994.

STANDARD OPERATING PROCEDURE

AR-003 Polyaromatic Hydrocarbons (PAHs) in Ambient Air Method TO-13A

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1. Objective

To establish standard procedures for the collection of air samples to be analyzed for polycyclic aromatic hydrocarbon (PAH) concentrations in ambient air.

2. Materials

- Modified High Volume Sampler
- Model PS-1 sample cartridges and filters assembled for PS-1 sampler, or equivalents
- GMW Model GMW-40 calibrator and associated equipment for calibration of the GMW PS-1 sampler
- Ice chest
- Data sheets for recording the location, sample date, duration of sample, starting and stopping times, and calculated sample volume
- Airtight, labeled, screw-capped container (wide mouth, glass with Teflon seal) to hold filter and adsorbent cartridge during transport to analytical laboratory
- Raised platform for the sampling unit
- Powder-free nitrile gloves

3. Execution

This section details the sampling media preparation by the analytical laboratory and is presented for informational purposes.

3.1. Method Summary

- Filters and adsorbent cartridges (containing XAD-2, Polyurethane Foam [PUF], or combination XAD-2 and PUF) are solvent cleaned and vacuum-dried. Cleaned filters and adsorbent cartridges are stored in screw-capped containers wrapped in aluminum foil (for protection from light) prior to installation in a modified high volume sampler. The filters and cartridges are supplied by the laboratory ready for use.
- A calibrated sampler (e.g., General Metal Works Model PS-1 or equivalent is used to draw approximately 325 m^3 of ambient air through the filter and adsorbent cartridge.
- Record location, sampling date, starting and stopping times, temperature, and barometric pressure. Magnahelic gage readings should be recorded hourly and adjusted as needed to maintain air

monitor flow. Calculate the volume of air sampled using the appropriate calibration data for the sampler during that time period.

- The filter and cartridge are placed in an appropriately labeled container and shipped to the analytical laboratory for analysis.
- Heat, ozone, nitrogen dioxide (NO_2), and ultraviolet (UV) light can cause sample degradation. The exposed sampling media must be immediately removed from the sampler, wrapped in clean foil, and packed in ice or refrigerated.

3.2. Sampling Head Configuration

- The sampling head consists of a particulate filter support and a compartment to retain the adsorbent cartridge. Prior to field use, both the filter and adsorbent must be cleaned to <10 micrograms (µg) total PAHs/apparatus.

3.3. Glass Fiber Filter Preparation (performed by laboratory)

- The glass fiber filters are baked at 600°C for five hours before use.
- To ensure acceptability, the filters are extracted with methylene chloride ($MeCl_2$) in a Soxhlet for 16 hours at 4 cycles per hour. The MeCl extract is concentrated and analyzed by Gas Chromatograph or High Pressure Liquid Chromatography. A filter blank of <10 nanogram (ng) PAHs/filter is acceptable.

3.4. XAD-2 Adsorbent Preparation

- Initial cleanup procedure for XAD-2 requires that a batch, approximately 60 grams (g), be extracted via Soxhlet using $MeCl_2$ for 16 hours at 4 cycles/hour.
- XAD-2 resin is removed and dried in a vacuum oven attached to an ultra purge nitrogen (N_2) gas stream and dried at room temperature for 2 to 4 hours.
- A nickel screen (200/200 mesh) is filtered to the bottom of a hexane-rinsed glass cartridge to retain the XAD-2 resin.
- The Soxhlet extracted, vacuum-dried, XAD-2 resin is placed into the sampling cartridge (using polyester gloves) to a depth of approximately 2 inches (approximately 55 g resin).
- The glass module containing the XAD-2 adsorbent is wrapped with hexane-rinsed aluminum foil, placed in a labeled container and tightly sealed with Teflon tape.
- At least one assembled cartridge from each batch must be analyzed, as a laboratory blank, using the procedure in TO-13 Section 13 before the batch is considered acceptable for field use (<10 ng PAHs/cartridge).

3.5. PUF Sampling Cartridge Preparation

- The PUF adsorbent is a polyether-type polyurethane foam (density No. 3014 or 0.0225 g/cm^3) used for furniture upholstery.
- The PUF inserts are 6.0 cm diameter cylindrical plugs cut from 3-inch sheet stock and should fit, with slight compression, in the glass cartridge supported by the wire screen. The plugs are cut using a high speed drill and continuously lubricated with water.
- For initial cleanup, the PUF plug is placed in a Soxhlet apparatus and extracted with acetone for 14 to 24 hours (4 cycles/hr). When cartridges are reused, 5 percent diethylether in n-hexane can be used as a cleanup solvent.
- The extracted PUF is placed in a vacuum oven connected to a water aspirator and dried at room temperature for 2 to 4 hours.

The PUF is placed into the glass sampling cartridge using polyester gloves. The module is wrapped with hexane rinsed aluminum foil, placed in a labeled container, and tightly sealed. At least one assembled cartridge from each batch must be analyzed, as a lab blank, before accepting the batch for use in the field. Blank levels of <10 ng/plug PAH is acceptable.

3.6. Sample Collection

- The essential features of a sampling apparatus are a sampling head, a blower motor, a flow control valve, a voltage variator, and an air flow indicator.
- Each unit is calibrated monthly, at a minimum, and a calibration check is performed daily, before use and at the end of the run, using the calibration kit and calibration curves supplied by the manufacturer.
- The samplers should be located in an unobstructed area, at least 2 meters from any obstacle to air flow. The exhaust hose should be stretched out in the downwind direction to prevent recycling of air into the sample head. The sampler should be placed off the ground on a sturdy stand, with the air inlet 4 to 6 feet off the ground.
- Detach the lower chamber of the rinsed sampling module. While wearing disposable, clean, lint-free nylon or powder-free nitrile gloves, remove a clean glass cartridge/sorbent from its container (wide-mouthed glass jar) and unwrap its aluminum foil covering. Place the foil back into the jar for rewrapping the cartridge after use.
- Insert the cartridge into the lower chamber and tightly reattach it to the module.
- Using clean Teflon tipped forceps, carefully place a clean fiber filter atop the filter holder and secure in place by clamping the filter holder ring over the filter using the three screw clamps. Ensure that all

module connections are tightly assembled. Failure to do so may cause leaks which could affect sample representativeness. Ideally, sample module loading and unloading should be conducted in a controlled environment within a centralized sample processing area so that the sample handling variables can be minimized.

- With the module removed from the sampler and the flow control valve fully open, turn the pump on and allow it to warm up for approximately five minutes.
- Requisite information for the sampling run is recorded on the test data sheet.
- The loaded sample module is attached to the sampler.
- The power switch is turned on. Either direct hookup or generator supplied 110 V AC power is required. The lapsed time meter is activated and the start time is recorded.
- The Magnehelic reading is recorded every hour during the work day. The calibration curve is used to calculate the flow rate. Ambient temperature, barometric pressure, and the Magnehelic reading are recorded at the beginning and end of the sampling period.
- At the end of the sampling period, the power is turned off. Carefully remove the sampling head containing the filter and adsorbent cartridge to a clean area. While wearing disposable lint free nylon or nitrile gloves, remove the sorbent cartridge from the lower module chamber and lay it on the retained aluminum foil in which the sample was originally wrapped. Carefully remove the glass fiber filter from the upper chamber using clean Teflon tipped forceps.
- Fold the filter paper in half twice (sample side inward) and place it in the glass cartridge above the sorbent.
- Wrap the combined samples in aluminum foil and place them in their original glass sample container. A sample label should be completed and affixed to the sample container. Chain of custody records should be maintained for all samples.
- The glass container should be stored in ice and protected from light to prevent photodecomposition of collected analytes. If the time span between sample collection and lab analysis is to exceed 24 hours, samples must be kept refrigerated. Holding time is <20 days.
- A final calculated sample flow check is performed. If flow rate calibration deviated by more than 10 percent from the initial reading, the flow data for that sample must be marked as suspect.
- All samples in the field are stored on ice at 0°C until delivered to the laboratory where they will be stored at 4°C.

4. Notes

- A field blank should be collected which consists of an unexposed filter removed from envelope, put in place in the HV sampler, immediately removed, folded, replaced in its envelope and sent to the laboratory. Field blanks should be taken at a frequency of one per twenty samples or one per weekly sampling whichever is the greater.

- When handling the sampling cartridge, wear powder free nitrile/surgical gloves for prevention of false data and check the flow rate be checked hourly for potential adjustment throughout the day.

5. References

Code of Federal Regulations, 40 CFR 50, Appendix J, Reference Method for the Determination of Particulate Matter as PM_{10} *in the Atmosphere.*

Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods (Interim Edition), Addendum to Section 2.11 Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere (High-Volume Sampler Method), US Environmental Protection Agency, Office of Research and Development, Washington, D.C. EPA/600/R-94/038b April 1994.

STANDARD OPERATING PROCEDURE

AR-004 Hydrogen Cyanide Work Zone Air Monitoring Procedures

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1. Objective

Protect human health through real-time monitoring of hydrogen cyanide gas during field activities.

2. Execution

To monitor cyanide (as hydrogen cyanide gas), the GEI field representative will utilize a real time handheld meter (Multi-Rae with hydrogen cyanide detector, or equivalent) during intrusive activities, or as directed otherwise, including subsurface excavations, borings and monitoring well installation, materials handling, and groundwater sampling in areas with confirmed cyanide impacts.

Due to potential detector interference, hydrogen sulfide gas (H_2S) may also be monitored for comparison to the hydrogen cyanide gas levels detected.

Prior to commencing work onsite, the real-time cyanide meter should be calibrated in accordance with the equipment manufactures specifications. If the meter is calibrated in the field, the daily calibration results will be recorded into the site field notebook. If required, background ambient air monitoring should be completed prior to commencing work activities and recorded into the field notebook. The work zone should be established upwind of the any exposed soils (if possible) to limit potential exposure. Cyanide will be monitored around the perimeter of the work zone on a regular basis. Continuous monitoring will be completed every 15 minutes if sulfur odor or suspected purifier material is encountered. Measurements will be monitored in the breathing zone and will be recorded into the field notebook. In the event that hydrogen cyanide is detected, the GEI field representative will follow the following procedures:

2.1. Response Level: Less than 1 ppm for 15-minute average using real time meter

- Stop work and move (with continuous monitoring meter) at least 25 feet upwind from excavation or until continuous monitoring meter registers <1 ppm.
- Continue monitoring with real time meter.
- Allow area to ventilate and continue to monitor while returning to the work zone.
- Do not move into an area when readings are >1 ppm.
- May resume work when readings are <1 ppm.

3. Notes

No air purifying respiratory protection is available for hydrogen cyanide gas.

The American Conference of Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for Hydrogen Cyanide is 4.7 ppm.

4. References

Code of Federal Regulations, 40 CFR 50, Appendix J, Reference Method for the Determination of Particulate Matter as PM$_{10}$ in the Atmosphere.

Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Specific Methods (Interim Edition), Addendum to Section 2.11 Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere (High-Volume Sampler Method), US Environmental Protection Agency, Office of Research and Development, Washington, D.C. EPA/600/R-94/038b April 1994.

GEI CONSULTANTS, INC.
110 Walt Whitman Road, Suite 204
Huntington Station, New York

SOP No. AR-005
Revision No. 1
Effective Date: November 2010

STANDARD OPERATING PROCEDURE

AR-005 zNose® Monitoring

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1. Objective

The purpose of the zNose® monitoring is to measure naphthalene concentration in real-time and provide early detection in the field of potential short-term emissions.

2. Execution

Odors as a function of naphthalene concentration will be monitored over a 15-minute period and recorded. To measure naphthalene concentrations, the zNose® Model 4200 system or equivalent will be used. The zNose® is an ultra-fast GC that is capable of analyzing airborne concentrations of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) in less than one minute. The zNose® uses a surface acoustic wave (SAW) detector that changes in vibration frequency as compounds elute from the column and condense onto the surface of the detector.

The zNose® is a portable instrument positioned downwind of the remedial activities. A selected number of samples are analyzed for naphthalene concentrations over a 15-minute period. The concentrations will be averaged to produce a 15-minute result. The calibration will be checked at the start of the day, at mid-day, and at the end of the day. An air blank will be run after each of the naphthalene calibrations. A blank will also be run if a reading exceeds the calibration range of the instrument.

The zNose® also has the capability of generating fingerprint images of the chemical constituents in the vapor called VaporPrints™. A VaporPrint™ of an air sample can be compared to others generated at the perimeter and off site to see if remedial operations are the source of the odors. VaporPrints™ can allow for identification of odors that may not be affiliated with remedial operations.

<u>Equipment Calibration</u>

Equipment calibration will be performed according to manufacturer's instructions. The zNose® will be calibrated daily before use. Standards will be tested once during work and once at the end of the day to verify the equipment functional. For the model 4200, helium will be filled prior to the work day. For the model 4300 a backup helium canister will be on hand. A zNose® guide will be provided on site to help with troubleshooting. A particulate monitor and organic vapor analyzer will be in use as well with downwind readings being taken every 15 minutes.

An in-house zNose® expert will review the data for quality assurance prior to final reporting delivery to the client. The zNose® is a screening tool and readings can be confirmed by laboratory analysis or a collocated air sample if needed.

3. Notes

Model 4200

This model must been connected to a 120 volt power source and be refilled with helium throughout the day. The zNose® may not function properly in inclement weather and may give false readings if water enters the intake.

Model 4300

This model is battery powered and lasts several hours. A nearby 120 volt power source is preferred to operate the laptop computer. The unit must be refilled with helium throughout the day. The zNose® may not function properly in inclement weather and may give false readings if water enters the intake.

4. References

zNose® Boot-Camp Handbook, GEI, December, 2006.

Section 11

SOIL GAS SAMPLING (SG)

SUMMARY GUIDANCE

SG-001 General Guidance on Soil Vapor Intrusion Evaluations

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1. Objective

Soil vapor intrusion evaluations are used to assess the potential for migration of volatile organic compounds (VOCs) from the subsurface into occupied buildings. This SOP describes issues and factors to consider prior to and during a soil vapor intrusion evaluation. Specific SOPs for the different types of sampling are identified.

2. Background

There are many potential sources (other than MGP residuals) of VOCs in subsurface soil, indoor air, and ambient air. Chlorinated compounds are common sources, and indoor air is often affected by VOCs in cleaning products, solvents, new furniture, rugs, and paints. Any or all of these sources may affect soil vapor, indoor, and ambient air.

Soil vapor intrusion evaluations should be approached on a site-specific basis and depending on the site-specific setting and proximity to impacted groundwater or source material, it may be appropriate to proceed in a hierarchical fashion through each tier of evaluation or a variety of tiers may be combined and implemented simultaneously.

The following events will commonly result in a soil vapor intrusion investigation.

- Identification of a potential complete exposure pathway.
- Private property owner request for sampling.
- State or Federal administrative order.

If little or no data are available then a screening level assessment is an appropriate first step. However, if a significant groundwater plume or source is known to be present near or below, it may be more appropriate to directly develop and implement a soil vapor and/or indoor air sampling plan.

The relevant SOPs to guide the types of sampling that may be necessary are:

- SOP SG-002 Soil Vapor Sample Collection
- SOP SG-003 Sub-Slab Soil Vapor Collection
- Indoor Air Sampling
- SOP SG-004 Ambient Air Sample Collection

3. Factors Affecting Soil Vapor Intrusion

The nature and extent of impacted soil and/or groundwater between the site and the residential/commercial building should be defined. In general, the following characteristics should be understood:

- Surficial geology.
- Depth to groundwater.
- Groundwater flow direction.
- Type and magnitude of soil and groundwater impacts.
- Man-made or natural preferential pathways for vapor migration in the vadose zone.
- Presence of an overlying water bearing zone that does not have impacts beneath the residential or commercial building.
- Potential “smear zones” (residual non-aqueous phase liquid [NAPL] present at depths over which the water table fluctuates).
- Soils which are highly organic, wet, and/or of low permeability.
- Dry and porous soils.
- The limits of backfill surrounding the residential or commercial building.

An un-impacted shallow water zone will significantly retard or completely prohibit the potential for deeper impacted groundwater to affect soil vapor. “Smear zones” may affect the rate of soil vapor migration. Soil texture and moisture content may also affect vapor migration.

If a site characterization or remedial investigation (SC/RI) has already been completed, the relevant data may be available. If the SC/RI has not been completed, some investigation may be necessary.

Building Factors such as structure, floor layout, air flow, and physical conditions can also affect vapor migration and should be documented during the evaluation. The New York State Department of Health (NYSDOH) Center for Environmental Health’s Indoor Air Quality Questionnaire and Building Inventory form is presented in Attachment A. At a minimum, the following information should be recorded.

- Building foundation construction characteristics (basement, footers, crawl spaces, etc.), including potential preferential vapor intrusion pathways such as foundations cracks and utility penetrations.
- Basement wall materials (hollow block, stone, or poured concrete, etc.).
- Presence of an attached garage.
- Recent renovations to the building such as new paint or new carpet.

- Mechanical heating/cooling equipment that may affect air flow.
- Use and storage of petroleum products such as home heating oil storage tanks, underground storage tanks (USTs), or kerosene heaters.
- Recent use of petroleum-based finish or other products containing volatile organic compounds (VOCs).
- Areas of pavement on the property should also be identified in the event sub slab vapor sampling is not feasible or appropriate due to a high groundwater table. Paved areas could serve as surrogate locations in lieu of sub slab soil vapor sampling if high water table conditions exist.

The construction materials and integrity of the floor of the structure closest to the potential point of entry for soil vapor (basement level or first floor for slab-on-grade constructions) should be identified, along with potential preferential pathways (utility lines/pipes, sumps, etc.) that may be present within the bottom-most level of the structure.

The operation and presence of heating systems, including fireplaces and clothes dryers, may create a pressure differential between the structure and the outside environment, causing an increase of migration of soil vapor into the building. The NYSDOH guidance document suggests limiting indoor air sampling to the heating season (with the exception of immediate inhalation hazard situations), which is roughly defined as November 15th to March 31st. However, sampling may be completed at any time during the year in response to a request by a community member. In situations where non-heating season sampling has taken place, consideration should be given to re-sampling the property within the heating season. The operation of HVAC systems should be noted on the building inventory form (Attachment A).

During the initial building assessment, and again when sub-slab soil vapor and/or indoor air sampling are performed, differential pressure measurements between indoor air, ambient air, and soil vapor should be collected utilizing a calibrated differential pressure meter and recorded to document the potential effect building conditions have on soil vapor migration.

3.2.3 Chemical Inventory

The chemical inventory complements the identification of the building factors affecting soil vapor intrusion. The chemical inventory will identify the occurrence and use of chemicals and products throughout the building. These products can be used to develop an indoor environmental profile.

A separate inventory should be prepared for each room on the floor being tested as well as any other indoor areas physically connected to the areas being tested. Inventories will include product names, chemical ingredients, or both. If possible, photographs of the products should be taken of the location and condition of the inventoried products and the photographic records should be indexed with the inventory records.

The products inventory can also be used to document odors and, if possible, portable vapor monitoring equipment measurements should be taken and recorded. A product inventory will be repeated prior to each round of testing at the building. If available, the volatile ingredients should be recorded for each product. If the ingredients are not listed on the label, record the manufacturer's name and address or phone number if available. The product inventory form is presented in Attachment A.

3.2.4 Water Table Conditions and Vapor Intrusion Assessment Approach

If the water table elevation is lower than the basement slab, then the following samples should be collected.

- Sub-slab soil vapor samples.
- Indoor air samples from basement level.
- Indoor air samples from main living space (first floor).
- Outdoor ambient air sample.

See SOPs SG-002 (Soil Vapor Sample Collection), SG-003 (Sub-Slab Soil Vapor Collection), and SG-004 (Ambient Air Sample Collection).

If the water table elevation is higher than the basement slab, then the following tasks should be performed.

- Determine if a sump pump is present and actively pumping water. If sump is actively pumping, collect a sample of groundwater from the sump.
- Collect an indoor air sample from basement level. Collect an indoor air sample from main living space (first floor).
- Identify exterior soil vapor sample location near foundation (outside of foundation backfill) and preferably beneath a surrogate vapor cap (e.g., paved driveway, patio). Collect soil vapor samples from exterior soil vapor location.
- Collect an outdoor ambient air sample.

4. References

USEPA modified Method TO-15 and helium via ASTM D-1945.

Section 2.7.1 of the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated October 2006.*

5. Attachments

Attachment A – NYSDOH Center for Environmental Health's Indoor Air Quality Questionnaire and Building Inventory Form

Attachment B – Chemical Inventory Template

Attachment A

ATTACHMENT A

Off-Site Property Sampling Documentation Form

Property Location/Address: ______________________________

Property: ______________________________

Sampling Date: ______________________________

Property Location/Address: ______________________________
Property: _____________________________
Sampling Date: _____________________________

Preparer’s Name: ________________________________ Date/Time Prepared: ______________

Preparer’s Affiliation: ________________________________ Phone No.: __________________

Purpose of Investigation:____

1. OCCUPANT Interviewed: Yes ☐ No ☐

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: Yes ☐ No ☐

Last Name: _____________________________ First Name: ____________________________

Address: ____

County: _______________________

Home Phone: ___________________________ Office Phone: __________________________

3. CONTACT NAME (Check if same as Occupant ____, Owner ____)

Last Name: _____________________________ First Name: ____________________________

Address: ____

County: _______________________

Home Phone: ___________________________ Office Phone: __________________________

4. PROPERTY LOCATION: ____

Relative to Site:

Direction _________ Direction to Nearest Cross Street: __________

Distance _________ Distance to Nearest Cross Street: __________

Surrounding Land Use:

North: _________________ East: _________________

South: _________________ West: _________________

Property Location/Address: ____________________________
Property: ___________________________
Sampling Date: ___________________________

5. PROPERTY BOUNDARIES

Delineate the boundaries of the property (on a separate project map, outline property location, private well location, septic/leachfield location, groundwater flow, compass direction, windrose.)

6. BUILDING CONSTRUCTION

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)? Yes ☐ No ☐

If yes, how many? ______

Other characteristics:

Number of floors______ Building age______

Is the building insulated? Yes ☐ No ☐ How air tight? Tight / Average / Not Tight

Construction Material ___________________________________

7. BASEMENT AND CONSTRUCTION CHARACTERISTICS

Does the building have a basement and/or crawl space, or is it slab-on-grade construction?

____

Describe the construction of the basement/crawl space (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________

Property Location/Address: ______________________________
Property: _____________________________
Sampling Date: _____________________________

c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor surface:	uncovered	covered	covered with _____________	
e. Concrete floor:	unsealed	sealed	sealed with ______________	
	unpainted	painted	painted 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	

Does your basement have a sump? Yes ☐ No ☐

Is, is there water in the sump? Yes ☐ No ☐

Describe sump conditions:____

____

Have you observed standing water in your basement? Yes ☐ No ☐

If so, what is the frequency of this observation? _____________During rain events? ☐

Have you observed sheen atop the standing water? Yes ☐ No ☐

Basement/Lowest level depth below grade: ________(feet)

Are there any cracks in the floor of your basement? Yes ☐ No ☐

Description: ____

____

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Description: ____

____

What activities occur in the finished basement?

Description: ____

____

Approximately how many hours per day (or week) do you spend in your basement? __________

8. HEATING, VENTING AND AIR CONDITIONING

Type of heating system(s) used in building: (Circle all that apply – note primary)

Property Location/Address: ______________________________
Property: _____________________________
Sampling Date: _____________________________

Hot Air Circulation
Electric Baseboard
Space Heaters

Hot Water Baseboard
Heat Pump
Radiant Floor

Steam Radiation
Wood Stove
Outdoor wood boiler

Unvented Kerosene Heater
Other _____________________________

The primary type of fuel used is:

Fuel Oil
Kerosene
Wood

Natural Gas
Propane
Coal

Electric
Solar
Other? ___________________

Time of use of each type of heating? ____

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? Yes ☐ No ☐

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.

____

____

____

____

Type of insulation (e.g. blown, fiber, etc.)? ____

Does building have energy efficient windows (e.g. double paned) Yes ☐ No ☐

Was weather-stripping recently added/upgraded? Yes ☐ No ☐

Particleboard used in construction? Yes ☐ No ☐

9. OCCUPANCY

Property Location/Address: ______________________________
Property: _____________________________
Sampling Date: _____________________________

Level General Use of Each Floor (e.g., family room, bedroom, laundry, workshop, storage)

Basement ____
1st Floor ____
2nd Floor ____
3rd Floor ____
4th Floor ____

10. BULK PETROLEUM STORAGE

Aboveground storage tank on the property Yes ☐ No ☐

If yes, how old is tank? _______________ Condition? __________________

Last inspected? _______________ Location: ____________________

Describe conduits to building (type, location, and entry portal condition): _________________
____

Underground storage tank on the property. Yes ☐ No ☐

If yes, how old is tank? _______________ Condition? __________________

Last inspected? _______________ Location: ____________________

Describe conduits to building (type, location, and entry portal condition): _________________
____

11. WATER AND SEWAGE

Water Supply:

Public Water Drilled Well Driven Well Dug Well Other ______________

Is there use of groundwater water for irrigation purposes? Yes ☐ No ☐

Sewage Disposal:

Public Sewer Septic Tank Leach Field Dry Well Other ______________

12. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Yes ☐ No ☐

If not, is there a separate garage or carport? Yes ☐ No ☐

b. Does the garage have a separate heating unit? Yes ☐ No ☐ NA ☐

Property Location/Address: ______________________________
Property: _____________________________
Sampling Date: _____________________________

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, ATV, car)
Yes ☐ No ☐ NA ☐ Please specify__________________

Is gasoline stored in the garage? Yes ☐ No ☐

Quantity? ________________

d. Has the building ever had a fire? Yes ☐ No ☐

When?_________________

e. Is a kerosene or unvented gas space heater present? Yes ☐ No ☐

Where? ________________

f. Is there a workshop or hobby/craft area? Yes ☐ No ☐

Where & Type? ________________

g. Is there smoking in the building? Yes ☐ No ☐

How frequently? _______________

h. Have cleaning products been used recently? Yes ☐ No ☐

When & Type? ________________

i. Have cosmetic products been used recently? Yes ☐ No ☐

When & Type? ________________

j. Has painting/staining been done in the last 6 months? Yes ☐ No ☐

Where & When? _______________

Is house paint stored inside? Yes ☐ No ☐

Where? _______________

k. Is there new carpet, drapes or other textiles? Yes ☐ No ☐

Where & When? _______________

l. Have air fresheners been used recently? Yes ☐ No ☐

When & Type? ________________

m. Is there a kitchen exhaust fan? Yes ☐ No ☐

If yes, where vented?____________

n. Is there a bathroom exhaust fan? Yes ☐ No ☐

If yes, where vented?____________

o. Is there a clothes dryer? Yes ☐ No ☐

If yes, is it vented outside? Yes ☐ No ☐

p. Has there been a pesticide/chemical fertilizer application? Yes ☐ No ☐

Property Location/Address: ____________________________
Property: ____________________________
Sampling Date: ____________________________

When & Type?____

Conducted by Owner or Private Yard Service ___________________________

Is yard waste/trash burned on-site? Yes ☐ No ☐

Do any of the building occupants use solvents at work? Yes ☐ No ☐

(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? Yes ☐ No ☐

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
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? Yes ☐ No ☐

Date of Installation: ____________

Is the system active or passive? Active ☐ Passive ☐

Are there any recent/past improvements to building? Yes ☐ No ☐

Interior painting? ____

Any landscaping improvements that involved bringing fill on site? Yes ☐ No ☐

Other ____

Approximately when (how long ago) did these improvements occur? ______________

Does anyone living here engage in any of the following activities or hobbies?

a. Art projects (e.g. oil painting, ceramics, pottery, stained glass, metal sculpture)

Yes ☐ No ☐

Name: _____________________________ Age: _________ Sex: _____________

Name: _____________________________ Age: _________ Sex: _____________

Property Location/Address: ____________________________
Property: ___________________________
Sampling Date: ___________________________

b. Furniture refinishing Yes ☐ No ☐

Name: ____________________________ Age: _________ Sex: _____________

Name: ____________________________ Age: _________ Sex: _____________

c. Model building(e.g. planes,boats,cars) Yes ☐ No ☐

Name: ____________________________ Age: _________ Sex: _____________

Name: ____________________________ Age: _________ Sex: _____________

d. Gardening Yes ☐ No ☐

Name: ____________________________ Age: _________ Sex: _____________

Name: ____________________________ Age: _________ Sex: _____________

e. Automotive work Yes ☐ No ☐

Name: ____________________________ Age: _________ Sex: _____________

Name: ____________________________ Age: _________ Sex: _____________

f. Ammunition reloading Yes ☐ No ☐

Name: ____________________________ Age: _________ Sex: _____________

Name: ____________________________ Age: _________ Sex: _____________

Is there a wood burning stove? Yes ☐ No ☐

If so, how frequently is it used?

____

____

Is there a barbeque grill? Yes ☐ No ☐

If so, how frequently is it used? What is the type of fuel?

____

____

Has the building ever had fumigation? Yes ☐ No ☐

Property Location/Address: ____________________________
Property: ___________________________
Sampling Date: ___________________________

If so, when and how frequently? Type?

____

____

13. ODOR SUMMARY

Have the occupants observed any unusual odors? ________________________________

____

____

____

____

History of odor observation – date of onset, duration, severity, etc.

____

____

____

____

____

____

____

14. PRODUCT INVENTORY

Record the specific products found in building that have the potential to affect indoor air quality on the attached product inventory form.

15. INDOOR SKETCH

Draw a plan view sketch (on grid paper) of the basement, first floor, and any other floor where sampling was conducted in the building as well as any outdoor sample locations. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Property Location/Address: ______________________________
Property: ____________________________
Sampling Date: ____________________________

Product Inventory
Off-Site Property Sampling Documentation
Soil Vapor Intrusion Investigation

Property Address:	**Performed by:**
Date of Inventory:	**Field Instrument Make & Model:**

Location	**Product Description**	**Size (units)**	**Condition ***	**Chemical Ingredients**	**Field Instrument Reading (units)**	**Photo ** Y/N**

Notes

* 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.

Attachment B

Product Inventory
Off-Site Property Indoor Air Sampling Documentation

Property Address:

Performed by:

Date of Inventory:

Field Instrument Make & Model:

Location	**Product Description**	**Size (units)**	**Condition ***	**Chemical Ingredients**	**Field Instrument Reading (PPM)**	**Photo** Y/N**
Kitchen						
Bathroom						
Basement						

Notes:
1 = Various Locations. Products were placed in plastic bins and removed from the residence 24 hours prior to the sampling.
* Condition of the product containers: Unopened (UO) , Used (U), or Deteriorated
** Photographs of the front and back of product containers to document chemical ingredients. (Y = Yes; N = No)
PPM = parts per million
NL = Not Listed

STANDARD OPERATING PROCEDURE

SG-002 Soil Vapor Sample Collection

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1. Objective

This procedure outlines the general steps to collect soil vapor samples. The site-specific project work plan should be consulted for proposed sample locations, sample depths, and sampling duration.

2. Execution

Permanent and temporary soil vapor probes should be installed using the procedures outlined below. All soil vapor probes should be installed using a direct-push drill rig (e.g., GeoProbe® or similar), hand auger, or manually using a slide hammer.

2.1. Document Field Conditions

- Document pertinent field conditions prior to installation of any probe points.
- Record weather information (precipitation, 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 onsite equipment or obtained from a reliable source of local measurements (e.g., a local airport). Data should be obtained for the past 24 to 48 hours.
- If sampling near a commercial or industrial building, uses of volatile chemicals during normal operations of the facility should be identified.
- Outdoor plot sketches should be drawn that include the site, area streets, neighboring commercial or industrial facilities (with estimated distance to the site), outdoor air sampling locations (if applicable), and compass orientation (North).
- Any pertinent observations should be recorded, such as odors and readings from field instrumentation.

2.2. Soil Vapor Point Installation Specifications

Each soil vapor point should be constructed as follows:

- Six-inch stainless steel Geoprobe® AT86 series Permanent Implants (soil vapor screens) or equivalent and threaded to an (expendable) stainless steel anchor point.
- The implants should be fitted with inert Teflon or stainless steel tubing of laboratory or food grade quality.
- The annular space surrounding the vapor screen interval and a minimum of 6-inches above the top of the screen should be filled with a

porous backfill material (e.g., glass beads or coarse silica sand) to create a sampling zone 1 foot in length.

For temporary points, a hydrated bentonite surface seal should be created at the surface to minimize infiltration. For permanent points, the additional measures described below should be included.

- The soil vapor points should be sealed above the sampling zone with a bentonite slurry for a minimum distance of 3 feet (or to grade, whichever is smaller) to prevent ambient air infiltration.
- If needed, the remainder of the borehole should be backfilled with clean material.
- A protective casing should be set around the top of the point tubing and grouted in place to the top of the bentonite to minimize infiltration of water or ambient air, as well as to prevent accidental damage to the soil vapor point.
- The tubing top should be fitted with a Swagelok® and cap to prevent moisture and foreign material from infiltrating the tubing.

2.3. Soil Vapor Sample Collection

Soil vapor samples should be collected as indicated in the work plan and in accordance with applicable state or federal guidance documents. Specifically, samples from the points should be collected as follows:

- Permanent soil vapor points should not be sampled or purged for a minimum of 24 hours after installation. Temporary points may be purged and sampled immediately following installation.
- Document pertinent field conditions prior to sampling as described above.
- A suction pump should be used to remove a minimum of three implant volumes from the soil vapor points prior to sampling. Include the volume of any additional tubing added to affix sampling equipment and the annular space between the probe and the native material if sand or glass beads were used.
- The purge rate shall not exceed 0.2 liters per minute (lpm).
- Samples should be collected for volatile organic compounds (VOCs) in an individually laboratory certified clean 1-liter SUMMA® canister (or equivalent) using a certified flow controller calibrated for the anticipated sample duration (4 minutes). The regulator flow rate should not exceed 0.2 lpm.
- A helium tracer gas should be used to identify any potential migration or short circuiting of ambient air during sampling as described below in section 2.4.
- 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.
- 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 should 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.
- Samples should be analyzed for VOCs and naphthalene via modified USEPA modified Method TO-15 and helium via ASTM D-1945.
- Include the required copies of the chain of custody form in the shipping packaging, as directed by the laboratory. Maintain a copy of the chain of custody for the project file.
- Deliver or ship the samples to the laboratory as soon as practical.
- A portion of the laboratory analytical data should be validated by a data validation professional in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, January 2005 and the USEPA Region II Standard Operating Procedure (SOP) for the Validation of Organic Data modified to

accommodate the USEPA Method TO-15 and natural gas analysis by ASTM D-1945. The percentage of data required for validation is site-specific, dependent on approvals from the NYSDEC.

2.4. 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 each temporary soil vapor probe to be sampled in a sampling event. A tracer gas evaluation should be conducted on the each permanent soil vapor probe during the initial sampling event and a minimum of 10% of the soil vapor probes during subsequent sampling events.

The following tracer gas evaluation procedure uses helium as a tracer gases which can be measured through laboratory analysis or by a portable detector.

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 utilizing a VOC-free clay, bentonite, beeswax, or another suitable method.
- Introduce the tracer gas into the chamber. The chamber should 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. Close the valve after the chamber has been enriched with tracer gas at concentrations >50% as indicated by a calibrated helium detector.
- The chamber should 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 should 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 collecting an analytical sample or using a portable device to measuring the tracer gas concentration.
- Samples collected from vapor points during a tracer gas evaluation should be analyzed for VOCs and naphthalene via modified USEPA modified Method TO-15 and helium via ASTM D-1945.
- Alternately, a tracer gas detector may be used to verify the presence of the tracer gas in the chamber by affixing it to the valve fitting at the

bottom of the chamber. The tracer gas detector may also be used to measure the tracer gas concentration in the pump exhaust during purging. If used, then record the tracer gas concentrations in the chamber and in the soil vapor sample.

- Based on the concentrations of the tracer gas detected during analysis or direct measurement, determine whether additional gas tracer evaluations are necessary.

If the evaluation on a probe 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 subsequent sample collection.

A non-detectable level of tracer gas is preferred, however, if the evaluation on a probe 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.

3. References

USEPA modified Method TO-15 and helium via ASTM D-1945.

Section 2.7.1 of the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated October 2006.*

STANDARD OPERATING PROCEDURE

SG-003 Sub-slab Soil Vapor Collection

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1. Objective

This procedure outlines the general steps to collect sub-slab soil vapor samples. The site-specific project work plan should be consulted for proposed sample locations, sample depths, and sampling duration.

2. Execution

Permanent and temporary sub-slab soil vapor probes will be installed using the procedures outlined below. All sub-slab soil vapor probes will be installed using a direct-push drill rig (e.g., GeoProbe® or similar), hand auger, or manually using a slide hammer.

2.1. Document Field Conditions

Document pertinent field conditions prior to installation of any probe locations.

- Record weather information (precipitation, 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 onsite equipment or obtained from a reliable source of local measurements (e.g., a local airport). Data should be obtained for the past 24 to 48 hours. Record the indoor conditions (temperature, heating/cooling system active, windows open/closed, etc.).
- Measure the differential pressure at the building. Measure the indoor and outdoor barometric pressure using a high resolution device. Where possible, measure the sub-slab barometric pressure at the sampling point.
- If sampling near a commercial or industrial building, uses of volatile chemicals during normal operations of the facility should be identified.
- Indoor floor plan sketches should be drawn that include the floor layout with sampling locations, chemical storage areas, garages, doorways, stairways, location of basement sumps or subsurface drains and utility perforations through building foundations, heating, ventilating and air conditioning (HVAC) system air supply and return registers, compass orientation (North), footings that create separate foundation sections, and any other pertinent information should be completed.
- Outdoor plot sketches should be drawn that include the building site, area streets, outdoor air sampling locations (if applicable), compass orientation (north), and paved areas.

- Any pertinent observations should be recorded, such as odors and readings from field instrumentation.

2.2. Sub-Slab Soil Vapor Point Installation Specifications

Each sub-slab soil vapor point will be constructed as follows:

- Drill an approximately 3/8-inch hole through the slab. If necessary, advance the drill bit 2-3 inches into the sub-slab material to create an open cavity.
- Using dedicated inert Teflon or stainless steel tubing of laboratory or food grade quality, insert the inlet of the tubing to the specified depth below the slab. For permanent installation, only stainless steel tubing and fittings will be used.
- For permanent point installations, the annular space surrounding the vapor probe tip will be filled with a porous backfill material (e.g., glass beads or coarse silica sand) to cover 1-inch of the above the tip of the probe.
- Seal the annular space between the hole and the tubing using an inert non-shrinking sealant such as melted 100% beeswax, permagum grout, putty, etc. For permanent installations, cement may be used.
- For permanent points, a protective casing will be set around the top of the point tubing and grouted in place minimize infiltration of water or ambient air, as well as to prevent accidental damage to the permanent point.
- The tubing top will be fitted with a Swagelok® and cap to prevent moisture and foreign material from infiltrating the tubing.

In cases where sub-slab sampling is impractical or infeasible, a surrogate location (attached garage, concrete patio, asphalt driveway, etc.) may be used if it is representative of sub-slab conditions. In surrogate locations, the vapor sampling point may be installed in accordance with SOP SG-002, *Soil Vapor Collection*.

2.3. Sub-Slab Soil Vapor Sample Collection

Sub-slab soil vapor samples will be collected as indicated in the site-specific project work plan and in accordance with state or federal guidance documents. Specifically, sub-slab samples from the points will be collected as follows:

- Document pertinent field conditions prior to sampling as described above.
- A suction pump will be used to remove one to three implant volumes from the sub-slab soil vapor points prior to sampling. Include the volume of any additional tubing added to affix sampling equipment and

the annular space between the probe and the native material if sand or glass beads were used.

- The purge rate shall not exceed 0.2 liters per minute (lpm).
- Samples will be collected in an individually laboratory certified clean 1-liter SUMMA® canister (or equivalent) using a certified flow controller calibrated for the anticipated sample duration (4 minutes). The regulator flow rate will not exceed 0.2 lpm.
- A helium tracer gas will be used to identify any potential migration or short circuiting of ambient air during sampling as described below in Section 2.4.
- 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 sub-slab soil vapor probe to the flow controller.
- 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.

- Samples will be analyzed for volatile organic compounds (VOCs) and naphthalene via modified USEPA modified Method TO-15 and helium via ASTM D-1945.
- Include the required copies of the chain of custody form in the shipping packaging, as directed by the laboratory. Maintain a copy of the chain-of-custody for the project file.
- Deliver or ship the samples to the laboratory as soon as practical.
- All laboratory analytical data will be validated by a data validation professional in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, January 2005 and the USEPA Region II Standard Operating Procedure (SOP) for the Validation of Organic Data modified to accommodate the USEPA Method TO-15 and natural gas analysis by ASTM D-1945.

2.4. Tracer Gas Evaluation

The tracer gas evaluation provides a means to evaluate the integrity of the sub-slab soil vapor probe seal and assess the potential for introduction of indoor air into the sub-slab soil vapor sample. A tracer gas evaluation should be conducted on the each temporary sub-slab soil vapor probe to be sampled in a sampling event. A tracer gas evaluation should be conducted on the each permanent sub-slab soil vapor probe during the initial sampling event and a minimum of 10% of the sub-slab soil vapor probes during subsequent sampling events.

The following tracer gas evaluation procedure uses helium as a tracer gases which can be measured through laboratory analysis or by a portable detector.

- Retain the tracer gas around the sub-slab 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. 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 sub-slab 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 sub-slab

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 purge one to three tubing volumes prior collecting an analytical sample or using a portable device to measuring the tracer gas concentration.

- Samples collected from vapor points during a tracer gas evaluation will be analyzed for VOCs and naphthalene via modified USEPA modified Method TO-15 and helium via ASTM D-1945.
- Alternately, a tracer gas detector may be used to verify the presence of the tracer gas in the chamber by affixing it to the valve fitting at the bottom of the chamber. The tracer gas detector may also be used to measure the tracer gas concentration in the pump exhaust during purging. If used, then record the tracer gas concentrations in the chamber and in the soil vapor sample.
- Based on the concentrations of the tracer gas detected during analysis or direct measurement, determine whether additional gas tracer evaluations are necessary.

If the evaluation on a probe 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 subsequent sample collection.

A non-detectable level of tracer gas is preferred; however, if the evaluation on a probe 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.

3. References

USEPA modified Method TO-15 and helium via ASTM D-1945.

Section 2.7.1 of the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

STANDARD OPERATING PROCEDURE

SG-004 Ambient Air Sample Collection

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1. Objective

This set of procedures outlines the general steps to collect ambient air samples. The site-specific project work plan should be consulted for proposed sample locations and sampling duration.

2. Execution

The following procedures will be followed for the collection of ambient air samples:

2.1. Document Field Conditions

Document pertinent field conditions prior to sample collection.

- Record weather information (precipitation, 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). Data should be obtained for the past 24 to 48 hours.
- If sampling near a commercial or industrial building, uses of volatile chemicals during normal operations of the facility should be identified.
- Outdoor plot sketches should be drawn that include the site, area streets, neighboring commercial or industrial facilities (with estimated distance to the site), outdoor air sampling locations (if applicable), and compass orientation (North).
- Any pertinent observations should be recorded, such as odors and readings from field instrumentation.

2.2. Sample Collection

- Select a location upwind of the building or other area that is being evaluated.
- Samples will be collected in an individually laboratory certified clean SUMMA® canister (or equivalent) using a certified flow controller calibrated for the anticipated sample duration (1-hour, 8-hour, etc.). The regulator flow rate will not exceed 0.2 liters per minute (lpm).
- 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.
- 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. 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.
- Samples will be analyzed for volatile organic compounds (VOCs) and naphthalene via modified USEPA modified Method TO-15.
- Include the required copies of the chain of custody form in the shipping packaging, as directed by the laboratory. Maintain a copy of the chain of custody for the project file.
- Deliver or ship the samples to the laboratory as soon as practical.

All laboratory analytical data will be validated by a data validation professional in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, January 2005 and the USEPA Region II Standard Operating Procedure (SOP) for the Validation of Organic Data modified to accommodate the USEPA Method TO-15.

3. References

USEPA modified Method TO-15 and helium via ASTM D-1945.

Section 2.7.1 of the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated October 2006.*

Section 12

QUALITY CONTROL – QUALITY ASSURANCE (QA)

STANDARD OPERATING PROCEDURE

QA-001 Equipment Decontamination

---

1. Objective

This Standard Operating Procedure (SOP) describes methods used for preventing or reducing cross-contamination, and provides general guidelines for sampling equipment decontamination procedures. Preventing or minimizing cross contamination in sampled media and in samples is important for preventing the introduction of error into sampling results and for protecting the health and safety of site personnel. Removing or neutralizing contaminants that have accumulated on sampling equipment ensures protection of personnel from permeating substances, reduces or eliminates transfer of contaminants to clean areas, prevents the mixing of incompatible substances, and minimizes the likelihood of sample cross-contamination.

In all cases, requirements specified in the project-specific Quality Assurance Project Plan (QAPP) and/or any other site-specific plan will prevail over this document.

2. Execution

All non-dedicated sampling equipment shall be cleaned between each use in the following manner:

1. Wash/scrub with a biodegradable degreaser (“Simple Green”) if there is oily residue on equipment surface;
2. Tap water rinse;
3. Wash and scrub with Alconox (or non-phosphate soap) and water mixture;
4. Tap water rinse;
5. All equipment used to collect samples for volatile organic compound (VOC) and semi-volatile organic compound (SVOC) analysis will then receive a laboratory grade, 100% methanol rinse followed by a de-ionized water rinse;
6. 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;
7. The drilling equipment will be decontaminated in general accordance with methods described in the appropriate sections of this document; and
8. 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.

All drilling equipment shall be cleaned in the following manner:

1. Inspect equipment for cleanliness prior to moving onto a site and prior to relocating to each new sampling location. All contractor-provided equipment (augers, rods, spoons, backhoe buckets) shall be decontaminated by steam cleaning **prior to coming on site.**
2. Equipment decontamination consists of an Alconox-solution wash (or equivalent non-phosphate detergent) and/or potable water rinse or steam cleaning.
3. Alconox solution is a mixture of approximately 1 cup of Alconox per 1 gallon of potable water. Alconox solution wash requires scrubbing the equipment with a brush soaked in Alconox solution and removing any visible contamination or dirt from the equipment.
4. Before advancing each boring and in between samples, drilling equipment (including augers, casing, rods, and washtub) must be decontaminated.
5. The split-spoon decontamination procedure includes: a gross wash and scrub in a bucket of Alconox solution and potable water rinse.

3. Notes

- Do not store the deionized/distilled water in polyethylene bottles, use Nalgene, glass, or Teflon. Polyethylene may leach phthalates.
- Do not attempt to decontaminate string or rope – replace it.
- Due to eye and skin absorption hazards, safety glasses and gloves must be worn when handling decontamination solvents.
- The decontamination procedure may require modification based on site-specific conditions and methods used should not interfere with the site-specific chemical analyses. The procedure may also require modification based on state regulations.
- Steam cleaning with potable water is an acceptable decontamination method for drilling equipment (i.e., augers).
- Dedicated equipment does not need to be decontaminated beyond initial decontamination prior to field use, if warranted.

4. References

Environmental Response Team (ERT), US EPA. Sampling Equipment Decontamination, SOP No. 2006, Revision 0.0. August 11, 1994.

US EPA Region 9. Sampling Equipment Decontamination, SOP No. 1230, Revision 1. September 1999.

STANDARD OPERATING PROCEDURE

QA-002 Field and Laboratory Quality Control Procedures

---

1. Objective

Field Quality Control (QC) samples are used to monitor the reproducibility and representativeness of the field activities. The QC samples are handled, transported, and analyzed in the same manner as the associated field samples. QC samples may include trip blanks, field blanks, and field duplicates. QC sample rationale, procedure and frequency are presented below and further defined within the project-specific work plan (WP) and/or Quality Assurance Project Plan (QAPP).

In all cases, requirements specified in the project-specific QAPP and/or any other site-specific plan will prevail over this document.

2. Execution

2.1. Trip Blanks

- Used to monitor possible sources of contamination from transport, storage, inadequate bottle cleaning, or laboratory methodologies.
- Sample containers filled at the laboratory with analyte-free water, are transported to and from the site, and are not opened until time of analysis.
- Trip blanks are stored with the sample containers prior to and after field activities and remain with the collected samples until analyzed.
- Generally, one trip blank per volatile organic compound (VOC) shipment.

2.2. Equipment Blanks

- Equipment blanks, are used to monitor the adequacy of decontamination procedures and possible sources of contamination from inadequate bottle cleaning or laboratory methodologies.
- Equipment blanks are samples collected by pouring laboratory supplied or distilled or deionized water through a decontaminated or dedicated piece of field equipment.
- Prepare field-cleaned equipment blanks immediately after the equipment is cleaned in the field and before leaving the sampling site.
- Collect these blanks using sampling equipment that has been cleaned in the field (i.e., between sampling points). The cleaning procedures used for the blank collection must be identical to those used for the field sample collection.

- The water is then collected in a sample bottle(s) and stored with the associated field samples and submitted for analysis.
- Generally collected at a frequency of 1/20 samples and when non-dedicated sampling equipment is used. Check project-specific WP and/or QAPP for required frequency.

2.3. Field Duplicates

- Used to evaluate the precision and representativeness of the sampling procedures.
- Field duplicates are two samples collected from the same location using the same procedures. Both samples are submitted to the laboratory as individual samples with different sample identification.
- Field duplicates from groundwater sampling are collected by alternating filling sample containers from the same sampling device. Volatile samples must be collected from the same dedicated equipment.
- Soil or sediment field duplicates are collected by homogenizing the sample for all analyses except volatiles. The homogenized sample is then divided into two equal portions and placed in separate sample containers. Field duplicates for volatile analysis are collected at two adjacent sampling locations.
- Each sample is assigned different sample identifications.
- Generally collected at frequency of 1/20 samples. Check project-specific WP and/or QAPP for required frequency.
- All field QC samples should be labeled in the field and submitted “blind” to the laboratory.

2.4. Matrix-Spike samples (MS/MSD)

- Matrix spike and matrix spike duplicate samples (MS/MSDs) are environmental samples that are spiked in the laboratory or in the field with a known concentration of a target analyte(s) to verify percent recoveries.
- MS/MSD samples are primarily used to check sample matrix interferences. They can also be used to monitor laboratory performance. However, a data set of at least three or more results is necessary to statistically distinguish between laboratory performance and matrix interference.
- The minimum frequency of MS/MSDs should be five percent of the total number of samples being analyzed for the target analyte(s).
- MS/MSD samples are also used to evaluate error due to laboratory bias and precision.

- One MS/MSD pair per target analyte should be analyzed and the average percent recovery should be calculated to assess bias.
- To assess precision, at least eight matrix spike replicates from the same sample should be analyzed and the standard deviation and coefficient of variation should be determined.

2.5. Typical QA/QC Frequency

- All QA/QC frequency is project-specific and should be verified prior to sample collection by checking the project-specific WP and/or QAPP.

Duplicate Samples	Shall be collected at a frequency of one replicate soil sample per every twenty primary soil samples collected.
Equipment Blanks	Shall be collected at a rate of one per every type of non-dedicated sampling equipment.
Trip Blanks	Shall be collected every day soil samples are collected for volatile analyses.
Field Blanks	Shall be collected every day soil samples are collected for volatile analyses.
MS/MSDs	The laboratory shall be provided sufficient sample volume for select samples so that it can perform project-specific MS/MSD analyses at a rate of one per every 20 samples (project specific MS/MSD analysis is not required for projects in which less than 20 samples are collected).

3. Limitations

- Trip blanks must never be opened in the field.
- Trip blanks are usually for VOCs only because less volatile compounds are not likely to cross-contaminate other samples by simply being in close proximity.
- Water of documented quality must be used during the collection of field blanks.
- Field duplicates must have different sample identifications.

4. References

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (November 1986), U.S. Environmental Protection Agency Department of Solid Waste, Washington, D.C.

U.S. Environmental Protection Agency Office of Emergency and Remedial Response, 1990, Quality assurance/quality control guidance for removal activities: EPA/540/G-90/004, Sampling QA/QC Plan and Data Validation Procedures Interim Final, April, 1990.

DER-10, Technical Guidance for Site Investigation and Remediation. New York State Department of Environmental Conservation. *May 3, 2010.*

Analytical Service Protocol, New York State Department of Environmental Conservation. *July 2005.*

US EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5, March 2001).

Guidance for Quality Assurance Project Plans (EPA QA/G-5, December 2002).

5. Attachments

Attachment A – General Guidelines for selecting equipment on the basis of construction material and target analyte(s)

Attachment A

Table 2. General Guidelines for selecting equipment on the basis of construction material and target analyte(s)

[✔, generally appropriate for use shown; Si, silica; Cr, chromium; Ni, nickel; Fe, iron; Mn, manganese; Mo, molybdenum; CFC, chlorofluorocarbon; B, boron]

Construction material for sampling equipment		Target analyte(s)	
Material	**Description**	**Inorganic**	**Organic**
	Plastics[1]		
Fluorocarbon ploymers[2] (other varies available for differing applications)	Chemically inert for most analytes	✔ (potential source of fluoride)	✔ (Sorption of some organics)
Polypropylene	Relatively inert for inorganic analytes	✔ (not appropriate for Hg)	**Do not use**
Polypropylene (linear)	Relatively inert for inorganic analytes	✔ (not appropriate for Hg)	**Do not use**
Polyvinyl chloride (PVC)	Relatively inert for inorganic analytes	✔ (not appropriate for Hg)	**Do not use**
Silicone	Very porous. Relatively inert for most inorganic analytes	✔ (potential source of Si)	**Do not use**
	Metals		
Stainless steel 316 (SS 316)	SS-316-metal having the greatest corrosion resistance. Comes in various grades. Used for submersible pump casing.	✔ (Potential source of Cr, Ni, Fe, and possible Mn and Mo) **Do not use** for surface water unless encasted in plastic.	✔ Do not use if corroded[3]
Stainless steel 304	Similar to SS-316, but less corrosion resistant	**Do not use**	✔ Do not use if corroded[3]
Other metals: brass, iron, copper, aluminum, galvanized and carbon steels	Refrigeration-grade copper or aluminum tubing are used routinely for collection of CFC samples	**Do not use**	✔ Routinely used for CFCs Do not use if corroded[3]
	Glass		
Glass, borosilicate (laboratory grade)	Relatively inert. Potential sorption of analytes	✔ **Do not use** for trace element analyses. Potential source of B and Si	✔

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[1] Plastic used in connection with inorganic trace-element sampling should be uncolored or white. Tubing used for trace metal sampling should be cleaned by soaking in 5-10 percent HCl solution for 8-24 hours, rinsing with reagent water (metals free) and allowed to air dry in mercury-free environment. After drying, the tubing is doubled-bagged in clear polyethylene bags, serialized with a unique number, and stored until used.

[2] Fluorocarbon polymers include materials such as Teflon™, Kynar™, and Tefzel™ that are relatively inert for sampling inorganic or organic analytes. Only fluoropolymer should be used for samples that will analyzed for mercury because mercury vapors can diffuse in or out of other materials, resulting in either contaminated or biased results.

[3] Corroded/weathered surfaces are active sorption sites for organic compounds.

Section 13

GROUNDWATER TREATMENT SYSTEM INSPECTION (SI)

STANDARD OPERATING PROCEDURE

SI-001 Standard Oxygen Injection System Inspection Procedure

---

1. Objective

The purpose of this Standard Operating Procedure (SOP) is to identify procedures required to maintain maximum system uptime and ensure the system inspections are conducted safely.

2. Important Documents

The system operator should be familiar with the documents listed below prior to conducting system inspections or maintenance on the system.

- System Operating Maintenance and Monitoring (OM&M) Plan –This document specifies inspection schedules, analytical monitoring schedules, and specific inspection procedures.
- Manufacturers Operations Manual – This is a system specific document created by the manufacturer. This document contains system component information, maintenance and troubleshooting information, and instructions on how to use the system control logic. A copy of this document is retained within each system enclosure.

3. System Process

The oxygen injection systems are designed to generate a 95 percent oxygen gas mixture and inject it in pulsed intervals into the subsurface through a series of injection wells**.**

Air is compressed then passed through a series of filters before it is dried and cooled by a refrigerated dryer. The compressed air is then stored in a tank until it is passed through the oxygen generator. The oxygen generator strips out the nitrogen, leaving a 90-95% oxygen gas mixture which is then stored within the oxygen storage tanks. The injection process is controlled by a series of solenoid valves, timers, and the control logic. Each system uses slightly different control logic.

4. System Components

Typical system components are listed below. The operator should reference the manufactures Operations Manual for each individual system.

- Kaeser Rotary Screw Air Compressor (models vary by system)
- Coalescing Filter
- Particulate Filter
- Kaeser refrigerated dryer (models vary by system)

- Compressed Air Receiver Tank (typically 60 gallon @ 100 pounds per square inch [psi])
- AirSep model SCFH pressure swing adsorption oxygen generator (models vary by system)
- 120 gallon oxygen storage tank – low pressure (60 psi)
- Powerex rotary scroll oxygen compressor (booster), 2.5 SCFM at 100 psi (applicable to larger systems with deeper injections)
- 240 gallon oxygen storage tank – high pressure (applicable to larger systems with deeper injections)
- Oxygen Delivery Manifold
- Injection Control Logic (specific to individual system)

5. System Inspections

The Oxygen injection systems are monitored monthly, at a minimum, to ensure that the injection systems are operating according to design and manufacture. The inspections include:

- Monitoring the integrity of the injection lines and injection points.
- Inspection of the mechanical components (checking oil levels, belt tightness, etc).
- Recording operational pressures and operational hours of the system components. These values should be compared to historical values to determine if there are any discrepancies.
- Recording pressures and flow rates at each injection point during a normal operational cycle. These values should be compared to historical values to determine if there are any discrepancies.
- Monitoring the purity of the oxygen being manufactured by each system and subsequently injected into the groundwater. The O2 percentage should be monitored when the oxygen tanks are fully charged.
- Inspecting the cleanliness and general condition of the system enclosure interior and exterior.
- All information will be recorded on the system inspection log.
- Any discrepancies will be reported to the project manager.

6. Regular Maintenance

Manufacturer recommended maintenance is performed twice annually by an approved mechanic. Maintenance includes changing of the oil, filter elements, belts, and filter mats, as specified in the individual system component manual which are provided in the manufacturer's Operations Manual. The system operator should keep a log of anything out of the ordinary and provide to the appropriate maintenance personnel. Typical items that should be noted are listed below:

- Rattling of solenoid valves can indicate that the valve is dirty and needs to be replaced.
- Low O2 percentage could indicate a problem with the solenoid valves or that the molecular sieve material needs to be replaced.
- Potential fluid leaks.
- Irregularity in the typical system component sounds. Listen to the operation of the compressor, oxygen generator, booster pump, and dryer. If something doesn't sound right, it probably isn't.

Report any of the items listed above to the system manager.

7. Alarm Acknowledgement

The oxygen injection systems are equipped with a telemetry function that notifies the operator when the system goes down. The alarm can be transmitted by email, text message, or phone call. The system operator will investigate the problem – and coordinate access to the system, if needed - once an alarm message is received. Once the problem is identified, the system operator should contact the system manager and determine how to address the problem. The system manager will then inform National Grid of the problem and the steps being taken to resolve it.

8. Health and Safety

Anyone entering a system will comply with the site-specific HASP. Additional Health and Safety hazards, specific to this SOP, pertinent to include:

- Elevated oxygen percentage – The system operator will scan the breathing air within the system enclosure with an oxygen analyzer. If the oxygen percentage falls outside the range of 19 and 23% the system operator will disconnect the power coming into the system and allow the system ventilate.
- Mechanical hazards when working on equipment – The system operator will ensure that the power is disconnected from the system components when maintenance has to be completed. This will be completed by shutting down the individual circuit breakers or disconnecting the main power supply. Proper lock out/tag out procedures will be implemented in accordance with the HASP.

9. Site Contacts (Refer to site-specific plan for modifications)

Key site personnel are listed below:

- **System Manager**
  Jeff Parillo
  GEI Consultants, Inc.
  Office – 860.368.5374
  Cell – 631.481.5949

- **System Operator**
  Chris Berotti
  GEI Consultants, Inc.
  Office – 631.759.2961
  Cell – 631.481.5868
- **System Manufacturer**
  Matrix Environmental
  Alan Setchell, System Technician
  Office – 518.636.5098
  Cell – 518.857.9044
- **Maintenance Vender**
  Fenley and Nicol Environmental, Inc.
  Office – 631.586.4900
  Mike Ryan, Mechanic
  Cell – 516.768.8765
  Mathew Schieferstein, Project Manager
  Cell – 516.702.0025
- **Kaeser Representative**
  Industrial Sales and Service
  Tom Nelan, President
  Cell – 631.420.4800
  Office – 516.807.0463

STANDARD OPERATING PROCEDURE

SI-002 Ozone System Inspection

---

1. Objective

The purpose of this Standard Operating Procedure (SOP) is to identify key procedures needed to maintain maximum system uptime of the ozone injection and soil vapor extraction systems, and to ensure the system inspections are conducted safely.

2. Important Documents

- The system operator should be familiar with the documents listed below prior to conducting system inspections or maintenance on the system.
- System Operations Maintenance and Monitoring (OM&M) Plan – This is a site specific document. This document specifies inspection schedules, analytical monitoring schedules, and specific inspection procedures.
- Manufacturer’s Owner’s Manual – This is a system specific document created by the manufacturer. This document contains system component information, maintenance and troubleshooting information, and instructions on how to use the system control logic. A copy of this document is retained at the Ozone Building.
- Training Videos – System training videos are available and located on GEIs network under the link below:

  H:\TECH\project\Keyspan\BayShore\OU-1Ozone System\Training\Training Videos

3. System Process

- The ozone Injection system is designed to generate a 1-3 percent ozone gas mixture and sparge it directly into the subsurface through a series of stainless steel injection wells**.**
- Compressed air is first generated by a compressor. The compressed air is then passed through a series of filters before it is dried and cooled by a refrigerated dryer and a desiccant dryer, effectively bringing the dew point down to a maximum of -70 degrees Fahrenheit. The compressed air is then passed through the ozone generator where the ozone concentration is increased to 1 to 3 percent ozone gas mixture. The injection process is controlled by the human machine interface (HMI), three remote system manifolds, solenoid valves, and the control logic.

- A Soil Vapor Extraction (SVE) system is also in place to capture any fugitive ozone gas or impacted soil vapor. The system consists of 11 soil vapor extraction laterals spaced throughout the injection well field. Vacuum is applied by the regenerative blower. The extracted vapor is passed through the blower and through two 500 pound carbon vessels and an ozone destruct unit prior to discharge through the stack.
- There are two identical system trains in place for both the SVE and ozone injection system. If one system goes down the other system will automatically start, maintaining near 100 percent system uptime.

4. System Components

- System components for a complete system train are listed below. The operator should reference the manufactures Owners Manual for details on each component.
-
- Ozone Injection System
- Kaeser Rotary SX-6 Screw Air Compressor
- Coalescing Filter (x2)
- Particulate Filter (x2)
- Condensate Filter
- Kaeser refrigerated dryer
- Kaeser desiccant dryer
- Cold Shot Split Water Chiller
- Ozonia Ozone Generator
- Ozone Delivery Manifold
- Ozone Compressor Pumps
- Remote system manifolds (x3)
- Injection Control Logic – HMI
- SVE System
- Rentron Regenerative Blower
- 240 gallon moisture separator
- 500 pound TetraSolve Granular Activated Carbon Vessel (x2)
- 250 pound TetraSolve Liquid Granular Activated Carbon Vessel (x2)
- Swhift Ozone Destruct Unit
- 11 SVE Laterals
- 1 Exterior SVE Manifold

5. System Inspections

The SVE system and the ozone injection system are monitored at least once per week to confirm that the systems are operating according to design and manufacture. The inspections include:

- Inspection of the mechanical components.
- Recording of the operational pressures, temperatures, flow rates, and operational hours of the system components. These values should be compared to historical values to determine if there are any discrepancies.
- Emptying any condensate collection basins into properly labeled drums.
- Maintaining the drum storage area.
- Recording the injection pressures and flow rates at each injection point during a normal operational cycle. These values should be compared to historical values to determine if there are any discrepancies (semi-annual).
- Recording the vacuum pressures and flow rates at the SVE manifold.
- Monitoring the SVE effluent with a photoionization detector (PID).
- Analytical sampling of the SVE effluent at three locations, Pre-treatment, Mid-treatment, and Post-treatment (monthly).
- All information will be recorded on the inspection logs.

6. Regular Maintenance

Manufacturer recommended maintenance is performed twice to three times annually by an approved mechanic. Maintenance includes changing of the oil, filter elements, belts, and filter mats, as specified in the individual system component manual which are provided in the manufacturers Operations Manual. The system operator should keep a log of anything out of the ordinary and provide to the appropriate maintenance personnel. Typical things that should be noted are listed below:

- Rattling of solenoid valves can indicate that the valve is dirty and needs to be replaced.
- Drifting O3 percentage could indicate a problem with the UV lamp within the ozone monitor.
- Record any potential fluid or air leaks.
- Irregularity in the typical system component sounds. Listen to the operation of the compressor, ozone generator, booster pump, and dryer. If something doesn’t sound right, it probably isn’t.
- Report any of the items listed above to the system manager.

7. Alarm Acknowledgement

The SVE and ozone injection systems are equipped with a telemetry function that notifies the operator when the system goes down. The alarm is transmitted by email. The system operator will investigate the problem once an alarm message is received. Once the problem is identified, the system operator should contact the system manager. A decision will then be made on how the problem will be resolved. The system manager will then inform National Grid of the problem and the steps being taken to resolve the problem.

8. Health and Safety

Anyone entering the system will comply with the site specific HASP. Additional Health and Safety hazards include:

- Elevated ozone levels – The PEL for ozone is 0.1 ppm. The system will shut itself down if concentrations within the Ozone Generation Room meet or exceed this value. The system operator should verify ozone levels prior to entering the Ozone Generation Room at the office computer. The system operator will scan the breathing air within the room with a hand held ozone analyzer.
- Mechanical hazards when working on equipment – The system operator will ensure that the power is disconnected from the system components when maintenance has to be completed. This will be completed by shutting down the individual circuit breakers. Proper lock out/tag out procedures will be implemented in accordance with the HASP.

9. Site Contacts

Key site personnel are listed below. Refer to site-specific work plan for updated list.

- **System Manager**
  Jeff Parillo
  GEI Consultants, Inc.
  Office – 860.368.5374
  Cell – 631.481.5949
- **System Operator**
  Chris Berotti
  GEI Consultants, Inc.
  Office – 631.759.2961
  Cell – 631.481.5868
- **System Manufacturer**
  PIPER Environmental
  Anthony Rutland, System Technician
  Office – 831.632.2700

- **Maintenance Vender**
  Fenley and Nicol Environmental, Inc.
  Office – 631.586.4900
  Mike Ryan, Mechanic
  Cell – 516.768.8765
  Mathew Schieferstein, Project Manager
  Cell – 516.702.0025
- **Kaeser Representative**
  Industrial Sales and Service
  Tom Nelan,President
  Cell – 631.420.4800
  Office – 516.807.0463
- **Cold Shot Chiller Representative**
  The TurboChyll Company
  Sean Libby
  Office – 516.223.6494
  Fax – 516.223.6496

Interim Site Management Plan
Glen Cove Former MGP Site
Glen Cove, Nassau County, New York
February 2015

Appendix J

Quality Assurance Project Plan

GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

Quality Assurance Project Plan

Glen Cove Former Manufactured Gas Plant Site

City of Glen Cove
Nassau County, New York
NYSDEC Consent Index No. D1-0001-98-11
Site No. 1-30-089P

Submitted to:
National Grid USA
175 East Old Country Road
Hicksville, NY 11801

Submitted by:
GEI Consultants, Inc.
110 Walt Whitman Road, Suite 204
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631-760-9300

February 2015
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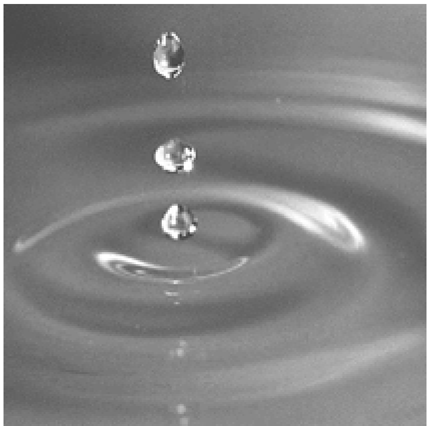

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Tables

Attachments

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Abbreviations and Acronyms

ASP	Analytical Service Protocol
CAS	Chemical Abstract Service
CHMM	Certified Hazardous Materials Manager
CMS	Chip Measurement System
CLP	Contract Laboratory Protocol
COC	Chain Of Custody
DQO	Data Quality Objective
DO	Dissolved Oxygen
DUSR	Data Usability Summary Report
ELAP	Environmental Laboratory Approval Program
EPA	United States Environmental Protection Agency
FSP	Field Sampling Plan
GC/MS	Gas Chromatography/Mass Spectroscopy
GEI	GEI Consultants, Inc.
KEYSPAN	KeySpan Corporation
LCS	Laboratory Control Sample
LEL	Lower Explosive Limit
LEP	Licenced Environmental Professional (Connecticut)
MDL	Method Detection Limit
MPH	Master of Public Health
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PACE	Pace Analytical Long Island Laboratory
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PID	Photoionization Detector
PM	Project Manager
PQL	Practical Quantification Limit
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation Recovery Act
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SC	Site Characterization
SD	Standard Deviation
SOP	Standard Operating Procedures
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compounds
TOX	Total Organic Halides
USDOT	United States Department of Transporation
VOC	Volatile Organic Compound

Quality Assurance Glossary

"Alteration" means altering a sample collected for analysis in any way other than by adding a preservative, such as nitric acid to lower pH. Examples of alteration include, but are not limited to: filtering, settling and decanting, centrifuging and decanting and acid extracting.

"Analytical Services Protocol" or "ASP" means the NYSDEC's compendium of approved EPA and NYSDEC laboratory methods for sample preparation and analysis and data handling procedures.

"Correlation Sample" means a sample taken, when using a field-testing technology, to be analyzed by and ELAP-certified laboratory to determine the correlation between the laboratory and field analytical results.

"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.

"Filtration" means the filtering of a groundwater or surface water sample, collected for metals analysis, at the time of collection and prior to preservation. Filtering includes but is not limited to the use of any membrane, fabric, paper or other filter medium, irrespective of pore size, to remove particulates from suspension.

“**Final delineation sample**” means a sample taken as an endpoint sample, used to make a decision regarding the extent of contamination at a site, which is to be analyzed by an ELAP-certified laboratory.

“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.

“Minimum reporting limit” means the lowest concentration at which an analyte can be detected and which can be reported with a reasonable degree of accuracy. It is the lowest concentration that can be measured, a lab-specific number, developed from minimum detection limits, and is also referred to as the practical quantitation limit (PQL).

“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.

“Nephelometric Turbidity Unit” or "NTU" is the unit by which turbidity in a sample is measured.

“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.

"Preservation" means preventing the degradation of a sample due to precipitation, biological action, or other physical/chemical processes between the time of sample collection and analysis. The most common examples involve refrigeration at 4 degrees Celsius and lowering sample pH by the addition of acid to keep dissolved metals in solution or to reduce the biodegradation of dissolved organic analytes.

“PAH” means polycyclic aromatic hydrocarbon as defined by 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.

“Semivolatile organic compound” or “SVOC” means compounds amenable to analysis by extraction of the sample with an organic solvent. For the purposes of this section, semivolatiles are those target compound list compounds identified in the statement of work in the current version of the 2005 ASP.

“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, 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 semivolatile 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, Multi-Concentration” in effect as of the date on which the laboratory is performing the analysis.

"Tentatively identified compound or TIC" means a chemical compound that is not on the target compound list but is detected in a sample analyzed by a GC/MS analytical method. TICs are only possible with methods using mass spectrometry as the detection technique. The compound is tentatively identified using a mass spectral instrumental electronic library search and the concentration of the compound estimated.

“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” or “VOC” means organic compounds amenable to analysis by the purge and trap technique. For the purposes of this chapter, analysis of VOCs means the analysis of a sample for either those priority pollutants listed as amenable for analysis using EPA method 8260 B 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.

“Well development” means the application of energy to a newly installed well to establish a good hydraulic connection between the well and the surrounding formation. During development, fine-grained formation material that may have infiltrated the sand pack and/or well during installation is removed, allowing water from the formation to enter the well without becoming turbid and unrepresentative of groundwater in the formation.

1. Purpose

GEI Consultants, Inc. (GEI) has prepared this Quality Assurance Project Plan (QAPP) to address analytical sampling and operations, maintenance and monitoring (OM&M) activities at the Glen Cove Former MGP Site located in Glen Cove, New York. This plan accounts for current sampling as well as potential future sampling. The QAPP is a companion document to the *Interim Site Management Plan*. The QAPP presents the project scope and goals, organization, objectives, sample handling procedures and QA/QC procedures associated with the Glen Cove Former MGP Site.

Furthermore, this QAPP 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;
- Laboratory data are validated, as necessary, so they can be applied to developing a conceptual understanding of the nature and extent of contamination of soils and groundwater at the Glen Cove Former MGP Site
- All aspects of investigation, from field to laboratory are documented to provide data that are technically sound and legally defensible;
- The site cap and cover system is inspected regularly and certified on an annual basis; and
- The oxygen injection system is inspected on a regular basis to ensure proper long-term operation.

The requirements of this QAPP apply to all contractor activities as appropriate for their respective tasks.

This QAPP was prepared based upon guidance provided by the United States Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (NYSDEC) including:

- *DER-10, Technical Guidance for Site Investigation and Remediation.* NYSDEC. *May 3, 2010;*
- *Analytical Service Protocol,* NYSDEC. *July 2005;*
- *US EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5, March 2001); and*
- *Guidance for Quality Assurance Project Plans (EPA QA/G-5, December 2002).*

2. Project Goals and Objectives

National Grid has performed the first phase of the Remedial Action (RA) planned at the site. However, the Remedial Action Objectives (RAOS) have not yet been achieved at the site and remaining contamination was left in the subsurface at the site.

The Phase II RA proposed for the Glen Cove former MGP is to treat contaminated groundwater that is likely to migrate from the site and to remove mobile NAPL. Specifically, the Phase II RA will entail:

- **Groundwater Treatment**: An oxygen injection system will be installed in a position to treat groundwater impacted with MGP-related contaminants as it migrates off the site.
- **Monitoring Well Installation**: Monitoring wells will be installed downgradient of the oxygen injection system to monitor system effectiveness.
- **NAPL Recovery**: Recovery wells will be installed in the footprint of the former gas holder to remove mobile NAPL from the subsurface.

The second phase of the RA (Phase II RA) will not commence until LIPA has completed upgrades to the Glen Cove substation. A Phase II RAWP will be prepared describing the work in detail.

After the Phase II RA has been performed, a Final Engineer’s Report will be prepared for the site, including discussion of impacts remaining at the site. In addition, a final SMP will be prepared to manage those impacts. Until that time, the Interim SMP was prepared to manage remaining contamination at the site.

3. Project Organization and Responsibility

GEI is responsible for the implementation of the scope of work associated with the OM&M plan, SMP, and associated performance monitoring tasks including the supervision of contractors, field activities, and the evaluation and interpretation of data. GEI will perform the sampling activities and coordinate submittal of samples to testing laboratories. The project organization and key personnel for GEI are listed below:

In-House Consultant: Dennis Unites, P.G., Licensed Environmental Professional (LEP)
Program Manager: Errol Kitt
Project Manager: Matt O’Neil
Field Team Leader: Chris Anastasiou
GEI Corporate Health & Safety Officer: Robin B. DeHate, Master of Public Health (MPH), PhD(c), Certified Hazardous Materials Manager (CHMM)
Data Validators: Lorie Mackinnon, Lisa McDonagh
Quality Assurance Officer/Data Manager: Brian Skelly/Jaimie Wargo

The primary responsibilities of each of these personnel are described in the following table.

Key Project Personnel and Responsibilities

Position	GEI Personnel	Areas of Responsibilities
In-House Consultant	Dennis Unites	• Provide strategic guidance of project activities • Client contact regarding strategic issues • Review of project deliverables
Program Manager	Errol Kitt	• Overall program oversight • Project management • Project schedule • Client contact regarding project related issues • Personnel and resource management • Review of project submittals • Budgeting
Project Manager	Matt O’Neil	• Client contact regarding project related issues • Coordination of contractors • Technical development and implementation of OM&M Plan, SMP, Work Plan, and Field Sampling Plan • Personnel and resource management • Preparation and review of project submittals • Preparation of project submittals • Budgeting
Field Team	Chris Anastasiou	• Client contact regarding project related issues

Key Project Personnel and Responsibilities		
Position	**GEI Personnel**	**Areas of Responsibilities**
Leader		on day to day basis as part of field operations • Coordination of contractors • Implementation of OM&M Plan, Work Plan and Field Sampling • Plan Personnel and resource management • Preparation of project submittals
Data Validators	Lorie MacKinnon Lisa McDonagh	• Perform data validation activities • Prepare data usability summary reports • Evaluate data with regards to quality objectives
Quality Assurance Officer/Data Manager	Brian Skelly Jaime Wargo	• Manage raw data from the laboratory • Maintain copies of COCs in the project file • QA/QC for sampling, validation and laboratory performance

Pace Analytical Laboratory (PACE), located in Melville, New York, has been selected to perform the following standard analytical chemistry parameters for subsurface soil and groundwater samples which may include:

- Volatile Organic Compounds (VOCs) according to EPA Method 8260B;
- Semi-Volatile Organic Compounds (SVOCs) according to EPA Method 8270C;
- Target Analyte List (TAL) Metals according to EPA Method 6010B/7470A/7471B series;
- Polychlorinated Biphenyls (PCBs) and pesticides by EPA Method 8082A;
- Herbicides by EPA Method 8151A;
- Total Cyanide by EPA Method 9012;
- Sulfate by EPA Method 375.2;
- Heterotrophic Plate Count (HPC) according to ASTM Method 9215B;
- Biological Oxygen Demand (BOD) by SM5210B;
- Total Organic Carbon by SM5310 (aqueous) and Lloyd Kahn (solids);
- Ammonia by EPA Method 350.1;
- Nitrogen by EPA Method 351.2;
- Nitrate/Nitrite by EPA Method 353.3; and
- Disposal Parameters including:
    - Toxicity Characteristic Leaching Procedure (TCLP) constituents including VOCs by EPA 8260B, SVOCs by EPA 8270, Resource Conservation and Recovery Act (RCRA)-8 Metals by EPA 6000/7000 series, pesticides by EPA Method 8081, and herbicides by EPA Method 8151A.
    - pH by EPA Method 150.1;

  - Reactive cyanide by EPA method 7.3.3.2 (2);
  - Reactive sulfide by EPA Method 7.3.4.1 (2);
  - Total Organic Halides (TOX) by EPA Method 9020B;
  - Total Petroleum Hydrocarbons by EPA 8100/418.1;
  - Total cyanide EPA 9010;
  - Percent sulfur by EPA D129-64;
  - BTU content by ASTM D240-87;
  - Flash point by EPA Method 1010; and
  - Percent moisture and density.

PACE’s relevant certifications are summarized in the following table.

PACE’s Certifications

Location	**Responsible Agency**	**Certification**
New York	New York State Department of Health	Environmental Laboratory Approval Program (ELAP) for potable water/non-potable water, solid and hazardous waste Contract Laboratory Protocol (CLP) CLP-Lab: 10478
United States	United States Environmental Protection Agency	EPA Lab Code: NY00026 [VOCs/SVOCs/Inorganics]

Table 1 provides a summary of soil analyses and **Table 2** provides a summary of groundwater analyses. **Table 3** provides a summary of quality assurance samples, holding times and analysis for each media.

4. Quality Assurance Objectives

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 (MDL), reporting limit (RL), 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.

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, groundwater, and soil vapor from the former MGP operations, compared to New York State Standards, Criteria and Guidance values, 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 and the Field Sampling Plan (FSP) included in Appendix I of the Interim Site Management Plan.

The data quality indicators are presented in subsections 4.1 through 4.6. Procedures to assess the data quality indicators are given below in Section 13.

Table 4 and **Table 5** provide the RLs, MDLs and the DQO's for soil and groundwater samples. The DQO's for soil samples for this project include minimum RLs specified within the 2005 NYSDEC ASP as well as unrestricted use criteria listed in Title 6 of the Compilation of the Rules and Regulations of the State of New York Part 375 (6 NYCRR Part 375). The DQO's for groundwater samples for this project include minimum RLs specified within the 2005 NYSDEC ASP as well as Class GA groundwater criteria listed in the Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWGS) and Guidance Values and Groundwater Effluent Limitations dated June 1998 and associated errata and addendums.

Tables 6 and **Table 7** provide the precision and accuracy DQO's for soil and water samples.

4.1 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. The MDL is determined from analysis of a sample in a given matrix-type containing the analyte.

Practical Quantitation Limit: The practical quantitation limit (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.

Tables 4 and **Table 5** provide the reporting limits and the DQO's for soil and groundwater samples.

4.2 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 (e.g., sample liners, drilling shoe, or stainless–steel 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 located in **Attachment A**.

4.3 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 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 13.2. The resulting information will be used to assess sampling and analytical variability. Duplicate samples are described below in subsection 5.1.5. **Table 3** summarizes the number of duplicates per media sampled.

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 below in subsection 5.1.5. **Table 3** summarizes the number of duplicates per media sampled.

4.4 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.

4.5 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 is dependent upon the proper design of the sampling program and will be satisfied by ensuring that any future work plans and the current OM&M plan 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.

4.6 Comparability

Comparability is a qualitative parameter that expresses the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that any future work plan as well as the current OM&M plan is followed and that proper sampling techniques are used. Maximization of comparability with previous data sets is expected because the sampling design and field protocols are consistent with those previously used.

Comparability is dependent on the use of recognized EPA 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., milligrams per kilogram (mg/kg)]); for liquids (weight/unit volume [i.e., micrograms per liter (µg/L)]); for air (weight/unit volume [i.e., micrograms per cubic meter ($\mu g/m^3$)]);
- Use common chemical name with corresponding chemical abstract system (Chemical Abstracts Service [CAS]) code; and
- Report all data for soils on a dry-weight basis.

5. Sampling Plan

Environmental sampling will include soil, groundwater, and waste characterization sampling. Direct push drilling (Geoprobe®) will be the preferred method for obtaining subsurface soil samples. Groundwater samples will be collected utilizing low-flow sampling methods, peristaltic pumps, bailers, whale pumps, or bladder pumps. 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 will be described in future work plans. Sampling methods and procedures are presented in the FSP

5.1 Sample Type, Location, and Frequency

5.1.1 Subsurface Soil Samples

If subsurface soil samples are required, field conditions at the time of sampling will determine the appropriate method. Possible methods include Geoprobe®, hollow-stem auger, or other appropriate drilling methods. The depth, location and number of soil borings will be specified in a job specific Work Plan. Soil samples will be collected and submitted for laboratory analysis in general accordance with the job specific Work Plan and FSP. A summary of typical subsurface soil sample naming analysis is provided on **Table 1**.

5.1.2 Groundwater samples

The current monitoring well network will be gauged and sampled in accordance with the OM&M Plan. If additional monitoring wells are needed, specifications will be outlined in a job specific Work Plan. Groundwater samples will be collected and submitted for laboratory analysis in general accordance with the SMP, OM&M Plan, and/or the job specific Work Plan. Water quality parameters including temperature, pH, turbidity, salinity, dissolved oxygen (DO) oxidation reduction potential (ORP), and specific conductance, will be collected prior to laboratory analysis. A summary of groundwater samples and analysis depicted provided on **Table 2**.

5.1.3 Soil Vapor and Indoor/Ambient Air Sampling

Analytical samples will be collected in general accordance with the *New York State Department of Health's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York"* and KeySpan's *"Draft Standard Operating Procedure- Soil Vapor Intrusion for MGP Sites in New York.* Analytical samples will be collected in certified clean SUMMA canisters and submitted for laboratory analysis in general accordance with the Site Management Plan or future Work Plan. Soil vapor and indoor/ambient air samples are not planned for the Site at this time.

5.1.4 Investigation-Derived Waste Sample Collection

Waste classification sampling will be conducted for any future soil 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 (i.e. drums) 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 at a rate and for parameters that are required by the National Grid-approved disposal facility.

5.1.5 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 3**.

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 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 containing samples submitted for VOC analysis.

Field Duplicate Samples, also referred to 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 with the compounds of concern. 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 investigative samples per matrix for organic and inorganic parameters. MS/MSDs will not be completed for waste characterization sampling activities.

Refer to **Table 3** for a summary of QC sample preservation and container requirements.

5.2 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 EPA’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 EPA specifications. The containers will be pre-preserved, where appropriate. Sample preservation and containerization details are outlined in **Table 3**.

5.3 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;
- The drilling equipment will be decontaminated in general accordance with methods described in the FSP; and

- 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.

6. Documentation and COC

6.1 Sample Collection Documentation

6.1.1 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. 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. When necessary, logbooks will be supported by daily activity reports.

6.1.2 COC Records

Sample custody is discussed in detail below in subsection 6.2. COC records are initiated by the samplers in the field. The field portion of the custody documentation should include:

- The project name;
- The project number;
- Signature(s) of sampler (s) responsible for sample custody;
- Sample Name/ID number;
- Date and time of collection;
- Whether the sample is grab or composite;
- Names of individuals involved in sampling;
- Required analytical methods; and
- 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 6.2.1 of this Plan. Sample receipt and log-in procedures at the laboratory are described below in subsection 6.2.2 of this Plan.

6.1.3 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
SOIL SAMPLES Boring -ID (SAMPLE DEPTH-FEET) GCSB-01 (10-15) **GROUNDWATER SAMPLES** Monitoring Well-ID GCMW-01 Temporary Groundwater Monitoring Point-ID (SAMPLE DEPTH-FEET) GCGP-01 (10-14) **SOIL SAMPLES** Surface Soil-ID (SAMPLE DEPTH-FEET) GCSS-01 (0-0.5) **SOIL VAPOR SAMPLES** Soil vapor-ID (SAMPLE DEPTH-FEET) SV-01 **INDOOR AIR SAMPLES** Indoor Air-ID (SAMPLE DEPTH-FEET) TBD **OUTDOOR AIR SAMPLES** Indoor Air-ID (SAMPLE DEPTH-FEET) TBD	**FIELD BLANKS** SAMPLE-ID – [DATE] GCSS-FB-080113 GCGP-FB-080113 GCMW-FB-080113 GCGW-FB-080113 **MATRIX SPIKE/DUP** SAMPLE [ID] [DEPTH] [EITHER MS OR MSD] GCSS-01 (10-15) MS/MSD GCGP-01 (10-15) MS/MSD GCMW-01 (10-15) MS/MSD GCGW-01 (10-15) MS/MSD **TRIP BLANKS** SAMPLE- ID [DATE] GC-TB-080113 **BLIND DUPLICATES** SAMPLE -ID[XX][DATE] GCSS-XX-080113 GCGP-XX-080113 GCMW-XX-080113 GCGW-XX-080113 SV-XX-080113

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.

6.1.4 Sample Handling

Samples will be handled in general accordance with the FSP.

6.2 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. Custody is one of several factors that are necessary for the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the two major requirements for admissibility: relevance and authenticity. Sample custody is addressed in three parts: field sample collection, laboratory analysis, and final evidence 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; and
- The item is in a designated and identified secure area.

6.2.1 Field Custody Procedures

Samples will be collected following the sampling procedures indicated in the FSP. A summary of samples and collection methods are provided above in Section 5 of this QAPP. Documentation of sample collection is described above in subsection 6.1. 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 naming system is presented above in subsection 6.1.3;
- Sample labels will be completed for each sample using waterproof ink;
- 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 provided to the data manager 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; and
- 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.

6.2.2 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; and
- 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; and
- The completed COC, air bills, and any additional documentation will be placed in the project file.

7. Calibration Procedure

7.1 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, at a minimum. If concentrations of VOCs are encountered above the reference gas standard, the soil screening photoionization detector (PIDs) may be calibrated or re-checked against the reference gas standard. 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 may be used during sampling activities.

Subsurface Soil Sampling Activities:

- RAE Systems MultiRAE Plus equipped with VOC (10.6 electron volt [eV] lamp); lower explosive limit (LEL), percent oxygen, hydrogen sulfide, and hydrogen cyanide, or equivalent;
- RAE Systems MiniRAE 2000 (PID) with 10.6 eV lamp or equivalent;
- Drager Chip Measurement System (CMS) and compound specific chips (including benzene, hydrogen sulfide, hydrogen cyanide, etc.) or equivalent;
- MIE Personal DataRam (pDR) 1200 with cyclone and pump (particulate monitor) or equivalent;
- MSA LC Pump or SKC 224-PCXR4 (air pump for dust monitoring) or equivalent; and/or
- BIOS DryCal DC-Lite Primary Flow Meter Model ML (air pump calibration) or equivalent.

Groundwater Sampling Activities:

- Horiba U22 or equivalent.

7.2 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.

The laboratory quality plan for PACE is located in **Attachment A**.
The Alpha Woods Hole Labs Quality Systems Manual is located in **Attachment B.**

8. Sample Preparation and Procedures

Analytical samples will be collected in general accordance with the FSP and as specified in a job specific Work Plan. **Table 1 and Table 2** provide sample collection matrices for soil, groundwater and soil vapor and ambient air. Analytical samples will be collected into laboratory-preserved sample containers and will be preserved as indicated in **Table 3**.

9. 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 primary goal in this project. Complete data packages suitable for data validation to support the generation of a Data Usability Summary Report (DUSR) according to NYSDEC requirements will be provided by the analytical laboratory. Complete data packages suitable for data validation to support the generation of a Data Usability Summary Report (DUSR) according to NYSDEC requirements will be provided by the project data validator Ms. Elissa M. McDonagh. Data Management will be performed under the direction of Jaimie Wargo Senior Technician – Data Management.

9.1 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.

9.2 Analytical Data Validation

GEI 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 (January 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, January 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 3 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.

Laboratory deliverables will consist of an original hard copy data package that is in general accordance with NYSDEC ASP Category B data deliverable requirements for data packages that require validation. Data validation is required for:

- 20-percent of OM&M soil vapor and groundwater samples;
- 100-percent of samples from an indoor air sampling event; or
- As specified in a job specific Work Plan.

The laboratory will provide a data package that is in general accordance with NYSDEC ASP Category A data deliverable requirements for data packages that do not require validation.

Data validation will be completed by the consultants’ data validators or qualified contracted personnel. Data validation frequency for analytical samples collected outside of OM&M activities will be specified in a job specific Work Plan. 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 between the laboratory’s RL and the MDL; these results will be qualified as estimated (J) by the laboratory. The laboratory may be required to report tentatively identified compounds (TICs) for the VOC and SVOC analyses; this will be requested by GEI 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 EPA National Functional Guidelines. This report will be in a format consistent with NYSDEC's DUSR.

9.3 Analytical Data Deliverable

Laboratory deliverables will consist of an original hard copy data package that is in general accordance with NYSDEC ASP Category B data deliverable requirements when validation is requested. The laboratory will provide a deliverable in accordance with NYSDEC ASP Category A data deliverable when validation is not required.

10. Internal Quality Control

Laboratory and field quality internal control checks will be used to ensure the data quality objectives are achieved. At a minimum, this will include:

- Matrix spike and/or matrix spike duplicate samples
- Matrix duplicate analyses
- 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

Field quality control samples will include:

- Equipment blanks as outlined in **Table 3**
- Field duplicate samples as outlined in **Table 3**
- Trip blanks as outlined in **Table 3**
- MS/MSDs as outlined in **Table 3**

11. 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.

12. Preventative Maintenance

Preventative maintenance will be performed on field equipment in accordance with the manufacturer’s recommendations. Preventative maintenance to field equipment will be provided by equipment vendors U.S Environmental Rental Corporation, Pine Environmental Services, or other selected vendors.

Laboratory equipment calibration and maintenance procedures are specified in PACE’s laboratory quality manual located in **Attachment A**.

Laboratory equipment calibration and maintenance procedures are specified in Alpha Woods Hole Labs Quality Systems Manual located in **Attachment B.**

13. 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.

13.1 Detection Limits

13.1.1 Method Detection Limit

The MDL is defined as follows for all measurements:

MDL = (t[n-1,1-a=0.99]) x (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.

13.1.2 *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.

13.2 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.

13.3 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:

$$\text{Bias} = pH_m - pH_t$$

where: pH_m = measured pH
pH_t = the true pH of the standard reference sample

13.4 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.

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. It is anticipated that 95-percent of the data will be complete. Data validation criteria discussed in Section 10 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.

13.5 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 job specific Work Plan.

13.6 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.

14. 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 and the 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 or defined by other means in the Work Plan and FSP. 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.

14.1 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 Work Plan), 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 QAO will approve the corrective measure. The Field Team Leader and Project 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

Corrective action in the laboratory will be completed in accordance with the quality assurance procedures located in **Attachment A** and/or **Attachment B**. 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.

Tables

Table 1
Soil and Sediment Field Sampling Matrix
Glen Cove Former MGP Site
Glen Cove, New York

Sample I.D.	TYPICAL SOIL & SEDIMENT BORING SAMPLE SELECTION RATIONALE: 1. Shallow soil/sediment within observed impacts (0 to 5' bgs). 2. Subsurface soil/sediment within heaviest observed impacts below 5 feet (if present). 3. Subsurface soil/sediment below deepest observed visual impacts. 4. Refer to job specific Work Plan for specific sampling details. IF NO IMPACTS ARE OBSERVED IN BORING: 1. 30, 60, and 90 ft bgs.								Analysis			
	Sample Number								VOCs (EPA Method 8260B)	TAL Metals (EPA Method 6000/7000)	TBD	TBD
	Number Samples Proposed	Number Samples Collected	Date Collected	0 to 5' bgs	Heaviest Impacted Zone below 5 feet (if Present)	Water Table Interface	Subsurface soil/sediment below deepest observed visual impacts	Completion depth of boring				
Subsurface Soil												
BS-XX	TBD								X	X		

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
TAL - Target Analyte List
TBD - To Be Determined
NA - Not Applicable
BGS - Below Ground Surface
1) Samples will be collected in accordance with the job specific Work Plan and the Field Sampling Plan
2) Samples will be analyzed in accordance with the job specific Work Plan and the Field Sampling Plan

Table 2
Groundwater Field Sampling Matrix
Glen Cove Former MGP Site
Glen Cove, New York

		SAMPLE SELECTION RATIONALE: 1. Groundwater Sample locations and depth intervals will be specified within a job specific Work Plan				**Water Quality Measurements**							**Analysis**										
		Sample Number			**Sample Zone**																		
Sample I.D.	**Sample Location**	**Number Samples Proposed**	**Number Samples Collected**	**Date Collected**	**Water Table**	**pH**	**Specific Conductance**	**Temperature**	**Oxidation Reduction Potential (ORP)**	**Turbidity**	**Salinity**	**Dissolved Oxygen**	**SCDOH VOCs (EPA Method 8260B)**	**chemical oxygen demand (COD)**	**biological oxygen demand (BOD)**	**Nitrate/Nitrite (EPA Method 353.3)**	**SO4**	**TAL Metals (EPA Method 6000/7000)**	**H2**	**CH4**	**Fe2+**	**total organic carbon (TOC)**	**dehalococcoides and dehalococcoides ethenogenes**
Monitoring Well Sample Locations																							
OUXMW-XX	TBD					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Notes:

VOCs - Volatile Organic Compounds
TAL - Target Analyte List
TBD - To Be Determined
BGS - Below Ground Surface
1) Samples will be collected in accordance with the job-specific Work Plan and the Field Sampling Plan
2) Samples will be analyzed in accordance with the job-specific Work Plan and the Field Sampling Plan
* = HPC will be sampled for on an annual basis.

Table 3
Analytical Methods/Quality Assurance Summary Table
Glen Cove Former MGP Site
Glen Cove, New York

Media	Number of Primary Samples	QA/QC Samples				Total Number of Samples	Analytical Parameters	Method	Preservative	Holding Time	Container
		TB	FB[1]	DUP	MS/MSD						
Subsurface Soil	TBD	1/Cooler	1/20	1/20	1/20	TBD	VOCs	8260B	Cool to 4°C	5 days unpreserved, 12 days preserved	Wide mouth 2-oz. VOA, clear glass jar
	TBD	1/Cooler	1/20	1/20	1/20	TBD	TAL Metals	6010B/7471B	Cool to 4°C	28 days to analysis for mercury; 6 months to analysis for other metals	Wide mouth 8-oz. clear glass jar
Ground Water	TBD	1/Cooler	1/20	1/20	1/20	TBD	VOCs	8260B	pH<2 with HCl, Cool to 4°C	5 days unpreserved, 12 days preserved	(2) 40 mL VOA vials w/HCL
	TBD	1/Cooler	1/20	1/20	1/20	TBD	Sulfate	375.2	Cool to 4°C	26 days	(1) 250 mL Polyethylene container / (1) 1000 mL Polyethylene container w/NaOH + Zn Acetate
	TBD	1/Cooler	1/20	1/20	1/20	TBD	Nitrogen	351.2	Cool to 4°C	26 days	(1) 250 mL amber glass w/H2SO4
	TBD	1/Cooler	1/20	1/20	1/20	TBD	Nitrate/Nitrite	353.3	Cool to 4°C	24 hours	(1) 250 mL Polyethylene container
	TBD	1/Cooler	1/20	1/20	1/20	TBD	Ammonia	350.1	Cool to 4°C	26 days	(1) 250 mL amber glass w/H2SO4
	TBD	1/Cooler	1/20	1/20	1/20	TBD	TAL Metals	6010B/7470A		28 days to analysis for mercury; 6 months to analysis for other metals	(1) 500 mL Polyethylene container w/HNO3

Notes:

[1]: Soil field blanks will include bottles listed in groundwater section of the table.

Waste Characterization disposal sample analysis will meet the requirements of the selected disposal facility.

VOCs - volatile organic compounds
PAH - polycyclic aromatic hydrocarbons
°C- Degrees Celsius
L - Liter
oz. - ounce
mL - Milliliter
HNO3 - Nitric acid
NaOH - Sodium Hydroxide
HCl - Hydrochloric Acid
NA - Not Applicable

Table 4
Chemical Parameters, Reporting Limits and Data Quality Objectives for Soil Samples
Glen Cove Former MGP Site
Glen Cove, New York

CAS Number	Analyte	DQO's		H2M Labs[2]	
		ASP 2005	Unrestricted Use[1]		
		CRQL (ug/mg)	SCO (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Volatile Organic Compounds Method 8260 B (mg/kg)					
67-64-1	Acetone	10	0.05	0.01	0.00033
107-13-1	Acrylonitrile	100	NE	0.1	
71-43-2	Benzene	10	0.06	0.01	0.00097
74-97-5	Bromochloromethane	10	NE	0.01	
75-27-4	Bromodichloromethane	10	NE	0.01	0.00074
75-25-2	Bromoform	10	NE	0.01	0.00067
74-83-9	Bromomethane	10	NE	0.01	0.0015
78-93-3	2-Butanone (MEK)	10	0.12	0.01	0.00091
75-15-0	Carbon disulfide	10	100*	0.01	0.00089
56-23-5	Carbon tetrachloride	10	0.76	0.01	0.0019
108-90-7	Chlorobenzene	10	1.1	0.01	0.0015
75-00-3	Chloroethane	10	NE	0.01	0.0013
110-75-8	2-Chloroethylvinylether	10	NE	0.01	
67-66-3	Chloroform	10	0.37	0.01	0.00065
74-87-3	Chloromethane	10	NE	0.01	0.0014
124-48-1	Dibromochloromethane	10	NE	0.01	0.00059
96-12-8	1,2-Dibromo-3-chloropropane	100	NE	0.1	
106-93-4	1,2-Dibromoethane (EDB)	10	NE	0.01	0.0007
95-50-1	1,2-Dichlorobenzene	10	1.1	0.01	0.002
541-73-1	1,3-Dichlorobenzene	10	2.4	0.01	0.0021
106-46-7	1,4-Dichlorobenzene	10	1.8	0.01	0.0023
110-57-6	trans-1,4-dichloro-2-butene	100	NE	0.1	
75-34-3	1,1-Dichloroethane	10	0.27	0.01	0.00061
107-06-2	1,2-Dichloroethane	10	0.02	0.01	0.00063
75-35-4	1,1-Dichloroethene	10	0.33	0.01	0.0011
156-59-2	cis-1,2-Dichloroethene	10	0.25	0.01	0.00062
156-60-5	trans-1,2-Dichloroethene	10	0.19	0.01	0.00061
75-09-2	Methylene chloride	10	0.05	0.01	0.00047
78-87-5	1,2-Dichloropropane	10	NE	0.01	0.00093
10061-01-5	cis-1,3-Dichloropropene	10	NE	0.01	0.00075
10061-02-6	trans-1,3-Dichloropropene	10	NE	0.01	0.00048
100-41-4	Ethylbenzene	10	1	0.01	0.0018
591-78-6	Methyl Butyl Ketone (2-Hexanone)	10	NE	0.01	0.00048
74-88-4	Iodomethane	10	NE	0.01	
108-10-1	4-Methyl-2-pentanone (MIBK)	10	NE	0.01	0.0009
100-42-5	Styrene	10	NE	0.01	0.0016
79-34-5	1,1,2,2-Tetrachloroethane	10	35*	0.01	0.00097
630-20-6	1,1,1,2-Tetrachloroethane	10	NE	0.01	
127-18-4	Tetrachloroethene	10	1.3	0.01	0.0015
108-88-3	Toluene	10	0.7	0.01	0.0018
71-55-6	1,1,1-Trichloroethane	10	0.68	0.01	0.0014
79-00-5	1,1,2-Trichloroethane	10	NE	0.01	0.00091
79-01-6	Trichloroethene	10	0.47	0.01	0.0013
75-69-4	Trichlorofluoromethane (FREON 11)	10	NE	0.01	0.002
96-18-4	1,2,3-Trichloropropane	10	80*	0.01	
108-05-4	Vinyl acetate	10	NE	0.01	0.00072
75-01-4	Vinyl chloride	10	0.02	0.01	0.0013
108383/106423	m,p-Xylene	NA	NE	0.01	0.003
95-47-6	o-Xylene	NA	NE	0.01	0.0018
1330-20-7	Total Xylene	10	0.26	NA	NA
107-05-1	Allyl chloride (3-Chloropropene)	10	NE	0.01	0.00033
75-71-8	Dichlorodifluoromethane (FREON 12)	10	NE	0.01	0.0015
98-82-8	Isopropyl benzene (Cumene)	10	NE	0.01	0.002
91-20-3	Naphthalene	10	12	0.01	0.0017
103-65-1	n-Propylbenzene (Propylbenzene)	10	3.9	0.01	0.0024
120-82-1	1,2,4-Trichlorobenzene	10	NE	0.01	0.0017
95-63-6	1,2,4-Trimethylbenzene	10	3.6	0.01	0.0018
108678/622968	1,3,5-Trimethylbenzene/P-ethyltoluene	10	8.4	0.01	0.0018
106-99-0	1,3-Butadiene	NE	NE	0.01	0.00106
123-91-1	1,4-Dioxane	NE	0.1	**0.5**	0.0313
540-84-1	2,2,4-Trimethylpentane (iso-Octane)	NE	NE	0.01	0.00041
67-63-0	2-Propanol (Isopropyl alcohol)	NE	NE	0.5	0.0249
75-07-0	Acetaldehyde	NE	NE	0.01	0.00091
25168-05-2	Chlorotoluene	NE	NE	0.01	0.00072
110-82-7	Cyclohexane	NE	NE	0.01	0.00028
64-17-5	Ethanol (Ethyl Alcohol)	NE	NE	0.5	0.0563
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NE	100*	0.01	0.00078
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	NE	NE	0.01	0.00041

Table 4
Chemical Parameters, Reporting Limits and Data Quality Objectives for Soil Samples
Glen Cove Former MGP Site
Glen Cove, New York

CAS Number	Analyte	DQO's		H2M Labs[2]	
		ASP 2005	Unrestricted Use[1]		
		CRQL (ug/mg)	SCO (mg/kg)	RL (mg/kg)	MDL (mg/kg)
142-82-5	n-Heptane (Heptane)	NE	NE	0.01	0.006
110-54-3	n-Hexane (Hexane)	NE	NE	0.01	0.0006
1634-04-4	Methyl tert-butyl ether (MTBE)	NE	0.93	0.01	0.00058
109-99-9	Tetrahydrofuran	NE	NE	0.01	0.00072
Semivolatile Organic Compounds (mg/kg) via Method 8270 C					
83-32-9	Acenaphthene	330	20	0.33	0.016
208-96-8	Acenaphthylene	330	100	0.33	0.023
120-12-7	Anthracene	330	100	0.33	0.021
56-55-3	Benz[a]anthracene	330	1	0.33	0.02
205-99-2	Benzo[b]fluoranthene	330	1	0.33	0.044
207-08-9	Benzo[k]fluoranthene	330	0.8	0.33	0.05
191-24-2	Benzo[g,h,i]perylene	330	100	0.33	0.011
50-32-8	Benzo[a]pyrene	330	1	0.33	0.053
100-51-6	Benzyl alcohol	330	NE	0.33	
85-68-7	Butyl benzyl phthalate	330	100*	0.33	0.037
111-91-1	Bis(2-chloroethoxy)methane	330	NE	0.33	0.0018
111-44-4	Bis(2-chloroethyl)ether	330	NE	0.33	0.029
117-81-7	Bis(2-ethylhexyl)phthalate	330	50*	0.33	0.013
101-55-3	4-Bromophenyl phenyl ether	330	NE	0.33	0.019
106-47-8	4-Chloroaniline	330	200*	0.33	0.034
59-50-7	4-Chloro-3-methylphenol	330	NE	0.33	0.037
91-58-7	2-Chloronaphthalene	330	NE	0.33	0.024
95-57-8	2-Chlorophenol	330	400*	0.33	0.015
7005-72-3	4-Chlorophenyl phenyl ether	330	NE	0.33	0.019
218-01-9	Chrysene	330	1	0.33	0.018
53-70-3	Dibenz[a,h]anthracene	330	0.33	0.33	0.058
132-64-9	Dibenzofuran	330	7	0.33	0.022
84-74-2	Di-n-butyl phthalate	330	100*	0.33	0.054
95-50-1	1,2-Dichlorobenzene	330	1.1	0.33	0.017
541-73-1	1,3-Dichlorobenzene	330	2.4	0.33	0.018
106-46-7	1,4-Dichlorobenzene	330	1.8	0.33	0.016
91-94-1	3,3-Dichlorobenzidine	660	NE	0.33	0.027
120-83-2	2,4-Dichlorophenol	330	2*	0.33	0.018
84-66-2	Diethyl phthalate	330	100*	0.33	0.028
51-28-5	2,4-Dinitrophenol	800	200*	0.8	0.064
131-11-3	Dimethyl phthalate	330	100*	0.33	0.022
534-52-1	4,6-Dinitro-2-methylphenol	800	NE	0.8	0.05
105-67-9	2,4-Dimethylphenol	330	NE	0.33	0.032
121-14-2	2,4-Dinitrotoluene	330	NE	0.33	0.025
606-20-2	2,6-Dinitrotoluene	330	NE	0.33	0.028
117-84-0	Di-n-octyl phthalate	330	100*	0.33	0.057
206-44-0	Fluoranthene	330	100	0.33	0.03
86-73-7	Fluorene	330	30	0.33	0.016
118-74-1	Hexachlorobenzene	330	0.33	0.33	0.022
87-68-3	Hexachlorobutadiene	330	NE	0.33	0.022
77-47-4	Hexachlorocyclopentadiene	330	NE	0.33	0.034
67-72-1	Hexachloroethane	330	NE	0.33	0.022
193-39-5	Indeno[1,2,3-cd]pyrene	330	0.5	0.33	0.05
78-59-1	Isophorone	330	100*	0.33	0.017
91-57-6	2-Methylnaphthalene	330	NE	0.33	0.025
95-48-7	2-Methylphenol (o-Cresol)	330	0.33	0.33	0.026
106-44-5	4-Methylphenol (p-Cresol)	330	0.33	0.33	0.059
91-20-3	Naphthalene	330	12	0.33	0.025
88-74-4	2-Nitroaniline	800	NE	0.8	0.023
99-09-2	3-Nitroaniline	800	NE	0.8	0.018
100-01-6	4-Nitroaniline	800	NE	0.8	0.023
98-95-3	Nitrobenzene	330	3.7*	0.33	0.02
88-75-5	2-Nitrophenol	330	NE	0.33	0.02
100-02-7	4-Nitrophenol	800	NE	0.8	0.045
62-75-9	N-Nitrosodimethylamine	330	NE	0.33	
86-30-6	N-Nitrosodiphenylamine	330	NE	0.33	0.037
621-64-7	N-Nitrosodi-n-propylamine	330	NE	0.33	0.025
52438-91-2	2,2-oxybis[1-Chloropropane]	330	NE	0.33	0.022
87-86-5	Pentachlorophenol	800	0.8	0.8	0.037
85-01-8	Phenanthrene	330	100	0.33	0.02
108-95-2	Phenol	330	0.33	0.33	0.015
129-00-0	Pyrene	330	100	0.33	0.029
120-82-1	1,2,4-Trichlorobenzene	330	NE	0.33	0.026
95-95-4	2,4,5-Trichlorophenol	330	NE	0.33	0.03

Table 4
Chemical Parameters, Reporting Limits and Data Quality Objectives for Soil Samples
Glen Cove Former MGP Site
Glen Cove, New York

CAS Number	Analyte	DQO's		H2M Labs[2]	
		ASP 2005	Unrestricted Use[1]		
		CRQL (ug/mg)	SCO (mg/kg)	RL (mg/kg)	MDL (mg/kg)
88-06-2	2,4,6-Trichlorophenol	330	NE	0.33	0.025
86-74-8	Carbazole	330	NE	0.33	0.019

Notes:

mg/kg - milligrams per kilogram
RL - Reporting Limits
MDL - Method Detection Limit
DQO - Data Quality Objectives
1 - DQOs are based on 6 NYCRR Part 375 Unrestricted Use Soil Clean-up Objectives
2 - RLs and MDLs are based on H2M Labs Inc.'s Reporting Limits and Method Detection limits as of October 2010.
* - Guidance came from SSCO's listed in the NYSDEC DRAFT Soil Cleanup Guidance (November 4, 2009)
Bolding - RL does not meet the DQO
Shading - MDL does not meet the DQO

Table 5
Chemical Parameters, Reporting Limits and Data Quality Objectives for Groundwater Samples
Glen Cove Former MGP Site
Glen Cove, New York

CAS Number	Analyte	DQO's		PACE Labs[2]	
		ASP 2005	NY AWQS GA[1]		
		CRQL (ug/L)	H(WS) (ug/L)	RL (ug/L)	MDL (ug/L)
Volatile Organic Compounds Method 8260 B (ug/L)					
67-64-1	Acetone	5	50*	1	0.31
107-13-1	Acrylonitrile	10	5	1	0.14
71-43-2	Benzene	1	1	1	0.15
74-97-5	Bromochloromethane	1	5	1	0.19
75-27-4	Bromodichloromethane	1	50*	1	0.12
75-25-2	Bromoform	1	50*	1	0.19
74-83-9	Bromomethane	1	5	1	0.35
78-93-3	2-Butanone (MEK)	5	50*	1	0.72
75-15-0	Carbon disulfide	1	60*	1	0.22
56-23-5	Carbon tetrachloride	1	5	1	0.26
108-90-7	Chlorobenzene	1	5	1	0.19
75-00-3	Chloroethane	1	5	1	0.21
110-75-8	2-Chloroethylvinylether	1	NE	1	0.27
67-66-3	Chloroform	1	7	1	0.065
74-87-3	Chloromethane	1	5	1	0.23
124-48-1	Dibromochloromethane	1	50*	1	0.16
96-12-8	1,2-Dibromo-3-chloropropane	1	0.04	**1**	0.24
106-93-4	1,2-Dibromoethane (EDB)	1	0.0006	**1**	0.071
95-50-1	1,2-Dichlorobenzene	1	3	1	0.35
541-73-1	1,3-Dichlorobenzene	1	3	1	0.56
106-46-7	1,4-Dichlorobenzene	1	3	1	0.51
110-57-6	trans-1,4-dichloro-2-butene	1	5	1	0.19
75-34-3	1,1-Dichloroethane	1	5	1	0.17
107-06-2	1,2-Dichloroethane	1	NE	1	0.19
75-35-4	1,1-Dichloroethene	1	0.07	**1**	0.088
156-59-2	cis-1,2-Dichloroethene	1	5	1	0.27
156-60-5	trans-1,2-Dichloroethene	1	5	1	0.22
75-09-2	Methylene chloride	2	5	1	0.23
78-87-5	1,2-Dichloropropane	1	1	1	0.043
10061-01-5	cis-1,3-Dichloropropene	1	0.4	**1**	0.058
10061-02-6	trans-1,3-Dichloropropene	1	0.4	**1**	0.062
100-41-4	Ethylbenzene	1	5	1	0.4
591-78-6	Methyl Butyl Ketone (2-Hexanone)	5	50*	1	0.18
74-88-4	Iodomethane	1	5	1	0.109
108-10-1	4-Methyl-2-pentanone (MIBK)	5	NE	1	0.092
100-42-5	Styrene	1	5	1	0.35
79-34-5	1,1,2,2-Tetrachloroethane	1	5	1	0.12
630-20-6	1,1,1,2-Tetrachloroethane	1	5	1	0.068
127-18-4	Tetrachloroethene	1	5	1	0.48
108-88-3	Toluene	1	5	1	0.18
71-55-6	1,1,1-Trichloroethane	1	5	1	0.17
79-00-5	1,1,2-Trichloroethane	1	1	1	0.16
79-01-6	Trichloroethene	1	5	1	0.26
75-69-4	Trichlorofluoromethane (FREON 11)	1	5	1	0.16
96-18-4	1,2,3-Trichloropropane	1	0.04	**1**	0.26
108-05-4	Vinyl acetate	1	NE	1	0.11
75-01-4	Vinyl chloride	1	2	1	0.14
108383/106423	m,p-Xylene	NA	5	1	0.78
95-47-6	o-Xylene	NA	5	1	0.36
1330-20-7	Total Xylene	1	5	1	NA
107-05-1	Allyl chloride (3-Chloropropene)	10	5	1	0.059
75-71-8	Dichlorodifluoromethane (FREON 12)	1	5	1	0.32
98-82-8	Isopropyl benzene (Cumene)	1	5	1	0.73
91-20-3	Naphthalene	1	10**	1	0.95
103-65-1	n-Propylbenzene (Propylbenzene)	1	5	1	0.73
120-82-1	1,2,4-Trichlorobenzene	1	5	1	0.61
95-63-6	1,2,4-Trimethylbenzene	1	5	1	0.17
108678/622968	1,3,5-Trimethylbenzene/P-ethyltoluene	1	NE	1	1.1
106-99-0	1,3-Butadiene	NE	NE	1	0.14
123-91-1	1,4-Dioxane	NE	NE	100	25
540-84-1	2,2,4-Trimethylpentane (iso-Octane)	NE	NE	1	0.97
67-63-0	2-Propanol (Isopropyl alcohol)	NE	NE	100	27
75-07-0	Acetaldehyde	NE	8*	1	3.8
25168-05-2	Chlorotoluene	NE	5	1	1.4
110-82-7	Cyclohexane	NE	NE	1	0.48
64-17-5	Ethanol (Ethyl Alcohol)	NE	NE	100	26
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NE	5	1	0.095
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	NE	NE	1	0.71

Table 5
Chemical Parameters, Reporting Limits and Data Quality Objectives for Groundwater Samples
Glen Cove Former MGP Site
Glen Cove, New York

CAS Number	Analyte	DQO's		PACE Labs[2]	
		ASP 2005	NY AWQS GA[1]		
		CRQL (ug/L)	H(WS) (ug/L)	RL (ug/L)	MDL (ug/L)
142-82-5	n-Heptane (Heptane)	NE	NE	1	6
110-54-3	n-Hexane (Hexane)	NE	NE	1	1.3
1634-04-4	Methyl tert-butyl ether (MTBE)	NE	10*	1	0.16
109-99-9	Tetrahydrofuran	NE	50*	1	0.15
Semivolatile Organic Compounds (ug/kg) via Method 8270 C					
83-32-9	Acenaphthene	10	20**	10	1.2
208-96-8	Acenaphthylene	10	NE	10	1
120-12-7	Anthracene	10	50*	10	1.1
56-55-3	Benz[a]anthracene	10	0.002*	**10**	1.2
205-99-2	Benzo[b]fluoranthene	10	0.002*	**10**	0.94
207-08-9	Benzo[k]fluoranthene	10	0.002*	**10**	1.3
191-24-2	Benzo[g,h,i]perylene	10	NE	10	1.4
50-32-8	Benzo[a]pyrene	10	ND	**10**	0.76
100-51-6	Benzyl alcohol	10	NE	10	0.202
85-68-7	Butyl benzyl phthalate	10	50*	10	1.2
111-91-1	Bis(2-chloroethoxy)methane	10	5	**10**	1.5
111-44-4	Bis(2-chloroethyl)ether	10	1	**10**	0.82
117-81-7	Bis(2-ethylhexyl)phthalate	10	5	**10**	0.83
101-55-3	4-Bromophenyl phenyl ether	10	NE	10	1.1
106-47-8	4-Chloroaniline	10	5	**10**	1.6
59-50-7	4-Chloro-3-methylphenol	10	NE	10	0.83
91-58-7	2-Chloronaphthalene	10	10**	10	1.3
95-57-8	2-Chlorophenol	10	NE	10	1.1
7005-72-3	4-Chlorophenyl phenyl ether	10	NE	10	0.94
218-01-9	Chrysene	10	0.002*	**10**	1.1
53-70-3	Dibenz[a,h]anthracene	10	NE	10	0.54
132-64-9	Dibenzofuran	10	NE	10	1
84-74-2	Di-n-butyl phthalate	10	50	10	0.91
95-50-1	1,2-Dichlorobenzene	10	3	**10**	1.5
541-73-1	1,3-Dichlorobenzene	10	3	**10**	1.4
106-46-7	1,4-Dichlorobenzene	10	3	**10**	1.5
91-94-1	3,3-Dichlorobenzidine	20	5	**20**	2.2
120-83-2	2,4-Dichlorophenol	10	5	**10**	0.84
84-66-2	Diethyl phthalate	10	50*	10	1.1
51-28-5	2,4-Dinitrophenol	25	10*	**25**	0.95
131-11-3	Dimethyl phthalate	10	50*	10	1.1
534-52-1	4,6-Dinitro-2-methylphenol	25	NE	25	0.89
105-67-9	2,4-Dimethylphenol	10	50*	10	1
121-14-2	2,4-Dinitrotoluene	10	5	**10**	0.99
606-20-2	2,6-Dinitrotoluene	10	5	**10**	0.98
117-84-0	Di-n-octyl phthalate	10	50*	10	0.93
206-44-0	Fluoranthene	10	50*	10	1.2
86-73-7	Fluorene	10	50*	10	1.3
118-74-1	Hexachlorobenzene	10	0.04	**10**	1.3
87-68-3	Hexachlorobutadiene	10	0.5	**10**	1.6
77-47-4	Hexachlorocyclopentadiene	10	5	**10**	1
67-72-1	Hexachloroethane	10	5	**10**	1.5
193-39-5	Indeno[1,2,3-cd]pyrene	10	0.002*	**10**	0.78
78-59-1	Isophorone	10	50*	10	0.84
91-57-6	2-Methylnaphthalene	10	NE	10	1.5
95-48-7	2-Methylphenol (o-Cresol)	10	1**	**10**	0.72
106-44-5	4-Methylphenol (p-Cresol)	10	1**	**10**	0.92
91-20-3	Naphthalene	10	10**	**10**	1.1
88-74-4	2-Nitroaniline	25	5	**25**	0.8
99-09-2	3-Nitroaniline	25	5	**25**	1.2
100-01-6	4-Nitroaniline	25	5	**25**	1.2
98-95-3	Nitrobenzene	10	0.4	**10**	1.1
88-75-5	2-Nitrophenol	10	NE	10	1.1
100-02-7	4-Nitrophenol	25	NE	25	0.36
62-75-9	N-Nitrosodimethylamine	10	NE	10	0.157
86-30-6	N-Nitrosodiphenylamine	10	50*	10	2.4
621-64-7	N-Nitrosodi-n-propylamine	10	NE	10	0.9
52438-91-2	2,2-oxybis[1-Chloropropane]	10	NE	10	0.71
87-86-5	Pentachlorophenol	25	1**	**25**	0.86
85-01-8	Phenanthrene	10	50*	10	1.1
108-95-2	Phenol	10	1**	**10**	0.61
129-00-0	Pyrene	10	50*	10	1.4
120-82-1	1,2,4-Trichlorobenzene	10	5	**10**	1.8
95-95-4	2,4,5-Trichlorophenol	10	NE	**25**	0.79

Table 5
Chemical Parameters, Reporting Limits and Data Quality Objectives for Groundwater Samples
Glen Cove Former MGP Site
Glen Cove, New York

CAS Number	Analyte	DQO's		PACE Labs[2]	
		ASP 2005	NY AWQS GA[1]		
		CRQL (ug/L)	H(WS) (ug/L)	RL (ug/L)	MDL (ug/L)
88-06-2	2,4,6-Trichlorophenol	10	NE	10	1.3
86-74-8	Carbazole	10	NE	10	1.1
Inorganic Analytes (ug/L)					
7429-90-5	Aluminum	NE	NE	0.2	8
7440-36-0	Antimony	60	3	0.06	2.9
7440-38-2	Arsenic	10	25	0.01	2.5
7440-39-3	Barium	200	1000	0.2	2.5
7440-41-7	Beryllium	5	3*	,005	0.2
7440-43-9	Cadmium	5	5	0.003	0.3
7440-70-2	Calcium	NE	NE	0.037	7.8
7440-47-3	Chromium (sum of Cr III and Cr IV)	10	50	0.01	2.3
7440-48-4	Cobalt	50	NE	0.05	1.4
7440-50-8	Copper	25	200	0.025	0.6
7439-89-6	Iron	NE	300	0.1	16.5
7439-92-1	Lead	5	25	0.005	1.3
7439-95-4	Magnesium	NE	35000*	1	7.6
7439-96-5	Manganese	NE	300	0.015	0.4
7439-97-6	Mercury	0.2	0.7	0.2	0.1
7440-02-0	Nickel	40	100	0.04	1.5
7440-09-7	Potassium	NE	NE	5	10.2
7782-49-2	Selenium	5	10	0.01	2.8
7440-22-4	Silver	10	50	0.01	0.3
7440-23-5	Sodium	NE	20000	5	115.9
7440-28-0	Thallium	10	0.5*	0.01	**3**
7440-62-2	Vanadium	50	NE	0.05	1.1
7440-66-6	Zinc	20	2000*	0.02	2.4
Wet Chemistry (ug/L)					
NA	Biological Oxygen Demand			2000	1640
NA	Chemical Oxygen Demand			200	7200
14797-55-8	Nitrate			500	3
14797-65-0	Nitrite			500	1
14808-79-8	Sulfate			5000	409
18496-25-8	Sulfide			1000	470
7440-44-0	Total Organic Carbon			1000	210
74-82-8	Methane			1	0.248

Notes:

ug/L - milligrams per Liter
RL - Reporting Limit
MDL - Method Detection Limit
DQO - Data Quality Objectives
1 - DQOs are based on TOGS Ambient Water Quality Standards and Guidance Values and Groundwater
2 - RLs are based on PACE (formerly H2M) Lab's Reporting Limits as of August 2014 and MDLs are based on H2M Labs Inc.'s Method Detection limits as of January 2012.
* - Guidance Value
** - NY AWQS are for the GA water class designated as type Health (Water Source) [H(WS)]. If the H(WS) designation was not available, the Aesthetic [E] type is used shown.
Bolding - RL does not meet the DQO
Shading - MDL does not meet the DQO

Table 6
Quality Control Limits Precision and Accuracy for Soil and Sediment Samples
Glen Cove Former MGP Site
Glen Cove, New York

Analytical	Analytical Method	MS/MSD Compound	MS/MSD % Recovery			LCS % Recovery		Surrogate	Surrogate % Recovery	
			Low	High	RPD	Low	High		Low	High
VOCs	8260B	1,1-Dichloroethene	61	145	14	61	145	1,2-Dichloroethane-d4	33	145
		Benzene	76	127	11	76	127	4-Bromofluorobenzene	60	148
		Chlorobenzene	75	130	13	75	130	Toluene-d8	60	132
		Toluene	76	125	13	76	125			
		Trichloroethene	71	120	14	71	120			
Metals	6010B	Metals excluding Hg	75[(a)]	125	20[(b)]	Varies	Varies	NA		
	7470A	Mercury	75[(a)]	125	20[(b)]	NA		NA		

Notes:

(a) - Matrix spike only

(b) - Laboratory duplicate RPD

NA - Not Applicable

VOCs - volatile organic compounds

SVOCs - semivolatile organic compounds

TPH - total petroleum hydrocarbons

RPD - Relative Percent Difference

Table 7
Quality Control Limits Precision and Accuracy for Groundwater Samples
Glen Cove Former MGP Site
Glen Cove, New York

Analytical	**Analytical Method**	**MS/MSD Compound**	**MS/MSD % Recovery**			**LCS % Recovery**		**Surrogate**	**Surrogate % Recovery**	
			Low	High	RPD	Low	High		Low	High
VOCs	8260B	1,1-Dichloroethene	61	145	14	61	145	1,2-Dichloroethane-d4	56	140
		Benzene	76	127	11	76	127	4-Bromofluorobenzene	79	145
		Chlorobenzene	75	130	13	75	130	Toluene-d8	75	166
		Toluene	76	125	13	76	125			
		Trichloroethene	71	120	14	71	120			
Metals	6010B	Metals excluding Hg	75(a)	125	20(b)	80	120	NA		
	7470A	Mercury	75(a)	125	20(b)	NA		NA		
Wet Chemistry	353.3	Nitrite	75(a)	125	20(b)	80	120	NA		
	353.3	Nitrate	75(a)	125	20(b)	90	110	NA		
	375.2	Sulfate	75(a)	125	20(b)	80	120	NA		
	SM4500-P E	Total Phosphorus	75(a)	125	20(b)	80	120	NA		
	351.2	Total Kjeldahl Nitrogen	75(a)	125	20(b)	80	120	NA		
	SM4500-NH3 H	Ammonia	75(a)	125	20(b)	80	120	NA		
	SM4500-NC	Total Nitrogen	NA					NA		
	SM5210B	Biological Oxygen Demand	NA	NA	NA	84.5	115.5	NA		
	410.4	Chemical Oxygen Demand	75(a)	125	20(b)	80	120	NA		
	SM5310B	Total Organic Carbon	75(a)	125	20(b)	80	120	NA		
		Hydrogen	75(a)	125	20(b)	80	120	NA		
	ASTM Method D3872-86	Ferrous Iron	75(a)	125	20(b)	80	120	NA		
	RSK-175	Methane (dissolved gases)	41	156	40	41	156	Propene	40	176

Notes:

(a) Matrix spike only
(b) Laboratory duplicate RPD
NA - Not Applicable
VOCs - volatile organic compounds
SVOCs - semivolatile organic compounds

Attachment A

Pace Analytical Long Island Laboratory Quality Manual (electronic only)

Pace Analytical®
Long Island Laboratory

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QUALITY ASSURANCE

QUALITY CONTROL MANUAL

This document has been read and approved by:

Joann M. Slavin
General Manager

Date 2/14/14

Nicole R Crespi

Nicole R. Crespi
Quality Assurance Manager

Date 2/14/14

This is COPY#______ distributed on __________ by __________and is ______CONTROLLED or __X___UNCONTROLLED

Table of Contents

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Revision History

Revision Number	Revision Date	Revisions made
09	02/19/09	Add signature page, effective date. Combine document into one revision. Streamline information into tables. Added continued acceptance provision. Added the appendix. Removed floor plan, instrument listing, vendor listing, approved methods, resumes, org chart to the Appendix.
10	6/14/09	Moved approval signatures to cover page. Added NYELAP to section 1.1.2. Add logbooks to table 3.0. Define temporary and archival storage. Change table 6.0 name to Bacti Reagent Grade (laboratory pure) Water. Added more details to Data Integrity procedures.
11	7/8/11	Updated Personnel. Added reference to document ADMIN001 *Plan for Going Out of Business or Transfer of Ownership* and reference to document ADMIN002 for Computers and Programs. Hardcopy of lab reports not retained, only electronic. Retain PW lead and copper records for 12 years. Master list of documents using an excel spreadsheet. Data packages burned to CD semi-annually. Ursual Middel approved lab report signatory. James Bidas approved for pesticide package review. Refrigerators 0-6.0°C. Freezers recommended -5 to -15 °C. ICV meet CCV criteria. LOD must be lower than LOQ. Updated bottle and preservation tables. Added details to housekeeping measures. Consumable storage in area of use. Control of waste room by special process supervisor or designee. QC limits generally not updated if confirmed to maintain consistency. Added policy on stress reduction and quality of work. T.O.C. updated to reflect changes. Updated Appendix.
12	8/2/11	Table 3- 12 years retention for all. 20.1.7-20.1.8 chlorine checks for DW organics. 20.1.9 and Table8&9 -Bacteria acceptance 1-inch headspace and procedure for over filled samples. 20.1.14 and Table 9 -NW unpreserved metals – wait 24 hrs after preservation for analysis. pH 3 for 531.1 in Table 8, also added RSK to Tables 8&9. Added reference #38.
13	6/27/12	Updated to address requirements of the DoD.
14	10/13/12	Added Thomas Powell. Sec 8.4-8.4 NELAC checklist used to specify records for data review. 8.10 "QA" in LIMS means data has been reviewed and validated as correct. Table 4 record min/max temp. for weekend as backup Added DoD methods and instruments to Appendix. 18.7 added reference to current LOD/LOQ.23.0 updated water

		supply units.27.2.1.1 get COA at purchase276.3.1if no exp. date, use 10yrs.27.10.1 record date put in service on COA. 30.10ms/msd spike. 33.1.7.1.1 review date on SOP cover35.2.9 determine time frame for CA.
15	7/5/13	JMS as Lab Director. Added to Purchasing of Services and Supplies- approved vendors. Electronic maintenance records in the LIMS. SOP retention. PT reporting on pt provider report forms and results posted to website. DOC procedure for parameters where LFBs don't apply, store electronically. Section on LIMS, EDDs & Test Reports. Updated T.O.C.
16	2/10/14	Lab name change. Changes to Personnel, organizational structure, job description, training. Removed references to DoD. T.O.C. updated to reflect changes. Updated Appendix and removed resumes.

1.0 Quality Policy Statement

Pace Analytical Services, Inc. has established systems, policies, programs, and procedures in order to assure the quality of the test results of the laboratory. Laboratory personnel are committed to exceptional professional and ethical practices and to the quality of its environmental testing in servicing its clients.

1.1 Quality System Policies and Objectives

- 1.1.1 The overall quality system objectives are documented in the quality policy statement and are issued under authority of Joann Slavin, Lab Director.
- 1.1.2 The laboratories standard of service is intended to meet or exceed the requirements of the NY ELAP, National Environmental Laboratory Accreditation Program (NELAC/TNI) and the USEPA Contract Laboratory Program.. All staff will be committed to being in compliance with these standards.
- 1.1.3 The QAM is supported by a larger collection of Standard Operating Procedures (SOPs) and documents for all programs in the laboratory.
- 1.1.4 All laboratory personnel concerned with environmental testing activities within the laboratory will familiarize themselves with the laboratories system policies and objectives.
- 1.1.5 The QA Manager will maintain evidence on file that demonstrates that each employee has read, understood, and is using the latest version of the laboratory's in-house quality documentation, which relates to his/her job responsibilities.
- 1.1.6 Opportunities for improvement of operations and processes are identified by managers on a continual basis from ongoing feedback on operations and through management reviews.
- 1.1.7 Inputs for improvement opportunities may be obtained from the following sources:
  - 1.1.7.1 Customer satisfaction surveys
  - 1.1.7.2 Employees
  - 1.1.7.3 Internal and external audits of the management system

1.1.7.4 Records of service nonconformities

1.1.8 Opportunities for improvement from daily feedback are evaluated by the General or Quality Manager(s) and are implemented through the preventative and correction action procedures.

1.1.9 Opportunities for improvement from analysis of longer-term data and trends are evaluated and implemented through the management review process.

2.0 Organization and Management Structure

2.1 Organization Chart (See the Appendix, Section 1.0)

2.2 The PASI Corporate Office centralizes company-wide accounting, business development, financial management, human resources development, information systems, marketing, quality, safety, and training activities. PASI's Director of Quality is responsible for assisting the development, implementation and monitoring of quality programs for the company. See the Appendix, Section 1.0 for the Corporate Organizational structure.

2.3 Each laboratory within the system operates with local management, but all labs share common systems and receive support from the Corporate Office.

2.4 A Senior General Manager (SGM) oversees all laboratories and service centers in their assigned region. Each laboratory or facility in the company is then directly managed by an SGM, a General Manager (GM), an Assistant General Manager (AGM), or an Operations Manager (OM). Quality Managers (QM) or Senior Quality Managers (SQM) at each laboratory report directly to the highest level of local laboratory management, however named, that routinely makes day-to-day decisions regarding that facility's operations. The QMs and SQMs will also receive guidance and direction from the corporate Director of Quality.

2.5 The SGM, GM, AGM or OM, or equivalent functionality in each facility, bears the responsibility for the laboratory operations and serves as the final, local authority in all matters. In the absence of these managers, the SQM/QM serves as the next in command. He or she assumes the responsibilities of the manager, however named, until the manager is available to resume the duties of their position. In the absence of both the manager and the SQM/QM, management responsibility of the laboratory is passed to the Technical Director, provided such a position is identified, and then to the most senior department manager until the return of the lab manager or SQM/QM. The most senior department manager in charge may include the Client Services Manager or the Administrative Business Manager at the discretion of the SGM/GM/AGM/OM.

2.6 A Technical Director who is absent for a period of time exceeding 15 consecutive calendar days shall designate another full-time staff member meeting the qualifications of the technical director to temporarily perform this function. The laboratory SGM/GM/AGM/OM or SQM/QM has the authority to make this designation in the event the existing Technical Director is unable to do so. If this absence exceeds 35 consecutive calendar days, the primary accrediting authority shall be notified in writing.

2.7 The SQM/QM has the responsibility and authority to ensure the Quality System is implemented and followed at all times. In circumstances where a laboratory is not meeting the established level of quality or following the policies set forth in this Quality Assurance Manual, the SQM/QM has the authority to halt laboratory operations should he or she deem such an action necessary. The SQM/QM will immediately communicate the halting of operations to the SGM/GM/AGM/OM and keep them posted on the progress of corrective actions. In the event the SGM/GM/AGM/OM and the SQM/QM are not in agreement as to the need for the suspension, the Chief Operating Officer and Director of Quality will be called in to mediate the situation.

2.8 The technical staff of the laboratory is generally organized into the following functional groups:

- Organic Sample Preparation
- Wet Chemistry Analysis
- Metals Analysis
- Volatiles Analysis
- Semi-volatiles Analysis
- Radiochemical Analysis
- Microbiology

2.9 Appropriate support groups are present in each laboratory. The actual organizational structure for PASI – Long Island is listed in the Appendix, Section 1.0. In the event of a change in SGM/GM/AGM/OM, SQM/QM, or any Technical Director, the laboratory will notify its accrediting authorities and revise the organizational chart in the Quality Assurance Manual (QAM) within 30 days. For changes in Department Managers or Supervisors or other laboratory personnel, no notifications will be sent to the laboratory's accrediting agencies; changes to the organizational chart will be updated during or prior to the annual review process. Changes or additions in these key personnel will also be noted by additional signatures on the QAM, as applicable. In any case, the QAM will remain in effect until the next scheduled revision.

3.0 Laboratory Job Descriptions

3.1 Senior General Manager

- Oversees all functions of all the operations within their designated region;
- Oversees the development of local GMs/AGMs/OMs within their designated region;
- Oversees and authorizes personnel development including staffing, recruiting, training, workload scheduling, employee retention and motivation;
- Oversees the preparation of budgets and staffing plans for all operations within their designated region;
- Ensures compliance with all applicable state, federal and industry standards;
- Works closely with Regional Sales Management.

3.2 General Manager

- Oversees all functions of their assigned operations;
- Authorizes personnel development including staffing, recruiting, training, workload scheduling, employee retention and motivation;
- Prepares budgets and staffing plans;
- Monitors the Quality Systems of the laboratory and advises the SQM/QM accordingly;

- Ensures compliance with all applicable state, federal and industry standards.

3.3 Senior Quality Manager

- Provides quality oversight for multiple laboratories where there is not a local quality manager or for labs where there are multiple and separately distinct quality systems in the same facility;
- Responsible for implementing, maintaining and improving the quality system while functioning independently from laboratory operations. Reports directly to the highest level of local laboratory facility management, however named, that routinely makes day-to-day decisions regarding laboratory operations, but receives direction and assistance from the Corporate Director of Quality;
- Ensures that communication takes place at all levels within the lab regarding the effectiveness of the quality system and that all personnel understand their contributions to the quality system;
- Monitors Quality Assurance/Quality Control activities to ensure that the laboratory achieves established standards of quality (as set forth by the Corporate Quality office). The Quality Manager is responsible for reporting the lab's level of compliance to these standards to the Corporate Director of Quality on a quarterly basis;
- Maintains records of quality control data and evaluates data quality;
- Conducts periodic internal audits and coordinates external audits performed by regulatory agencies or customer representatives;
- Reviews and maintains records of proficiency testing results;
- Maintains the document control system;
- Assists in development and implementation of appropriate training programs;
- Provides technical support to laboratory operations regarding methodology and project QA/QC requirements;
- Maintains certifications from federal and state programs;

- Ensures compliance with all applicable state, federal and industry standards;
- Maintains the laboratory training records, including those in the Learning Management System (LMS), and evaluates the effectiveness of training;
- Monitors correctives actions;
- Maintains the currency of the Quality Manual.

3.4 Quality Manager

- Responsible for implementing, maintaining and improving the quality system while functioning independently from laboratory operations.
- Reports directly to the highest level of local laboratory facility management, however named, that routinely makes day-to-day decisions regarding laboratory operations, but receives direction and assistance from the Corporate Director of Quality. They may also report to a Senior Quality Manager within the same facility;
- Ensures that communication takes place at all levels within the lab regarding the effectiveness of the quality system and that all personnel understand their contributions to the quality system;
- Monitors Quality Assurance/Quality Control activities to ensure that the laboratory achieves established standards of quality (as set forth by the Corporate Quality office). The Quality Manager is responsible for reporting the lab’s level of compliance to these standards to the Corporate Director of Quality on a quarterly basis;
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- Ensures compliance with all applicable state, federal and industry standards;
- Maintains the laboratory training records, including those in the Learning Management System (LMS), and evaluates the effectiveness of training;
- Monitors correctives actions;
- Maintains the currency of the Quality Manual.

3.5 Quality Analyst

- Assists the SQM/QM in the performance of quality department responsibilities as delegated by the SQM/QM;
- Assists in monitoring QA/QC data;
- Assists in internal audits;
- Assists in maintaining training records;
- Assists in maintaining the document control system;

3.6 Administrative Business Manager

- Responsible for financial and administrative management for the entire facility;
- Provides input relative to tactical and strategic planning activities;
- Organizes financial information so that the facility is run as a fiscally responsible business;
- Works with staff to confirm that appropriate processes are put in place to track revenues and expenses;
- Provide ongoing financial information to the SGM/GM/AGM/OM and the management team so they can better manage their business;
- Utilizes historical information and trends to accurately forecast future financial positions;
- Works with management to ensure that key measurements are put in place to be utilized for trend analysis—this will include personnel and supply expenses, and key revenue and expense ratios;

- Works with SGM/GM/AGM/OM to develop accurate budget and track on an ongoing basis;
- Works with entire management team to submit complete and justified capital budget requests and to balance requests across departments;
- Works with project management team and administrative support staff to ensure timely and accurate invoicing.

3.7 Client Services Manager

- Oversees all the day to day activities of the Client Services Department which includes Project Management and, possibly, Sample Control;
- Responsible for staffing and all personnel management related issues for Client Services;
- Serves as the primary senior consultant to customers on all project related issues such as set up, initiation, execution and closure;
- Performs or is capable of performing all duties listed for that of Project Manager.

3.8 Project Manager

- Coordinates daily activities including taking orders, reporting data and analytical results;
- Serves as the primary technical and administrative liaison between customers and PASI;
- Communicates with operations staff to update and set project priorities;
- Provides results to customers in the requested format (verbal, hardcopy, electronic, etc.);
- Works with customers, laboratory staff, and other appropriate PASI staff to develop project statements of work or resolve problems of data quality;
- Responsible for solicitation of work requests, assisting with proposal preparation and project initiation with customers and maintain customer records;
- Mediation of project schedules and scope of work through communication with internal resources and management;

- Responsible for preparing routine and non-routine quotations, reports and technical papers;
- Interfaces between customers and management personnel to achieve customer satisfaction;
- Manages large-scale complex projects;
- Supervises less experienced project managers and provide guidance on management of complex projects;
- Arranges bottle orders and shipment of sample kits to customers;
- Verifies login information relative to project requirements and field sample Chains-of-Custody.

3.9 Project Coordinator

- Responsible for preparation of project specifications and provides technical/project support;
- Coordinates project needs with other department sections and assists with proposal preparation;
- Prepares routine proposals and invoicing;
- Responsible for scanning, copying, assembling and binding final reports;
- Other duties include filing, maintaining forms, process outgoing mail, maintaining training database and data entry.

3.10 Department Manager/Supervisor

- Oversees the day-to-day production and quality activities of their assigned department;
- Ensures that quality assurance and quality control criteria of analytical methods and projects are satisfied;
- Assesses data quality and takes corrective action when necessary;
- Approves and releases technical and data management reports;
- Ensures compliance with all applicable state, federal and industry standards.

3.11 Group Supervisor/Leader

- Trains analysts in laboratory operations and analytical procedures;
- Organizes and schedules analyses with consideration for sample holding times;
- Implements data verification procedures by assigning data verification duties to appropriate personnel;
- Evaluates instrument performance and supervises instrument calibration and preventive maintenance programs;
- Reports non-compliance situations to laboratory management including the SQM/QM.

3.12 Laboratory Analyst

- Performs detailed preparation and analysis of samples according to published methods and laboratory procedures;
- Processes and evaluates raw data obtained from preparation and analysis steps;
- Generates final results from raw data, performing primary review against method criteria;
- Monitors quality control data associated with analysis and preparation. This includes examination of raw data such as chromatograms as well as an inspection of reduced data, calibration curves, and laboratory notebooks;
- Reports data in LIMS, authorizing for release pending secondary approval;
- Conducts routine and non-routine maintenance of equipment as required;
- Performs or is capable of performing all duties associated with that of Laboratory Technician.

3.13 Laboratory Technician

- Prepares standards and reagents according to published methods or in house procedures;
- Performs preparation and analytical steps for basic laboratory methods;
- Works under the direction of a Laboratory Analyst on complex methodologies;

- Assists Laboratory Analysts on preparation, analytical or data reduction steps for complex methodologies;
- Monitors quality control data as required or directed. This includes examination of raw data such as chromatograms as well as an inspection of reduced data, calibration curves, and laboratory notebooks.

3.14 Sample Management Personnel

- Signs for incoming samples and verifies the data entered on the Chain of custody forms;
- Enters the sample information into the Laboratory Information Management System (LIMS) for tracking and reporting;
- Stages samples according to EPA requirements;
- Assists Project Managers and Coordinators in filling bottle orders and sample shipments.

3.15 Systems Administrator or Systems Manager

- Assists with the creation and maintenance of electronic data deliverables (EDDs);
- Coordinates the installation and use of all hardware, software and operating systems;
- Performs troubleshooting on all aforementioned systems;
- Trains new and existing users on systems and system upgrades;
- Maintains all system security passwords;
- Maintains the electronic backups of all computer systems.

3.16 Safety/Chemical Hygiene Officer

- Maintains the laboratory Chemical Hygiene Plan;
- Plans and implements safety policies and procedures;
- Maintains safety records;
- Organizes and/or performs safety training;
- Performs safety inspections and provides corrective/preventative actions;
- Assists personnel with safety issues.

3.17 Program Director/Hazardous Waste Coordinator (or otherwise named)

- Evaluates waste streams and helps to select appropriate waste transportation and disposal companies;
- Maintains complete records of waste disposal including waste manifests and state reports;
- Assists in training personnel on waste-related issues such as waste handling and storage, waste container labeling, proper satellite accumulation, secondary containment, etc.;
- Conducts a weekly inspection of the waste storage areas of the laboratory.

4.0 Record Retention

4.1 All records are retained as required by regulatory requirements and client contractual agreements. The system shall produce unequivocal, accurate records that document all laboratory activities.

4.2 Instrument raw data is backed up daily to the network.

4.3 The Laboratory Information Management System (LIMs) is maintained in a fireproof room. In addition, a copy of the operating system is stored off-site.

4.4 Electronic files are backed up daily to the network. (Refer to document ADMIN002 for computers and programs.)

4.5 In the case of transfer of ownership or if the lab goes out of business, all records are to be transferred to the new owner or retained by the current Lab Director for the required time period. For a more detailed documented plan for going out of business or transfer of ownership refer to document ADMIN001, *Plan for Going Out of Business or Transfer of Ownership.*

Table 1.0: Temporary Storage (held on-site)

Record	Retention	Hardcopy	Location	Organization
Current Lab Reports	10 year	No	LIMs and Network	Lab Number
Current Data Packages	3-6 months	Yes	QC Department	Alphabetized by month
Standard Operating Procedures	Current Version	Electronic Copy	LIMs and Network	Directories and Sub-directories

Completed Logbooks	1-2 years	Yes	In the lab	Numbered
Accreditation Support Data	3 years	Yes	QA Office	Study number and date
Data Integrity Issues	5 years	Yes	QA Office	Date
Employee File/ Training Records	Current Employees	Yes	QA Office	Alphabetized

Table 2.0: Archival Storage (held off-site)

Record	Retention	Hardcopy	Location	Electronic	Location
Accreditation Support Data	5 years	Yes	QA office	Yes	Computer Directories
Raw Data/ Test Report Data/Lab Reports	12 years	Yes	Off-site storage	Yes	Tape storage/ CDs
Data Integrity Issues	5 years	No	Off-site storage	Yes	Tape storage/ CDs
Method Evaluations	5 years	Yes	QA Office	NO	N/A
Water Quality Tests	12 years	Yes	Off-site Storage	Yes	Tape storage/ CDs
Drinking Water Program	10 years 12 years for lead and copper	Yes	Off-site Storage	Yes	Tape storage/ CDs
Potable and Non-Potable Water Microbiology	5 years	Yes	Off-site Storage	Yes	Tape storage/ CDs
Employee File/ Training Records	10 years	Only original SDGs folder Case files	Off-site storage	NO	NA
CLP Reports	5 years	No	N/A	Yes	Tape Storage/ CDs stored onsite

Record	Retention	Hardcopy	Location	Electronic	Location
SOPs	5 years or per regulatory or client requirements, whichever is greater.	Signature Page only	QA Office	Yes	Server Network
Completed Logbooks	12 years	Yes	Off-site storage	Yes	Tape

5.0 Document Control

5.1 All records, documents and manuals generated by the laboratory will be maintained and controlled through a document control system. The purpose of the document control system is to ensure that only the most recent versions are available to the appropriate personnel, that revisions are timely, and that the document receives the required approvals. This system allows for retrieval of information such as lab reports, raw data as well as control of manuals, documents and Standard Operating Procedures produced.

5.2 The Quality Assurance Manager or designee is responsible for the document control system and maintains a master list of the location of all documents and their current revision by using an excel spreadsheet.

5.3 Document Approval

5.3.1 The Laboratory Director/General Manager and the Quality Assurance Manager approve all newly released documents and revised documents.

5.3.2 The Laboratory Director/ General Manager and the Quality Assurance Manager approve the QAM.

5.3.3 Controlled documents will have an approval signature page and a revision change record.

5.3.4 The central repository for controlled documents is on the local server.

5.4 Revision Control

5.4.1 All documents will contain the following control information:

5.4.1.1 Document Title

5.4.1.2 Revision Date

5.4.1.3 Revision Number

5.4.1.4 Effective Date (date of approval signature)

5.5 Obsolete Documents

5.5.1 The Quality Assurance Manager will maintain one electronic copy of an obsolete standard operating procedure in an archive folder on the server/network.

5.5.2 The original hardcopy signature page from the obsolete standard operating procedure is stored in the QA Office.

5.6 Document Archive

5.6.1 All hardcopy records are legible.

5.6.2 Completed laboratory logbooks are individually numbered.

5.6.3 Final archival is completed by the following:

5.6.3.1 Records are boxed.

5.6.3.2 Each box is labeled with a consecutive number that is generated by an electronic notebook.

5.6.4 The electronic notebook (archival storage) serves as the index for archived items.

5.6.5 Items removed from archive are done using an access log that records the following:

- Date removed
- Requested by
- Box Number
- Item number and description
- Authorized by
- Date returned

5.6.6 All archived data is stored to an off site document storage facility at Central Avenue in Farmingdale, NY.

5.6.7 The storage facility is locked, is free of vermin and is environmentally stable in regard to temperature and humidity and is kept safe from loss.

5.7 Data Package Archive

5.7.1 Data packages are scanned to a file (adobe PDF format) and saved to the local and network drives.

5.7.2 Original chain-of-custody, narratives, and title and chronicle pages are removed and filed in the case file in the QC department.

5.7.3 The PDF files are burned to a CD on a semi-annual basis.

5.7.4 After 3 to 6 months, the paper copy is destroyed.

5.8 Changes to Documents

5.8.1 Changes to documents will be reviewed and approved by the same function that performed the original review.

5.8.2 Where practicable, the altered or new text shall be identified in the document or the appropriate attachments.

5.8.3 Changes to any document will be made so as not to obscure or delete the previous data entry.

5.8.4 All changes will be crossed out and the correct entry made alongside.

5.8.5 Mistakes are not erased, made illegible, or deleted.

5.8.6 All alterations to records are signed or initialed by the person making the correction.

5.8.7 The lab developed error codes will be applied to the correction to explain the change.

5.8.8 Hand amendments of standard operating procedures are only permitted by those personnel authorized to do so.

5.8.9 Hand amendments of standard operating procedures, pending the re-issue of the documents, will be clearly marked, initialed and dated.

5.8.10 The QA Manager, prior to implementation as a new or modified procedure, will approve all hand amendments.

5.9 Laboratory Logbooks

5.9.1 Templates of some logbooks are maintained in the QC department and new books are generated and issued through this department.

5.9.2 In some cases, an electronic run log is generated using the instrument software, printed out, comments written where necessary. Final storage is in a binder.

5.9.3 Logbooks are bound and the pages in all logbooks are numbered sequentially to maintain the integrity of the document.

5.9.4 The books are given a book number and are signed out by the QC department, which maintains a master record of all logbooks.

5.9.5 Upon completion, the logbook binder is labeled with the test, start and completion date, and run number and is then logged back into the electronic notebook for archiving.

5.9.6 Analysts are required to sign initials and date next to all analyses performed.

5.9.7 For GC and GC/MS, the instrument program is to be listed as well as sample ID, amount of sample injected and reason, if any, for re-analysis (under remarks).

5.9.8 For wet chemistry tests, all raw data used in calculations is to be recorded in the logbook.

5.9.9 For sample preparation, all weights and/or exact volume of sample extracted are to be listed as well as type of cleanup performed and date extracted.

5.10 Document Distribution

5.10.1 Only the most recent versions of SOPs and the QAM are available on the document central repository.

5.10.2 The central repository to be used by employees for all current versions of laboratory documents is the server/network.

5.10.3 The Document Control Officer in the QC Department maintains instrument and logbooks and data packages.

5.10.4 A signed statement is on file that demonstrates that each employee has read, understood, and is using the latest version of the laboratory's QAM documentation, which relates to his/her job responsibilities.

5.10.5 When revisions are made to documents such as SOPs and the QAM, affected personnel are notified by the distribution of a new certification signature page along with a summary of the changes. In some cases (as with the QAM when significant revisions are made), a lab employee meeting may take place, where the document is projected on screen to review the changes as a group.

5.10.6 Each analyst must certify by signature that they have read, understand

and agreed to perform the most recent version of the test method, the approved method or standard operating procedure as defined by this document control system.

6.0 Lab Approved Signatures

6.1 The Quality Assurance Manual is approved by the Laboratory Director/ General Manager and the Quality Assurance Manager.

6.2 Lab reports generated by the lab must be approved prior to release to client except if data is stamped “Preliminary Results”.

6.3 The approved signatories are:

6.3.1 General Manager

6.3.2 QA Manager.

6.3.3 Project Managers

6.4 Case narratives, which are part of a data package, list any non-compliances pertaining to the package and require a signature that certifies that the analyses were performed in accordance with the said requirements.

6.4.1 The individual that reviewed the data package signs the narrative.

6.5 Data package reporters sign a form indicating that the data was reported truthfully.

6.5.1 This form is generated for each fraction and is included at the end of each data package fraction.

6.6 In the case where the person requiring a signature for the narrative or chain of custody is not present it is permitted to either sign the persons name followed by your initials or sign your name followed by “for” and the individual’s name.

7.0 Data Reduction and Data Review Procedure

7.1 Laboratory validation of the data begins with the processing of data and continues through data review and reporting of analytical results.

7.2 Data processing can be performed by the analyst who obtained the data or by another analyst.

7.3 Data review starts with an analyst independent of the data acquisition and processing, reviewing (validating) the data to determine if the data processing was performed correctly. The review continues through verifying that the reported analytical results correspond to the data acquired and processed.

7.4 Data review checklists have been developed and are used to specify which records must be included in data review. Checklists are stored on the network in O/QC/Documents and Forms.

7.4.1 There are two general checklists used which specify records to be checked.

7.4.1.1 The records specified in the NELAC Chemistry Checklist for the appropriate method must be included in the review.

7.4.1.2 Package Review Checklists are also used and are submitted in the data package, when required.

7.4.2 In addition to the items specified in the checklists, the complete data report must be checked for

7.4.2.1 Complete and accurate explanations of anomalous results, corrective action, and the use of data qualifiers in the case narrative.

7.4.2.2 Consistency with project-specific measurement quality objectives, if such exists.

7.5 In general, data will be processed by an analyst in one of the following manners:

7.5.1 manual computation of results directly on the data sheet or on calculation pages that are attached to the data sheet

7.5.2 input of raw data for computer processing

7.5.3 direct acquisition and processing of raw data by computer

7.6 If data is manually processed by an analyst, all steps in the computation shall be provided including:

7.6.1 equations used

7.6.2 the source of input parameters such as response factors (RF), dilution factors, calibration constants

7.6.3 if calculations are not performed directly on the data sheet, calculations shall be attached to the data sheets.

7.7 Analysts shall record observations about the sample and/or test conditions that may be pertinent for the reconstruction or interpretation of sample results (i.e., deviations from, additions to or exclusions from the test method, or non-standard conditions)

7.8 Deviations that may have affected the quality of results or that are necessary for the interpretation of the test result shall be included on the test report.

7.9 Analysts enter data into the LIMS where the data is computer processed to apply final calculations if necessary.

7.9.1 In the LIMS, after a final check of results, the analyst validates the data as reviewed (“QA” the data). When validating the data, a record is electronically kept of the analyst who reviewed the data and date and time. This validation step indicates data has been reviewed and data has been validated as correct.

7.10 The samples analyzed shall be evident on the raw data and the input is signed and dated by the analyst.

7.11 If data is directly acquired from instrumentation and imported into the LIMS, the analyst shall verify that the following are correct:

7.11.1 sample numbers

7.11.2 calibration constants and RF

7.11.3 output parameters such as units and numerical values used for reporting limits .

7.12 Where manual integrations are performed, the before and after chromatograms shall be retained. The person performing the manual integration must sign and date each chromatogram and document the rationale for the integration. The use of established codes may be used to document the rationale directly on the chromatogram. This applies to all samples, QC samples and calibration standards.

8.0 LIMS, Electronic Data Deliverables and Test Reports

8.1 LIMS

8.1.1 The lab uses Omega by Khemia Laboratory Information Management System(LIMS). The system is an Access based system. The system was designed to ensure the integrity and security of the sample information. The integrity of the data is ensured throughout input, storage, transmission, and processing. The LIMS administrator maintains a logbook documenting changes to the system and the date implemented to insure version control of the software.

8.1.2 The LIMS system maintains the integrity and the security of the data. The system has limited access. An individual login name and password are used to log on to the system. Passwords are encrypted. A tracking changes feature is part of the LIMS. This allows for computer documentation of changes made to analytical results in the system. This includes the change made, person that made the change.

8.1.3 A logging record is printed for each client grouping of samples received that day and verified by the Project Manager to verify tests selected, pricing and sample information.

8.1.4 The finalized data from the analyses are input into the LIMS system. The instrument's files are converted to a format compatible for import into the Omega LIMS system. Some tests without the capability of electronic output, such as many of the traditional wet chemistry parameters, require manual entry into the system. A series of EXCEL spreadsheets have been setup to aid in the entry of the data. These spreadsheets are then imported directly into the LIMS.

8.1.5 Once the data has been imported, the data is calculated for preparation factors, dilution factors and percent moisture. The analyst importing the files, checks the data for errors. If the data is acceptable, the analyst verifies ("QA Sequence") the data. As a secondary quality check, an automated electronic check system has been designed to run when importing any data into the LIMS. This check system will notify the user of multiple possible situations i.e., spikes/surrogates out of limits, missing data, exceeding calibration range etc. The analyst will need to then certify that the data is correct and may enter related comments. The name of analyst and a date/time stamp is recorded.

8.1.6 Once the data is verified a final report is generated. This data can also be accessed and generated by the Omega CLP reporting modules to provide a full data package.

8.2 Electronic Data Deliverables (EDDs)

8.2.1 EDDs are produced in the QC department. This data is verified by checking for transcription errors prior to releasing the EDD either manually or by using an automated data checker. EDDs are either sent to the client via e-mail, FTP transfer or are transferred onto a disk and mailed with the data package.

8.3 Test Reports

8.3.1 Lab reports are generated by the LIMS system and contain the following information:

8.3.1.1 Title (e.g.,"Laboratory Results");

8.3.1.2 Name and address of the laboratory,

8.3.1.3 Unique identification of the test report (such as work order, lab number and page numbers which are identified as a number of the total report pages (example: 1 of 20).

8.3.1.4 Client name, address, and project name if applicable

8.3.1.5 Client sample ID

8.3.1.6 Sample container analyzed (i.e., container1 of 2)

8.3.1.7 If relevant, specific sample information

8.3.1.8 Date/time of collection, collected by and date /time of receipt

8.3.1.9 Date and time of prep/analysis

8.3.1.10 Test method

8.3.1.11 Results, units, dry or wet weight

8.3.1.12 Analyst initials

8.3.1.13 Electronically produced signature and title of person authorized to release report and date of issue

8.3.1.14 a statement that the results relate only to the samples and analytes requested

8.3.1.15 a statement that the lab is not directly responsible for the integrity of the sample before receipt at the lab and is responsible only for the certified tests requested.

8.3.1.16 statement that the certificate or report shall not be reproduced except in full, without the written approval of the laboratory;

8.3.1.17 statement that the Test results meet the requirements of

NELAC unless otherwise noted.

8.3.1.18 Deviations from the test method that may affect the quality of results (i.e., non-compliant QC, non-standard conditions) and the use of qualifiers and definitions.

8.3.1.19 A statement of the estimated uncertainty of measurement only when required by client

8.3.1.20 When the test report contains results of tests performed by subcontractors, the subcontractor report will be attached and submitted to client. ,

8.3.1.21 Amendments to test reports are identified and include a report reissue date.

9.0 Data Reporting and Authorization Procedures

9.1 Completed data packages are generated in the departments.

9.2 Data reported to the clients in Massachusetts will be reported with the addition of a parameter list indicating the certified parameter list in that state.

9.3 Either the department supervisor, Quality Analyst, Laboratory Manager/Director or QA Manager, reviews all data packages.

9.4 Any deviations or non-compliances are documented in the "case narrative" written by the reviewer and /or noted with the use of data qualifiers and their definitions.

9.5 Any omissions or errors are listed and the data package is rejected and returned to the department for correction.

9.6 After corrections have been made, the reviewer verifies the corrections, the case narrative is revised as necessary, and the case narrative is signed by the reviewer.

9.7 Data shall be reported according to methodological protocols and/or client project-specific requirements, where such exists.

10.0 Personnel Authorized to Review Data Packages

Metals and Metals Inorganic:	Metals Supervisor	Al Badsha
	Wet Chem Supervisor	Christopher Otterberg

	Senior Analyst	Vincent Stancampiano
	Senior Analyst	Michael Miller
	QA Manager	Nicole R. Crespi
	Quality Analyst	Ursula Middel
	Laboratory Director	Joann Slavin
Pesticides:	Quality Analyst	Ursula Middel
	QA Manager	Nicole R. Crespi
	Laboratory Director	Joann Slavin
	Scientist IV	Elizabeth Gustin
	SVOA and Organic Prep Supervisor	James Bidas
	Senior Analyst	Michael Miller
GC/MS:	VOA Supervisor	Glen Bochicchio
	Quality Analyst	Ursula Middel
	QA Manager	Nicole R. Crespi
	Laboratory Director	Joann Slavin
	Senior Analyst	Michael Miller

11.0 Traceability of Measurements

11.1 Measurement Traceability is defined as ensuring that all equipment used for environmental tests, including equipment for subsidiary measurements (e. g. for environmental conditions) having a significant effect on the accuracy or validity of the result of the environmental test or sampling shall be calibrated before being put into service and on a continuing basis.

11.2 Table 4 lists the program and verification of the measuring and testing equipment.

11.3 All measurement and support equipment are maintained in proper working order in accordance with the manufacturer instructions.

11.4 The lab utilizes an outside calibration service to perform its annual calibration of equipment and instruments.

11.5 Records of maintenance activities are kept.

11.6 During annual calibration of equipment, (depending on the severity of the issue) item(s) that are found to be out of tolerance will undergo the following corrective actions (by sectional supervisor and management):

11.6.1 The data will be evaluated for anomalies and out of performance specifications from the last acceptable calibration.

11.6.2 Any analyses that could potentially be impacted will be reviewed to determine possible effects on reported results.

11.6.3 If reported results are affected, data must be recalled, re-reported and qualified.

Table 3: Verification of Measurement and Testing Equipment

Equipment	**Requirement**	**Frequency**	**QC Limits**
Analytical Balances	Calibrated by Integrated Service Solutions	Annually	Certificate of Calibration
Analytical Balances	Balance calibration check using two traceable standard weights that bracket the expected weight	Daily or before each use	± 0.1% or ±0.5 mg, whichever is greater (unless method specific guidance exists)
Top-loading Balances	Calibration by Integrated Service Solutions	Annually	Certificate of Calibration
Top-loading Balances	Calibration check in-house Balance calibration check using two traceable standard weights that bracket the expected weight (micro and soils) using 150g weight	Daily or before each use	± 2% or ± 0.02 g, whichever is greater Must detect 0.1g at 150g load
Traceable standard	Calibrated by National	Every 5 years	Certificate of Calibration

Equipment	**Requirement**	**Frequency**	**QC Limits**
weights	Calibration Services		
pH meter	Calibration with standard buffers of pH 4.0 and 10.0. Slope verified with standard buffer of pH 7.0	Daily or before each use	Slope verification must be ±0.1 pH units to proceed
Conductivity Meter	Calibration check with 0.01, 0.001, and 0.005M KCL solution	Day of use	±20% of the expected value
Conductivity Meter	Cell constant determination using a 0.01M KCl solution	Annually or as needed	±1% of the manufacturer's specifications
Dissolved Oxygen Meter	Calibration of Meter and probe against winkler method	Day of use	
Spectrophotometers	Verify wavelength settings using NIST traceable color standards or their equivalent	Annually	See manufacturers specifications
NIST Thermometers	Calibrated by Integrated Service Solutions	Annually, at all points of interest	Certificate of Calibration
Liquid in Glass Working Thermometers	Calibration verses the NIST.	Before first use and Annually thereafter, at temperature (s) of interest	apply correction factor. Correction factor > 1 °C should be discarded
Digital Thermometers	Must read to 3 significant figures. Calibration verses NIST	Before first use and Annually thereafter, at temperature (s) of interest.	apply correction factor
IR Thermometers	Calibration verses NIST.	Quarterly. Should be checked on day of use at single point.	apply correction factor
Dial Thermometers	Calibration	Quarterly	apply correction factor

Equipment	Requirement	Frequency	QC Limits
	verses NIST.		
Turbidimeters	Initial Calibration with formazin or AMCO-AEPA-1	Annually	Results within manufacturers specifications
Turbidimeters	Checked with a Polymer sphere standard in the range(s) of interest.	Daily or each use	Must fall within the standard control limits.
Refrigerators	Temperature checks	Daily *	0-6.0°C
Freezers	Temperature checks	Daily*	Recommended -5 to -15 °C
BOD Incubators	Temperature checks	Daily*	20°C ±1 °C
Bacteriological Incubators	Temperature Checks monitored on each shelf	Daily*	35°C ±0.5 °C
Ovens	Temperature check	Beginning and end of cycle and/or daily if left on always	Must maintain the target temperature of interest during use.
Autoclaves	Temperature Check	Beginning and end of cycle	Must maintain sterilization temperatures during the sterilization cycle. Cycle must be completed within 45 minutes when a 10-12 minute sterilization period is used.
Autoclaves	Autoclave automatic and mechanical timing device check verses a NIST digital timer.	Quarterly	Within 120 seconds
Autoclaves	Demonstration of sterilization	Biological indicators weekly OR continuous monitoring	Indicators must show sterility or continuous monitoring must indicate correct

Equipment	Requirement	Frequency	QC Limits
			temperature
Bacteriological Water Baths	Temperature check	Daily	Must maintain a temperature of 44.5 °C ±0.2 °C
Volumetric Dispensing Devices	Calibrated at all levels of use	By lot before first use and Quarterly	Calculate %accuracy and %error Mean ± 2% RSD ≤1% (based on 10 replicate measurements)
Syringes	Certified calibrated from the vendor	NA	Store certificates
Class A and B Volumetric Labware	Volume verification	Class B: By lot before first use. Class A and B: Upon evidence of deterioration	Bias: Mean within ± 2% of nominal volume Precision: RSD ≤ 1% of nominal volume (based on 10 replicate measurements)
Non-volumetric labware (Applicable only when used for measuring initial sample volume or final extract/digestate volume)	Volume verification	By lot before first use or upon evidence of deterioration	Bias: Mean within ± 3% of nominal volume Precision: RSD ≤ 3% of stated value (based on 10 replicate measurements)

*Daily meaning 7 days/week. Staff is scheduled for weekend monitoring. Min/max thermometers are in use. In the event that personnel are unable to be at the lab for weekend monitoring, the min/max temperature will be documented.

Table 4.0: Working Thermometers

Equipment	Requirement	QA Limits
Freezer	Dedicated and calibrated. Immersed in liquid.	Graduations no greater than 1°C.
BOD Incubator	Dedicated and calibrated. Immersed in liquid.	Graduations no greater than 0.2 °C
Ovens	Dedicated and calibrated. Immersed in sand.	Graduations no greater than 1.0 °C

Refrigerators	Dedicated and calibrated. Immersed in liquid.	Graduations no greater than 1.0 ºC
Bacteriological Air Bath Incubators	Dedicated and calibrated located on each shelf in the incubator.	Graduations no greater than 0.1 ºC
Bacteriological Water Bath Incubators	Dedicated and calibrated located on each shelf in the incubator.	Graduations no greater than 0.1 ºC

(Digital thermometers, thermocouples, or other similar electronic temperature measuring devices are exempt from the requirement that it be immersed in sand or liquid if the temperature measurement can be taken without altering the environment being measured)

Table 5.0: Reagent Grade (Laboratory pure) Water

Parameter	Frequency	Acceptance Criteria
Conductivity (at 25°C)	Daily or when maintenance is performed	<2 micromhos/cm at 25°C
Free residual chlorine	Monthly or when maintenance is performed	<0.1 mg/L
Standard plate count	Monthly or when maintenance is performed	<500 colonies/mL
Suitability test	Yearly or when maintenance is performed	Ratio between 0.8 to 3.0
Heavy metals	Yearly or when maintenance is performed	< 50 ug/L for each metal collectively <100 ug/L

12.0 Accredited Test Methods

12.1 See the Appendix, Section 3.0

13.0 Contract Review

13.1 Records of request, tender and contract review, including significant changes, are maintained. Records of pertinent discussions with customers relating to the customer's requirements or work during the period of execution of the contract are also maintained.

13.2 Routine Work

13.2.1 For review of routine work and other simple tasks, the date and identification of the person on the chain-of-custody who is responsible for accepting the samples is considered adequate.

13.3 Written Contract Work

13.3.1 Prior to acceptance of new written contract work, the Project Manager thoroughly reviews the requirements of the written contract to ensure that the laboratory has the appropriate facility and resources to successfully complete the project. Criteria considered includes, but it not limited to:

13.3.1.1 Methodology

13.3.1.2 Detection Limits

13.3.1.3 Project specific data reporting requirements, including:

13.3.1.3.1 Conventions for reporting results below the LOQ

13.3.1.3.2 Specifications for the use of data qualifiers

13.3.1.4 Personnel requirements

13.3.1.5 Turn-around-time

13.3.2 At this time, guidance from the various departments and/or QC and Administration are provided. If a project specific quality plan is provided, it is reviewed in the above manner.

13.3.3 After initial review by the Project Manager and subsequent review by departmental personnel, the contract is then reviewed for legal considerations. Any questions or issues may be discussed with an Officer of the Company for approval.

13.4 Questions, modifications, or changes to the contract are then discussed and resolved prior to agreeing to the terms of the contract. An amendment to the contract may be included if needed.

13.5 The mutually agreed upon contract is then signed by an authorized representative of the firm.

14.0 Review of New Work

14.1 To maintain current methodologies and implement new regulations new test methods and procedures are occasionally added to the scope of testing in the laboratory.

14.2 There are varying degrees to the addition of new work. These include:

14.2.1 The addition of an analyte to an existing method.

14.2.2 Complete start-up of an established method.

14.2.3 Analyte requested with no established method.

14.3 Addition of an Analyte to an Existing Method

14.3.1 The analytical method is reviewed to determine if its use is appropriate for the new analyte. The standard is purchased from a commercial vendor and prepared. If the analyte is available from more than one source, a second source may be purchased to verify the calibration standard. The standard is analyzed to determine its elution time in the scan.

14.3.2 A calibration curve is produced to determine linearity. If preparatory steps are required, four replicates of the standard are carried through all phases of the method. The initial start-up procedure is documented.

14.3.3 A MDL or IDL is performed and the detection limit is determined.

14.3.4 An in-house SOP is written and used by the analysts. Demonstration of capability is maintained on file.

14.3.5 If necessary, the appropriate state accreditation is sought for the additional analyte following approved state certification processes.

14.4 Complete Start-Up of an Established Method

14.4.1 The method is obtained and reviewed by the Department Supervisor, Quality Analyst or Manager or senior analyst to determine if new instrumentation or reagents/standards are required by the method.

14.4.2 If the required instrumentation is currently available in the laboratory, the reagents, standards and other supplies are gathered/purchased.

14.4.3 If more than one analyte is quantified in the method, the analytes may be initially analyzed individually to determine elution time.

14.4.4 A second source is purchased to verify the calibration standard.

14.4.5 A calibration curve is produced to determine linearity. If preparatory steps are required, four replicates of the standard are carried through all phases of the method and compared to the established QC of the method. The initial start-up procedure is documented.

14.4.6 A MDL or IDL is performed and the detection limit is determined.

14.4.7 An in-house SOP is written and used by the analysts. Demonstration of capability is maintained on file.

14.4.8 The samples and standards and associated QC samples are carried through the procedure and the QC is compared to the method QC acceptance criteria.

14.4.9 If necessary, the appropriate state accreditation is sought for the additional analyte following approved state certification processes.

14.5 Analyte Requested with No Established Method

14.5.1 The analyte to be analyzed is researched and reviewed to determine the compound classification.

14.5.2 After the compound classification is complete, it is determined if it can be analyzed by an existing method. If not, it is determined if perhaps a modification to an existing method would allow successful determination of the compound.

14.5.3 Different approaches to testing the analyte may be tried, comparing the efficiency of the various approaches. The method that allows for acceptable precision and accuracy is used.

14.5.4 If more than one analyte is quantified in the method, the analytes may be initially analyzed individually to determine elution time.

14.5.5 If the required analytes are available from more than one source, a second source is purchased to verify the calibration standard. A calibration curve is produced to determine linearity.

14.5.6 If preparatory steps are required, four replicates of the standard are carried through all phases of the method and compared to the established QC of the method. The initial start-up procedure is documented.

14.5.7 A MDL or IDL is performed and the detection limit is determined.

14.5.8 An in-house SOP is written and used by the analysts. Demonstration of capability is maintained on file.

14.5.9 The samples and standards and associated QC samples are carried through the procedure and the QC is compared to the method QC acceptance criteria.

14.5.10 If necessary, the appropriate state accreditation is sought for the additional analyte following approved state certification processes.

15.0 Conflict of Interest

15.1 PASI employees must avoid situations that might involve a conflict of interest or could appear questionable to others. The employee must be careful in two general areas:

15.1.1 Participation in activities that conflict or appear to conflict with the employees' PASI responsibilities.

15.1.2 Offering or accepting anything that might influence the recipient or cause another person to believe that the recipient may be influenced to behave or in a different manner than he would normally. This includes bribes, gifts, kickbacks, or illegal payments.

15.2 Employees are not to engage in outside business or economic activity relating to a sale or purchase by the Company. Other problematic activities include service on the Board of Directors of a competing or supplier company, significant ownership in a competing or supplier company, employment for a competing or supplier company, or participation in any outside business during the employee's work hours.

16.0 Confidentiality

16.1 PASI employees must not use or disclose confidential or proprietary information except when in connection with their duties at PASI. This is effective over the course of employment and for an additional period of two years thereafter.

16.2 Confidential or proprietary information, belonging to either PASI and/or its customers, includes but is not limited to test results, trade secrets, research and development matters, procedures, methods, processes and standards, company-specific techniques and equipment, marketing and customer information, inventions, materials composition, etc.

17.0 Subcontracting

17.1 Occasionally, it is necessary to subcontract samples to other approved laboratories if Pace Long Island does not perform an analysis, instruments are down, or there is a current overload of work making meeting holding times questionable.

17.2 No samples are subcontracted to an outside laboratory without prior permission of the client.

17.3 Subcontract labs must possess the appropriate certifications and accreditations for the required work.

17.4 Prior to shipping of subcontract samples, the specific client requirements are reviewed with the laboratory including:

17.4.1 Specific method requirements

17.4.2 Reporting and detection limits

17.4.3 QC requirements

17.4.4 Submission of a project QAPjP SOP, if required.

17.5 Once the requirements are reviewed with the subcontract laboratory, a copy of their state certification is reviewed and maintained on file.

17.6 All subcontract results are generated on the subcontract laboratories report forms and submitted to Pace Long Island.

17.7 Results may be transcribed onto Pace Long Island's lab report with the qualifier that an outside laboratory performed the results. The Pace Long Island laboratory report shows the test subcontracted out and has the notation "see attached".

17.8 Copies of the subcontract process are maintained in individual client files. The information need only be filled out once for an ongoing project.

17.9 Project Management maintains a file with the current laboratory certifications from the laboratories used for subcontracting. These certifications will be updated annually.

17.10 It is the responsibility of the person providing the quote or setting up the project to notify the client that their samples will be subcontracted.

17.11 Any Pace Analytical work sent to other labs within the PASI network is handled as subcontracted work and all final reports are labeled clearly with the name of the laboratory performing the work.

17.12 Any non-TNI work is clearly identified. PASI will not be responsible for analytical data if the subcontract laboratory was designated by the customer.

18.0 MDL/DL, LOD and LOQ

18.1 A detection limit (MDL/DL) is established for each analyte-matrix-method (where appropriate), including surrogates, by the completion of an MDL Study.

18.2 The MDL study is is based on the Method Detection Limit (MDL) procedure outlined in 40 CFR Part 136, Appendix B and is the analysis and statistical evaluation of seven replicates of blanks spiked with the level of the analytes of interest at estimated detection limits, for the purpose of determining the MDL levels. If an MDL study is not performed, the detection limit may be established by use of another scientifically sound procedure.

18.3 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. According to NELAC, the LOD equates with the MDL.

18.3.1 Once a detection limit is established, it is used to determine a Limit of Detection (LOD) for each analyte and matrix as well as for all preparatory and cleanup methods routinely used on samples. For NELAC/TNI, the LOD is the MDL.

18.3.2 The LOD must be < or = to the LOQ (lowest calibration standard).

18.3.3 LODs must be verified annually on instruments where results are to be reported below the LOQ.

18.3.4 LOD verifications must meet the following requirements;

- ♦ The apparent signal to noise ratio at the LOD must be at least three and the results must meet all method requirements for analyte identification (e.g., ion abundance, second-column confirmation, or pattern recognition.) For data systems that do not provide a measure of noise, the signal produced by the verification sample must produce a result that is at least three standard deviations greater than the mean method blank concentrations.

- ♦ If a laboratory uses multiple instruments for a given method the LOD must be verified on each.
- ♦ If the LOD verification fails, then the laboratory must repeat the detection limit determination and LOD verification at a higher concentration or perform and pass two consecutive LOD verifications at a higher concentration and set the LOD at the higher concentration.

18.4 The Limit of Quantitation (LOQ) is the lowest calibration standard.

18.4.1 The LOQ and the highest calibration standard of a multi-level calibration curve establish the quantitation range. For metals analysis with a single-point calibration, the LOQ and the calibration standard establish the quantitation range, which must lie within the linear dynamic range.

18.4.2 The LOQ must be verified annually.

18.4.3 The LOQ is verified with a successful analysis of a QC sample containing the analytes of concern in each quality system matrix at a concentration of 1-2 times the LOQ.

18.5 The analysis of the LOQ is quantitative (while the LOD is qualitative). A successful LOQ verification is one where the recovery of each analyte is within the established test method acceptance criteria or client data quality objectives. In the absence of these criteria, the accuracy should fall within EPA recommended advisory limits of 50-150%.

18.6 Current LODs and LOQs can be found on the Server in O/QC/LOD_LOQ.

19.0 Measurement of Uncertainty

19.1 An estimation of uncertainty for results generated by the laboratory may be provided to the data user upon request. The estimate quantifies the error associated with any given result at a 99% confidence interval. This estimate does not include bias that may be associated with sampling procedures. The laboratory has a procedure in place for making this estimation based on recovery data obtained from the Laboratory Control Samples. The uncertainty is a function of the standard deviation of the recoveries multiplied by the appropriate Student's t Factor at 99% confidence. Additional information pertaining to the estimation of uncertainty may be found in the latest revision of the *Procedure for the Measurement of Uncertainty* SOP. The measurement of uncertainty is provided only upon request by the customer.

20.0 Calibration and/or Verification Test Procedures

20.1 Calibration and/or verification procedures are designed to insure that the data will be of known quality and the results are appropriate for a given regulation or decision.

20.2 Raw data is retained to reconstruct the calibration used to calculate the sample result.

Table 6.0: Calibration and Verification

QC Requirement	Frequency	QC Limits	Correction
Instrument Calibration	Per the requirements of the method	Linear Regression: Correlation coefficient (r^2) >0.995 unless demonstrated that a lower r^2 can produce acceptable data. Average Response Factor: as per method requirements Calibration Factor: as per method requirements	Analysis cannot proceed unless an acceptable calibration is produced unless covered under the exceptionally permitted departures from procedure. All departures are reviewed by section supervisors. Data may be reported if determined acceptable by supervisor and will be documented in the run log.
Calibration Documentation	Each time instrument is calibrated	Labeled with the method used, instrument, date of analysis, analyte concentrations and response factor or calibration factor.	
Initial Calibration Verification (ICV) Second source	Immediately following initial	Unless specified otherwise in the analytical method, the	

QC Requirement	Frequency	QC Limits	Correction
Standard (second source must be from a different vendor except in the case of gas cylinders, where a different lot is acceptable)	calibration	measured value of the analyte must meet the criteria of the continuing calibration verification.	
Mid-point Standard	Daily or as required by analytical method		
Instrument Blank	Daily or as required by the method		
Limit of Quantitation (LOQ) Lowest Concentration Level Reported	Each Initial Calibration and verified annually	The lowest calibration standard is the lowest concentration level reported.	Results reported below this standard are considered estimated and the data are flagged with a qualifier and/or discussed in the case narrative.
Highest Level Concentration	Each Initial Calibration	The highest calibration standard is the highest concentration reported without dilution	Results reported above this standard (unless from a diluted run) are considered estimated and the data flagged with a qualifier and/or discussed in the case narrative.
Method Detection Limit (MDL)	Annually	Determined for all analytes where spiking solutions are available. The MDL must be <LOQ	Results reported down to MDL are qualified as estimated (J).
Limit of Detection (LOD)	Verified annually if results are to be reported below LOQ.	Determined for all analytes where spiking solutions are available. The LOD must be </= LOQ	Results reported between LOQ and LOD/MDL are qualified as estimated (J)

21.0 Procedures for Handling Submitted Samples

Personnel are in the laboratory: Monday to Friday 7am to 11pm

Saturday and Sunday: 9am to 3pm

If deliveries must be made later than 6pm on weekdays, or anytime on weekends, the laboratory must be contacted in advance so that arrangements can be made with our staff to ensure proper receipt of samples.

21.1 External Chain of Custody

21.1.1 Sample tracking is accomplished through the use of chains of custody.

21.1.2 A sample is considered to be in custody if it is:

- In an individual's actual possession;
- In view, after being in physical possession;
- Locked so that no one can tamper with it, after having been in physical custody;
- In a secured area, restricted to authorized personnel only.

21.1.3 All samples are handled under conditions, which avoid contamination, deterioration or damage to samples, and which secure their use for litigation purposes.

21.1.4 The chain of custody (COC) procedure begins with either sample collection or bottle preparation depending on client's needs.

21.1.5 Every sample container received shall be assigned a unique identification number that is entered on the COC.

21.1.5.1 All bottles are identified with the lab ID number and a suffix of A, B, C, D, etc. when samples are fractionated.

21.1.5.2 The total number of bottles received is entered.

21.1.5.3 If the sample is not fractionated, the bottles are all listed as A

21.1.5.4 In all cases, the total quantity of bottles is differentiated by the number of bottles as indicated by the designation "1 of 3, 2 of 3, etc." on the sample labels.

21.1.5.5 The sample container used for analysis is recorded in the LIMS.

21.1.6 The COC includes:

- container type
- preservative type
- number of containers for each sample location (including MS/MSD, trip blank and field blank)
- any distinctive notification

- signature of sampler
- receiver's signature
- date/time of relinquishment.

21.1.7 Upon receipt of the samples by a lab representative, the first "relinquished by/received by" blocks shall be completed on the COC.

21.1.8 The date and time of receipt in the lab is entered on the external COC form.

21.1.9 The shipment is checked for integrity, completeness and the samples are examined for damage.

21.1.9.1 All sample bottles are checked to verify that they are sealed properly, that they have no breakage, air bubbles (volatiles), and proper labeling.

21.1.9.2 Any shortages and damage is noted on the external COC.

21.1.9.3 If any problems occur, the project manager will be notified.

21.1.9.3.1 If the samples aren't in jeopardy of holding time exceedences, they are assigned cold storage before proceeding with sample accession until laboratory-receiving personnel receive instructions.

21.1.9.3.2 If the samples need to be analyzed immediately, the samples will be giving a laboratory number.

21.1.9.3.3 If the samples analyzed need to be re-collected, a new work order with a new number will be generated for the re-collected samples.

21.1.9.4 A sample receipt checklist is prepared in the sample-receiving department to account for any breakage or discrepancy in sample documentation, as compared to the sample shipment

21.1.10 The temperature of the cooler is checked for samples that require storage at <= 6°C.

21.1.10.1 A temperature blank is sent out with the coolers.

21.1.10.2 A 100ml plastic bottle filled with water and labeled Temperature Blank is placed in the cooler during cooler set up.

21.1.10.3 This bottle is read with the IR gun upon receipt in the lab and logged on the COC form.

21.1.10.4 Local samples may not be in transit long enough to be chilled, however there must be evidence that the preservation process has begun, such as receipt on ice.

21.1.10.5 If no temperature blank is present, a clear plastic or glass bottle may be used for the temperature blank.

21.1.10.6 Amber bottles are not to be used to check the temperature nor are vials or bottles wrapped in bubble pack.

21.1.11 A cooler checklist form is completed for samples received after normal business hours or on weekends.

21.1.11.1 The cooler temperature is checked as is the custody seal.

21.1.11.2 The COC is signed and placed back in the cooler and stored in the lab walk-in refrigerator.

21.1.12 Samples that have not been properly stored during transport to the lab will either be rejected and a resample collected or it will be noted in the LIMS, on the non-conformance report and on the final lab report.

21.1.13 A copy of the external COC is returned to the project manager.

21.1.14 The sample custodian places the original in the lab's client file.

21.1.15 The lab project manager will notify the client of non-conformances.

21.2 DC-1 Form Completion

21.2.1 If applicable to the samples received, the USEPA sample login form (Form DC-1) is completed. This form is used to document the receipt and inspection of the samples and coolers.

21.2.2 One original of the DC-1 form is required per cooler.

21.2.3 If the samples in a single cooler must be assigned to more than one Sample Delivery Group (SDG), the original DC-1 accompanies the deliverables for the SDG of the lowest Arabic number and a copy accompanies the other SDG's.

21.2.4 The copies must be stamped "COPY" and the location of the original noted on the copy.

21.2.5 The following information will be required to complete the DC-1 form:

21.2.5.1 Lab Name

21.2.5.2 Log-in data

21.2.5.3 Print and signature of lab personnel who received samples

21.2.5.4 Case number

21.2.5.5 SDG number

21.2.5.6 SAS number

21.2.5.7 Condition of shipping coolers

21.2.5.8 Sign and date air bill

21.2.5.9 Record the presence/absence of custody seals and their condition in item 1 of the form

21.2.5.10 Add pH of cyanide and metals samples as verified upon receipt in the laboratory. Cyanide must be greater than 12.

21.2.5.11 Record the air bill or sticker number in item 6

21.2.5.12 Record condition of bottles and presence or absence of sample tags in items 7 and 8 on the form

21.2.5.13 Review shipping documents and compare information on all documents and complete item 9

21.2.5.14 If there are no problems, sign, date and indicate time on the DC-1 form.

21.2.5.15 Record the sample tag I.D. numbers and assigned lab numbers.

21.2.5.16 Cross reference lab numbers with the SMO.

21.2.5.17 Project coordinator will document communication in the CLP communication logbook

21.2.5.18 Record the fraction and area stored in the sample transfer space and sign and date.

21.3 Internal Chain-of-Custody

21.3.1 The sample custodian assigns laboratory identification numbers to the samples and then transfers the samples to department custodians.

21.3.2 An internal COC form is completed with the project number, date of receipt and listing of samples by number and laboratory identification numbers.

21.3.3 The sample custodian and department custodian sign for transfer with date and time indicated.

21.3.4 The department custodian places samples in secured areas for storage.

21.3.5 The department custodian relinquishes samples to the technicians for sample preparation and/or analysis.

21.3.6 The analysts sign for the samples and extracts/digestates each time the samples exchange hands.

21.3.7 Upon completion of analysis, any remaining original sample matrix containers are returned to the appropriate sample custodian.

21.4 Internal Verification of COC Procedures

21.4.1 The sample custodian gives a copy of the external and internal COCs to the project manager as well as any information received with the sample to the document control section of the QA Department.

21.4.2 All paperwork is reviewed and checked for any transcription errors.

21.4.3 If there are any transcription errors, the sample custodian and any affected departments are contacted.

21.4.4 Verification that corrections were made properly is the responsibility of the laboratory's document control section or QA Department.

21.4.5 The samples are automatically entered into a status spreadsheet and the sample delivery group folder is prepared including all pertinent information.

21.4.6 The folder is labeled with the SDG number and filed.

21.5 Initial Sample Storage

21.5.1 All samples are stored in an area free from secondary contamination. Samples are stored separate from standards and high concentration samples and away from foodstuffs.

21.5.2 When cross contamination is a possibility, samples suspected of containing high concentrations of targeted analytes shall be isolated from other samples. Samples or extracts designated for volatile organic analysis must be segregated from other samples and extracts. Samples suspected of containing high concentrations of volatile organics shall be further isolated from other volatile organic samples.

21.5.2.1 Information is requested from the client of any known high concentration of volatile samples based upon historic information or prescreening in the field. If high concentration levels of samples are suspected, proper procedures to prevent secondary contamination during transport must be taken.

21.5.2.2 High concentration samples are segregated in a separate cooler by field personnel and sample vials or soil jars are transported in sealed zip lock bags with at least 3 ounces of activated carbon. The chain of custody form should be documented with the statement **"suspected high concentration volatile sample".**

21.5.2.3 Upon receipt of samples in the laboratory, accessioning personnel will segregate the samples by opening the cooler in a hood in the metals digestion lab (no organic solvents are utilized in this area). All samples are taken out of the cooler, placed inside the hood and inspected for breakage, leakage etc.

21.5.2.4 The samples will be accessioned into the LIMS system with a note in the LIMS indicating that "the samples are suspected high concentration level volatiles keep separate from other samples"

21.5.3 Volatiles

21.5.3.1 Samples are stored in refrigerators in either the GC/MS or the GC lab (depending on analysis requested) at 4°C (±2°C) and are protected from light from the time of receipt until analysis.

21.5.3.2 The high concentration level volatile water sample vials are stored in the zip lock bags with at least 3 ounces of activated carbon in a sealed container.

21.5.3.2.1 These samples are stored in a separate refrigerator.

21.5.3.2.2 The refrigerator is labeled **High concentration volatile samples only** on the door.

21.5.3.2.3 A storage blank is placed in the refrigerator, if samples are present, for every batch of samples of high concentration volatile organics received and analyzed with each batch. The storage blank is a head space free 40 ml vial filled with deionized water.

21.5.3.2.4 If samples are deemed to be high concentration after analysis, the samples will be removed from the non–high level volatile refrigerator as soon as possible after the concentration level has been determined and placed in the high concentration level refrigerator until the samples are placed in storage or flagged for disposal.

21.5.3.2.5 The concentration level of greater than 2500ppb is utilized in the lab for storage in the high concentration level refrigerator.

21.5.3.2.6 The storage blanks are used to determine if cross contamination may have occurred.

21.5.3.2.6.1 The storage blank is analyzed for the same analyte list of compounds as the samples stored in the refrigerator as well as TICs.

21.5.3.2.6.2 The sample results of the storage blank are evaluated and a form 1 issued with the concentration levels of targeted analytes as well as TICs identified. The results are submitted in the data package.

21.5.3.2.6.3 No subtraction of any blank is to be performed.

♦

21.5.3.2.6.4 If the storage blank is contaminated, the means of sample storage needs to be reevaluated; a nonconformance report prepared and distributed for corrective action and the results shall be reported with appropriate data qualifiers.

21.5.4 BNA, Pesticide/PCB

21.5.4.1 Samples are stored in the Special Process section in refrigerators or the walk-in refrigerator at 4°C (±2°C) and are protected from light upon receipt until extraction and analysis.

21.5.4.2 After analysis, extracts and unused samples are protected from light and stored at 4°C (±2°C).

21.5.4.3 The extracts are stored in the refrigerator between the GC/MS and Special Process sections.

21.5.5 Metals

21.5.5.1 Water samples are stored in a refrigerator in the Metals section.

21.5.5.2 Soil samples are stored in a refrigerator in the metals section and maintained at 4°C (±2°C).

21.5.6 Cyanide

21.5.6.1 Samples are stored in a refrigerator at 4°C (±2°C) in the Wet Chemistry storage area.

21.5.7 All CLP samples are stored in locked refrigerators.

21.6 Final Sample Storage

21.6.1 The time that samples are held after completion of analysis is dependent on the client's requirements.

21.6.2 Some samples are stored for 6 months.

21.6.3 Most samples are stored for 60 days after report generation.

22.0 Sample Preservation, Containers, and Holding Times

A summary of preservation, container and holding times is found in Tables 7.0-9.0

22.1 Sample Preservation

22.1.1 The addition of preservative is verified upon receipt and documented.

22.1.2 The pH of all preserved samples (except volatile samples and oil and grease which are verified in the departments) are verified in the receiving department by the use of pH paper.

22.1.3 A small aliquot of sample is poured over the pH paper.

22.1.4 Do not dip the paper into the sample.

22.1.5 The verification of pH preservation is noted in the LIMS on the Sample Receipt Checklist.

22.1.6 Volatile aqueous samples are checked for proper preservative by the use of pH paper after sample analysis and recorded in the sample logbook.

22.1.7 Chlorine residual checks are performed for samples submitted for organic drinking water analyses using chlorine test strips.

22.1.8 Chlorine residual checks will take place in the departments, except for the methods that also need pH preservative verification; these will be checked in the receiving department (i.e., 525.2, 531.1, 549, 508.1).

22.1.9 In instances where there is unpreserved sample available to check for chlorine residual, the unpreserved bottle will be used. If no chlorine is present in that bottle, then it can be safely assumed that there is no chlorine present in any of the sample bottles for a particular location, and no further testing is required. If the unpreserved sample contains chlorine, then all bottles (524,531,549) will be checked individually for the presence of chlorine.

22.1.10 Bacteria samples must be received with 1-inch headspace to allow for proper mixing.

22.1.10.1 If a sample bottle is filled too full to allow for proper mixing, do not pour off and discard a portion of the sample. Rather, pour the entire sample into a larger sterile container, mix properly, and proceed with the analysis.

22.1.11 Sample preservation should be rechecked if continued preservation of the sample is in question (i.e., the sample may not be compatible with the preservation) or if deterioration of the preservation is suspected.

22.1.12 Tables 7.0-9..0 contain proper sample preservations.

22.1.13 For USEPA samples, note the pH on the DC-1 form.

22.1.14 Bottles without preservative will be noted on the COC and if allowable, preservative will be added at the laboratory.

22.1.15 Notify the project manager if preservations have been added at the laboratory and record on sample receipt checklist.

22.1.16 If non-potable water samples submitted for metals analyses are received unpreserved, preservative may be added at the lab, however, acid must be added at least 24 hours before analysis to dissolve any metals that adsorb to the container walls.

22.1.16.1 The receiving department must note the time of preservation in the LIMS and on the sample bottle so the metals department is aware of the 24-hour time period.

22.1.16.2 Clients must be notified immediately if rush turn around time is requested (i.e., 24 TAT).

22.1.17 If sample preservations do not comply with the requirements in Table 7.0-9.0, notify the project manager immediately.

22.1.18 The client will be notified as soon as possible.

22.2 Sample Containers

22.2.1 Sample containers are usually provided by the lab, except where otherwise specified by the client.

22.2.2 Several different sampling containers may be used for one project.

22.2.3 Materials must be selected that would not result in interference with the analysis.

22.2.4 Each sample container will have a durable waterproof label, which contains all the information necessary to identify the sample.

22.2.5 New clients are given a summary of which bottle to use for what test to ensure that the correct bottle is used for the test requested.

22.2.6 The amount of information on the label may vary depending on the source and other factors, but, in general may include:

- Number of bottles per analysis
- Collector's name
- Sample location
- Date and time of collection
- Depth of sample
- Atmospheric conditions

22.2.7 The bottles used are verified as non-contaminated by monthly checking of bottles. This is done by filling the bottle with distilled water and analyzing the water for the parameters that would normally be analyzed from that bottle.

22.2.8 This record is kept on file in the QC Department.

22.2.9 Any positive readings for any analytes are flagged and the supervisor and QA Manager are notified.

22.2.10 No bottles from the affected lot are used until the source of contamination is determined and remedied.

22.3 Holding Time Status

22.3.1 On a daily basis, holding times are monitored as a check on the different departments and the supervisors notify staff if holding times are drawing near (at least two days in advance).

22.3.2 A status report is available to all laboratory employees in the LIMs.

22.3.3 To ensure that the status report is kept current, all analysts are required to update sample status on a daily basis.

22.3.4 After completion of a project, the Package Production section coordinates collation of the data package and reviews that all required forms are included and that the package is mailed within the required time frame.

Table 7.0 Potable Water Bottle and Preservation Requirements

Analyte	**Bottle**	**Preservation**	**Holding Time**
The information contained in this item comes from the Code of Federal Regulations (40 CFR 141). Note 1: Maximum holding time includes the time elapsed from collection of the sample to placement in the incubator. Note 2: Consumer collected samples may be left unpreserved for up to 14 days. Note 3: E. coli samples enumerated for reporting to EPA under the LT2 rule may be tested when the 8 hour hold time is exceeded and within 30 hours from the time of collection to set-up only when preservation is documented intact. All data generated outside of the 8 hour hold time must be qualified as such in the report to the client. No samples older than 30 hours shall be tested. Note 4: ELAP offers Nitrate or Nitrite only for accreditation. ELAP does not offer combined Nitrate-Nitrite. The preservation and holding time requirements for combined Nitrate-Nitrite is Cool to 4°C, H_2SO_4 to pH<2, and 28 days. **Note 5: For bacteriological tests, when the sample is collected, leave ample air space in the bottle (at least 2.5 cm or 1 in) to facilitate mixing by shaking.**			
Bacteriological Tests: Note 5 Fully processed Drinking Water (40 CFR 141.21(f)(3)):			

Analyte	**Bottle**	**Preservation**	**Holding Time**
Coliform (Total) and E. coli presence/absence	Sterile P,G	0.008% Na2S2O3	30 hours NOTE 1
Standard Plate Count	Sterile P,G	0.008% Na2S2O3	8 hours NOTE 1
Coliphage	P	Cool to 4°C, 0.5mL 10% Na2S2O3 per L of sample	48 hours
Surface Water (40 CFR 141.74(a)(1)):			
Coliform (Total) and E. coli enumeration	P,G	Cool to 4°C	8 hours NOTE 1, 3
Standard Plate Count	P,G	Cool to 4°C	8 hours NOTE 1
Coliphage	P	Cool to 4°C	48 hours
Inorganic Tests			
Alkalinity	P,G	Separate bottle completely filled to the exclusion of air, cool, 4°C	14 days
Metals (Sb, As, Ba, Be, Cd, Ca, Cr, Cu, Pb, Ni, Se, Ag, Na, Tl)	P,G	HNO3 to pH<2	6 months NOTE 2
Bromate	P,G	50 mg/L EDA	28 days
Chloride	P,G	None	28 days
Chlorite	P,G	50 mg/L EDA, Cool to 4oC	14 days
Color	P,G	Cool, 4°C	48 hours
Conductivity	P,G	Cool, 4°C	28 days
Cyanide	P,G	Cool, 4°C NaOH to pH<12 1.2 g/L ascorbic acid	14 days
Fluoride	P,G	None	28 days
Mercury	G	HNO3 to pH<2	28 days
Mercury	P	HNO3 to pH<2	28 days
Nitrate By Ion Chromatography	P,G	Cool, 4°C	48 hours NOTE 4
Nitrate Chlorinated Supplies	P,G	Cool, 4°C	14 days NOTE 4

Analyte	**Bottle**	**Preservation**	**Holding Time**
Nitrate Non-chlorinated Supplies	P,G	H2SO4 to pH<2	48 hours NOTE 4
Nitrite	P,G	Cool, 4°C	48 hours
Phosphorus (as Orthophosphate)	P,G	Cool, 4°C	48 hours
Silica	P	Cool, 4°C	28 days
Sulfate	P,G	Cool, 4°C	28 days
Total Filterable Residue	P,G	Cool, 4°C	7 days
Turbidity	P,G	Cool, 4°C	48 hours
UV254 Absorbance	P,G	Cool, 4°C	48 hours
Organic Tests			
Trihalomethanes Bromodichloromethane Bromoform Chlorodibromomethane Chloroform	Glass with Teflon-lined Septum	0.008%Na2S2O3 Cool 4°C	14 days
Volatile Halocarbon and Volatile Aromatics: Methy-tert-butyl ether	Glass with Teflon-lined Septum	Na2S2O3 (10 mg/40 mL is sufficient for up to 5 ppm Cl_2) added to empty sample bottle then add 1:1 HCl to pH<2. Cool 4°C	14 days
Microextractables: Method 504.1	Glass with Teflon-lined Septum	Cool, 4°C 3 mg Na2S2O3 per 40 ml vial	28 days
Method 505	40-ml glass vial with cap liner	3 mg Na2S2O3 Cool, 4°C	7 days
Method 506	1-L (or qt.) amber glass with TFE lined cap	60 mg Na2S2O3 Cool, 4°C	14 days until extraction, then 14 days after extraction
Method 507	1-L Borosilicate glass, graduated, with TFE lined cap	80 mg Na2S2O3 Cool, 4°C Protect from light	14 days until extraction, then 14 days after extraction

Analyte	Bottle	Preservation	Holding Time
Method 508	1-L Borosilicate glass, graduated, with TFE lined cap	80 mg $Na_2S_2O_3$ Cool, 4°C Protect from light	7 days until extraction, then 14 days after extraction
Method 508A PCB's, Total as decachlorobiphenyl	1-L glass, with TFE lined cap	Cool, 4°C	14 days until extraction, then 30 days after extraction
Method 508.1	1-L glass with TFE lined cap	50 mg $Na_2S_2O_3$ then 1:1 HCl to pH<2 Cool, 4°C	14 days until extraction then 30 days after extraction
Method 515.1: 515.2, 515.3 Chlorinated Acids	1-L Borosilicate glass, graduated, with TFE lined cap	80 mg $Na_2S_2O_3$ Cool, 4°C Protect from light	14 days until extraction, then 14 days after extraction
Method 525.2	Refrigerated glass sample containers, sampling must be free of plastic tubing, gaskets, etc. that may leach analytes into water	Cool, 4°C Remove Cl residual; adjust pH<2 with6 N HCl	Extract within14 days. Analyze within 30 days of sample extraction
Method 531.1 Methylcarbamate pesticides	60-ml vial with PTFE silicone faced septa	1.8 ml acetic acid Buffer to pH 3±0.2, 4.8 mg $Na_2S_2O_3$ Ship 4oC Store at-4°C.	28 days
Glyphosate	60-ml vial PTFE faced Silicone	6 mg $Na_2S_2O_3$ Cool 4oC; Protect from light	14 days
Endothall	40-ml amber glass vial with TFE lined cap	Cool 4°C; Protect from light	7 days
Diquat	1-L amber plastic or silanized glass with screw cap	100 mg $Na_2S_2O_3$ H_2SO_4 to pH=2, Cool to 4°C, Protect from light	7 days until extraction, then 21 days after extraction

Analyte	**Bottle**	**Preservation**	**Holding Time**
Benzo(a)pyrene	1-L (or qt.) amber glass with TFE lined cap	100 mg Na2S2O3 1:1 HCl to pH<2; Cool to 4°C; Protect from light	7 days until extraction then 30 (40 for Method 550.1) days after extraction
Method 551.1	60 ml glass vials Teflon lined Septum	Sodium Sulfite or Ammonium Chloride (for microextractables), pH 4.5-5.0 with phosphate buffer Cool, 4°C	14 days until extraction, then 14 days after extraction
Method 552.1	Amber glass with TFE liner	Add NH4Cl to a concentration of 100mg/L in sample; Cool 4°C	Extract within 28 days of collection. Analyze extract within 48 hours if stored at 4oC or less.
Method 552.2	Amber glass with TFE liner	Add NH4Cl to a concentration of 100mg/L in sample; Cool 4°C	Extract within 28 days of collection. Analyze extract within 7 days if stored dark at 4oC or less or 14 days if 10oC or less.
Method 555	glass TFE lined	Acidify to pH2 with 1:1 HCl; Dechlorinate with 5mg NaSO3 per 100mL sample; Cool 4°C Protect from light	Analyze after extraction, within 14 days of collection
Dissolved Gases Method RSK-175	40 mL Glass with Teflon lined Septum	HCL to pH<2. Cool to <=6°C	14 days

Table 8.0 Non-potable Water Bottle and Preservation Requirements

Analyte	**Bottle**	**Preservation**	**Holding Time**
♦ Note that where “Cool to <=6°C” is stated, samples are not to be frozen. Rounding down to 6°C may not be used to meet the <=6°C requirement. The preservation temperature does not apply to samples that are analyzed immediately (less than 15 minutes). ♦ **For bacteriological tests, when the sample is collected, leave ample air space in the bottle (at least 2.5 cm or 1 in) to facilitate mixing by shaking.** ♦ **For metals tests, an aqueous sample may be collected and shipped without acid preservation. However, acid must be added at least 24 hours before analysis to dissolve any metals that adsorb to the container walls.**			
Bacteriological Tests			
Coliform, Total, Fecal, and E. coli, and Enterococcus	P,G	Cool to <=6°C	8 hours*
Coliform, Total, Fecal, and E. coli and Enterococcus in chlorinated samples	P,G	Cool to <=6°C 0.008% Na2S2O3	8 hours*
Standard Plate Counts	P,G	Cool to <=6°C, 0.008% Na2S2O3	8 hours*
*Maximum holding time includes the time elapsed from collection of the sample to placement into the incubator.			
Inorganic Tests ** ELAP offers Nitrate or Nitrite only for accreditation. ELAP does not offer combined Nitrate-Nitrite. The preservation and holding time requirements for combined Nitrate-Nitrite is cool to ≤ 6°C, H2SO4 to pH<2, and 28 days (40 CFR 136, Table II).			
Acidity	P, FP,G Separate bottle completely filled to the exclusion of air	Cool to <=6°C	14 days
Alkalinity	P, FP,G Separate bottle completely filled to the exclusion of air	Cool to <=6°C	14 days

Analyte	Bottle	Preservation	Holding Time
Metals (Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Au, Fe, Pb, Mn, Mg, Mo, Ni, Pd, Pt, Ag, Tl, Sn, Ti, V)	P, FP,G	Cool to <=6°C, H_2SO_4 to pH<2	28 days
Biochemical oxygen demand	P, FP,G	Cool to <=6°C	48 hours
Bromide	P, FP,G	None	28 days
Biochemical oxygen demand, carbonaceous	P, FP,G	Cool to <=6°C	48 hours
Chemical oxygen demand	P, FP,G	Cool to <=6°C, H_2SO_4 to pH<2	28 days
Chloride	P, FP,G	None	28 days
Chlorine Residual	P, G	None	Analyze within 15 minutes
Chromium VI	P, FP,G	Cool to <=6°C	24 hours
Chromium VI	P, FP,G	Cool to <=6°C, Plus pH9.3-9.7 with $(NH_4)_2SO_4$	28 Days
Color	P, FP,G	Cool to <=6°C	48 hours
Cyanide, total and amendable to chlorination	P, FP,G	Cool to <=6°C, NaOH to pH>12, 0.6g No Sulfide	48 Hrs
Cyanide, total and amendable to chlorination	P, FP,G	Cool to <=6°C, NaOH to pH>12, 0.6g No Sulfide: Plus mitigate for interferences	14 Days
Fluoride	P	None	28 days
Hardness	P, FP,G	HNO_3 or H_2SO_4 to pH<2	6 months
Hydrogen ion (pH)	P, FP,G	None	Analyze within 15 Minutes
Kjeldahl and organic nitrogen	P, FP,G	Cool to <=6°C, H_2SO_4 to pH<2	28 days
Mercury	P, FP,G	HNO_3 to pH<2	28 days
Nitrate	P, FP,G	Cool to <=6°C	48 hours
Nitrate-nitrite	P, FP,G	Cool to <=6°C, H_2SO_4 to pH<2	28 days
Nitrite	P, FP,G	Cool to <=6°C	48 hours

Analyte	**Bottle**	**Preservation**	**Holding Time**
Oil and Grease	G	Cool to <=6°C, HCl or H2SO4 to pH<2	28 days
Organic carbon	P, FP,G	Cool to <=6°C, HCl or H3PO4, or H2SO4 to pH<2	28 days
Orthophosphate	P, FP,G	Filter within 15 minutes, Cool to <=6°C	48 hours
Phenols	G	Cool to <=6°C H2SO4 to pH<2	28 days
Phosphorus, total	P, FP,G	Cool to <=6°C, H2SO4 to pH<2	28 days
Residue, Total	P, FP,G	Cool to <=6°C	7 days
Residue, Filterable	P, FP,G	Cool to <=6°C	7 days
Residue, Non-filterable	P, FP,G	Cool to <=6°C	7 days
Residue, Settleable	P, FP,G	Cool to <=6°C	7 days
Silica	P, Quartz	Cool to <=6°C	28 days
Specific Conductance	P, FP,G	Cool to <=6°C	28 days
Sulfate	P, FP,G	Cool to <=6°C	28 days
Sulfide	P, FP,G	Cool to <=6°C, add zinc acetate plus sodium hydroxide to pH>9	7 days
Surfactants	P, FP,G	Cool to <=6°C	48 hours
Temperature	P, FP,G	None	Analyze within 15 Minutes
Turbidity	P, FP,G	Cool to <=6°C	48 hours
Organic Tests			
Purgeable Halocarbons plus Benzyl Chloride and Epichlorohydrin	G, Teflon- lined septum	Cool to <=6°C, Ascorbic Acid (25 mg/40 ml) for residual chlorine	14 days (7 days if not preserved)
Purgeable Aromatics	G, Teflon-lined septum	Cool to <=6°C, 0.008%Na2S2O3 for residual chlorine Preserve as above and HCl to pH<2	14 days (7days if not preserved)

Analyte	Bottle	Preservation	Holding Time
Acrolein and Acrylonitrile	G, Teflon-lined septum	Cool to <=6°C, 0.008%Na2S2O3 for residual chlorine Preserve as above and pH to 4-5	14 days for acrylonitrile, 3 days for acrolein 14 days
Phenols	G, Teflon- lined cap	Cool to <=6°C, 0.008% Na2S2O3 for residual chlorine	7 days until extraction 40 days after extraction
Benzidines	G, Teflon- lined cap	Cool to <=6°C, 0.008% Na2S2O3 for residual chlorine	7 days until extraction 7 days after extraction if stored under inert gas
Phthalate Esters	G, Teflon- lined cap	Cool to <=6°C	7 days until extraction 40 days after extraction
Nitrosamines	G, Teflon- lined cap	Cool to <=6°C, store in dark, 0.008% Na2S2O3 for residual chlorine. For diphenylnitrosamine add 0.008% Na2S203 and adjust pH 7-10 with NaOH within 24 hours of sampling	7 days until extraction 40 days after extraction
Nitroaromatics and Isophorone	G, Teflon lined cap	Cool to <=6°C, 0.008% Na2S2O3 for residual chlorine, store in dark	7 days until extraction 40 days after extraction
PCBs	G, Teflon-lined cap	Cool to <=6°C	1 year until extraction 1 year after extraction

Analyte	Bottle	Preservation	Holding Time
Pesticides	G, Teflon-lined cap	Cool to <=6°C Cool to <=6°C, pH 5-9, 0.008% Na2S2O3 for residual chlorine if aldrin is to be determined	72 hours 7 days until extraction 40 days after extraction
Polynuclear Aromatic Hydrocarbons	G, Teflon-lined cap	Cool to <=6°C, 0.08%Na2S2O3 for residual chlorine only, store in dark	7 days until extraction 40 days after extraction
Haloethers	G, Teflon-lined cap	Cool to <=6°C, 0.008%Na2S2O3 for residual chlorine only	7 days until extraction 40 days after extraction
Chlorinated Hydrocarbons	G-Teflon-lined cap	Cool to <=6oC	7 days until extraction 40 days after extraction
Dissolved Gases Method RSK-175	40 mL Glass with Teflon lined Septum	HCL to pH<2. Cool to <=6°C	14 days
***When the extractable analytes of concern fall within a single chemical category, the specified preservative and maximum holding times should be observed to safeguard sample integrity. When the analytes fall within two or more chemical categories, the sample may be preserved by cooling to ≤ 6°C, reducing residual chlorine with 0.008% Na2S2O3, storing in the dark, and adjusting the pH to 6-9; samples preserved in this manner may be held for 7 days before extraction and for 40 days after extraction. Exceptions to this procedure are noted in footnotes to 40 CFR 136 Table II and the approved methods.			

Table 9.0 Solid/Hazardous Waste Bottle and Preservation Requirements

Analyte	Bottle	Preservation	Holding Time
Note: Due to the variety of possible sample types, only generalizations can be made. Most solid samples are best preserved by refrigeration to 4 °C. Analysis should begin as soon as possible. If SW846 does not list a holding time, then the holding time must not exceed the holding time listed for water samples. A complete record should be maintained on each sample to provide a history of sample handling from collection to analysis.			

Analyte	**Bottle**	**Preservation**	**Holding Time**
HCr+6	P	≤6 °C	30 days to digestion, 7 days from extraction to analysis
Mercury	P	≤6 °C	28 days
Metals	P	None	6 months
HEM, Grease & Oil	P	≤6 °C	28 days
Cyanide	P	≤6 °C	14 days
pH	P	None	Analyze immediately
Total Organic Carbon	P	≤6 °C	28 days
Volatile Organics	P	≤6 °C	14 days
Semi-volatile Organics Pesticides Herbicides	125-mL wide-mouth glass with PTFE-lined lid	≤6 °C	Samples extracted within 14 days and extracts analyzed within 40 days following extraction
PCBs	250-mL wide-mouth glass container with PTFE-lined lid.	Cool to ≤6 °C.	Samples extracted within 14 days and extracts analyzed within 40 days following extraction

23.0 Laboratory Water Supply

23.1 The water used for reagents and blanks (trip, field, method, holding) and general laboratory procedures is derived from two sources: Aries High Purity and Thermo Scientific Barnstead Nanopure Water System

23.2 Aries High Purity Water System

23.2.1 Used for all organic work and all blanks sent to clients (field, trip).

23.2.2 GC and GC/MS sections use this water as the source for the method blanks for extractions and volatile organics.

23.2.3 The water is verified on a daily basis by the analysis of a method blank and determined to be free of organic contaminates. The resistivity is checked on a daily basis and logged into a logbook.

23.2.4 The conductivity is checked on a monthly basis and the values recorded in a notebook.

23.2.5 The cartridges are replaced when the resistivity is no longer within the allowable range (0.5 to 2.0 megohms-cm).

23.2.6 No volatile organics greater than the reporting limit can be detected in this water.

23.3 Thermo Scientific Barnstead Nanopure Water System

23.3.1 Used for all inorganic work (except for BOD)

23.3.2 The conductivity is checked daily and must be within the limits of 0.5 to 2.0 megohms/m.

23.3.3 This result will be recorded daily in a logbook.

23.4 Field and Trip Blank Sample Preparation

23.4.1 Laboratory distilled water, certified as pure, is used for all field and trip blanks.

23.4.2 This water is verified as pure by analysis prior to filling the trip and field blank bottles by analysis for volatiles, semi-volatiles and pesticide/PCBs.

23.4.3 All organic analytes must be detected at less than the reporting limit.

23.4.4 A record of this analysis is kept on file in the QC department.

23.4.5 Preservations are added to the sample containers prior to shipment.

24.0 Major Equipment and Reference Measurement Standards

24.1 Preventative Maintenance Procedures

24.1.1 The preventative maintenance procedures are designed to generate consistent production of a quality product. The proper calibration and verification of equipment is critical.

24.1.2 Preventative maintenance is important in preventing probable down time and instrument problems by instituting a proactive program to ensure that the routine maintenance procedures are performed to prevent failure of the equipment during use.

24.1.3 The calibration and maintenance on all the instruments are documented in the calibration log books and the individual instrument maintenance logbooks (most electronic maintenance records are in the LIMS).

24.1.4 See the Appendix Section 5 for general preventative maintenance.

24.2 Responsibility for Maintenance

24.2.1 The responsibility for the preventative maintenance lies with the analyst and the supervisor of the department.

24.2.2 All staff are trained to perform routine daily maintenance on instrumentation.

24.3 Service Contracts

24.3.1 All major laboratory instrumentation is covered under service contracts from either the instrument manufacturer or an outside service organization (Compco Analytical).

24.3.2 The service agreements include preplanned service during the course of the contract to minimize downtime. Examples include:

24.3.2.1 Source Cleaning, changing pump oil, cleaning the source and other routine maintenance.

24.3.3 Trained staff observes all external source maintenance

24.3.4 Once maintenance is requested, the time frame for arrival to the site is anywhere from 48 hours to 4 days depending on the specific agreement.

24.4 Equipment Redundancy

24.4.1 All major equipment has a back-up instrument that can be used in a situation where an instrument failure occurs.

24.4.2 All GC, GC/MS, ICP instrumentation have more than one instrument available at all times.

24.4.3 Spare parts for small consumables and columns are kept on site.

24.4.4 In the event that an instrument fails and no redundant instrument is available, the client is notified and arrangements are made to subcontract the impacted samples.

24.4.5 Equipment that fails is taken out of service, clearly marked, and appropriately stored (if applicable) until it has been repaired and shown by calibration test to perform correctly.

24.5 Reference Standards

24.5.1 Reference standards are obtained or calibrated by a body that can provide traceability (National Institute of Standards and Technology(NIST)).

24.5.2 Reference standards of measurement held by the laboratory are used for calibration only and for no other purpose, unless it can be shown that their performance as reference standards would not be invalidated.

25.0 Facilities

25.1 Pace Analytical Services, Inc.(Long Island) is located at:

575 Broad Hollow Road (Route 110)
Melville, New York 11747
Exit 49 South of the Long Island Expressway (495)

25.2 The laboratory comprises approximately 10,400 square feet in size (see Floor Plan, Appendix, Section 2.0)

25.3 The laboratory is subdivided into six sections:

25.3.1 Shipping/Receiving
25.3.2 Inorganic Chemistry (Wet Chemistry)
25.3.3 Inorganic Chemistry (Metals)
25.3.4 Organic Chemistry (GC)
25.3.5 Organic Chemistry (GC/MS)
25.3.6 Organic Prep Laboratory

25.4 The laboratory is staffed by approximately 50 technically qualified scientists, technicians, and support staff whose educational backgrounds vary depending on specific job functions.

25.5 The laboratories air supply is designed to minimize cross-contamination in various lab areas (e.g. sample preparation and volatile organic analysis). The air supply is monitored via computer and records of temperature fluctuations and humidity are available.

25.5.1 Negative pressure exists between the organic prep room and the rest of the laboratory to eliminate contamination of extraction solvents in the volatile organic testing areas.

25.6 Bench tops and floors are made of impervious, smooth easily cleaned materials.

25.7 There is at least two linear meters workspace per analyst while working.

25.8 Specific work areas are defined and access is controlled. Only authorized personnel and escorted signed-in visitors may enter the work area. This limits the access of unauthorized personnel from entering work areas with potentially hazardous chemicals.

25.9 Good housekeeping measures are employed to avoid the possibility of contamination as well as to maintain safety. Good Housekeeping is critical to a safe, efficient, clean and pleasant work environment.

25.9.1 Reducing unwanted clutter helps to avoid accidents and potential for fires.

25.9.2 Maintaining standards of housekeeping conveys a sense of professionalism to those who work in and visit the laboratory.

25.9.3 An outside service provides daily cleaning of the garbage, recyclables, cleaning of the floors and cleaning of the bathrooms and cafeteria.

25.9.4 A lab maintenance person is responsible for maintenance of the lighting, water spills and all around building issues.

25.9.5 Adequate lighting and ventilation is important for a safe work environment. Safe storage of chemicals and compressed gas cylinders must be in place to prevent accidents.

25.9.6 The use of personal protective wear such as safety glasses, gloves and lab coats are to be worn in the lab areas only, not outside the lab to prevent cross contamination.

25.9.7 Emergency equipment must be in view and easily accessible: this includes but is not limited to: telephones, eye wash stations, first aid kits, fire extinguishers, fire alarms, and spill kits.

25.9.8 Keeping the floor and bench tops free of clutter also helps in keeping the lab area safe and presentable.

26.0 Security

26.1 The entire building is equipped with a security system monitored by a private alarm company.

26.2 The laboratory area is divided into separate zones.

26.3 The access doors to these areas are wired with sensors so that the zones can be operated individually.

26.4 Each employee is assigned a FOB, which allows access to the building during a preset time schedule.

26.4.1 The FOBs are codes with the analyst information and are given to each analyst.

26.4.2 The number of FOBs and responsible persons is controlled.

26.4.3 FOBs are signed for by each analyst and handed in to Human Resources if employment ends.

26.5 Access to the building is monitored both internally and by an outside security company.

26.6 The lab is equipped with a hand scanner that limits entry to the building to employees that have been scanned in for approved entry.

26.7 All other entries are made by made by either the receptionist or receiving personnel electronically opening the door.

27.0 Purchasing of Services and Supplies

27.1 Non-capital purchases in the laboratory are centralized.

27.2 Purchases of services and supplies are made from approved suppliers.

27.3 Suppliers are evaluated and approved for acceptability based on:

27.3.1 The ability to deliver services or supplies of an adequate quality to ensure confidence in the results.

27.3.2 Suppliers must be approved by the appropriate accreditation body, when applicable.

27.3.3 Reference materials shall, where possible provide evidence of traceability to SI units of measurement/NIST.

27.3.4 The ability to deliver parts and supplies in a timely matter

27.3.5 The cost must be fair.

27.4 A listing of approved vendors may be found in the Appendix, Section 4.0. These vendors are identified in the LIMS, where additional information can be found.

27.4.1 Each vendor is assigned a “vendor type”. Vendor types identified as “office supplies”, “courier” and “other” are not subject to the quality evaluation of approved suppliers.

27.5 If no independent assurance of the quality is available, the lab must document that the product was inspected, calibrated or otherwise verified before use.

27.6 “Standing orders” are arranged as often as possible to ensure a constant supply of consumable materials while not requiring storage on site.

27.7 On a weekly basis, each department evaluates their needs for supplies.

27.8 A requisition for needed services or supplies is created from the approved vendor list, reviewed and verified by the department supervisors.

27.9 Requisitions are submitted to the purchasing agent.

27.10 All requisitions are approved by the Laboratory Director; dated with signature, before orders are placed

27.11 Records of all suppliers are maintained.

27.12 Records for services and supplies that may affect the quality of environmental tests must include the following (where applicable):

27.12.1 Date of receipt

27.12.2 Date opened

27.12.3 Expiration Date

27.12.3.1 If no expiration date is given, the lab will use 10 years from receipt (i.e., for certain chemicals.)

27.12.4 Source

27.12.5 Lot or serial number

27.12.6 Calibration and verification records

27.12.7 Certifications

27.13 Packing slips are checked against package content labels and matched with the purchase order.

27.14 Once accepted, the packing slip is dated and initialed as evidence of compliance.

27.15 Certificates of analysis (COA) are maintained on file after the COA is checked to ensure the received item meets the minimum specifications. COAs must also be retained for analytical columns.

27.15.1 Date received is recorded on the COA and date put into service, if applicable.

27.16 Consumables are stored in the area of use.

28.0 Waste Generation, Storage and Disposal

28.1 Waste Storage Facility

28.1.1 The waste storage room was designed and constructed according to Article XII of the Suffolk County Sanitary Code.

28.1.2 The room includes secondary containment for 15-55 gallon drums, explosion proof lighting/HVAC systems, and a fire suppression system.

28.1.3 The storage room is located adjacent to the laboratory's eastern lobby.

28.1.4 The waste room is restricted to certain personnel and is controlled by the Organic Prep Supervisor or designee.

28.1.5 Entrance to the waste room is obtained by submitting to the Special Organic Prep Supervisor, or designee a list of types and quantities of wastes to be transferred.

28.1.6 The list is reviewed and maintained by the Organic Prep Supervisor, or designee, to document the types and quantities of wastes transferred.

28.1.7 On a weekly basis, an inspection of the storage facility is conducted and documented.

Under no circumstances are any hazardous wastes discharged into any sink or drain

28.2 Bulk and Small Quantity Hazardous Wastes

28.2.1 These wastes are initially accumulated in the section of the laboratory where they are generated.

28.2.2 Bulk wastes are initially stored in containers ranging from 1 liter to 5 gallons in size.

28.2.3 After accumulation of a maximum of 5 gallons in size, the waste is transferred to a designated 55-gallon drum in the hazardous waste storage facility by the department supervisor or authorized hazardous waste handler.

28.3 Hazardous Waste Storage

28.3.1 Major Waste is segregated into 55 gallon drums as follows:

28.3.1.1 Waste acids

28.3.1.2 Waste methylene chloride/chloroform

28.3.1.3 Waste ether

28.3.1.4 Waste granulated activated carbon

28.4 Small Quantity Waste Storage

28.4.1 Small quantity waste consists primarily of contaminated samples, prepared samples, and expired or off-spec analytical standards.

28.5 Hazardous Waste Removal

28.5.1 All hazardous waste is removed for final disposal by a fully licensed transporter and treatment, storage and storage facility (TSD).

28.5.2 During transfer of wastes from the storage room by the disposal contractor, spill control equipment is on-site to respond to potential spills.

28.5.3 All final waste is processed through physical treatment and/or incineration.

28.6 Refer to the most current version of the *Waste Disposal Manual* for a comprehensive description of the laboratory policy.

29.0 Standard Reference Materials

29.1 Solvents, Reagents, and Absorbent Check Analysis

29.1.1 All solvents, absorbent materials, and reagents are routinely demonstrated to be free from contamination under the conditions of the analysis by analyzing a reagent blank.

29.1.2 All solvents, absorbent materials and reagents are stored so as to ensure their integrity by preventing against deterioration, contamination, and loss of identity.

29.1.3 Traceability of solvents, reagents and reference materials is documented by monitoring and recording:

29.1.3.1 Date received

29.1.3.2 Date opened

29.1.3.3 Expiration date

29.1.3.4 Lot numbers

29.1.3.5 Calibration or verification records

29.1.3.6 Certifications

29.2 Reference Material Use

29.2.1 Stock Standards

29.2.1.1 All stock standards purchased, if available, are traceable to NIST (National Institute of Standards and Technology).

29.2.1.2 All stocks come with documentation from the vendor attesting to the integrity of the standard solution.

29.2.2 Volatile Organic Standards

29.2.2.1 Generally, volatile standards are replaced every month or sooner if necessary.

29.2.2.2 Gas standard solutions are replaced on a weekly basis.

29.2.3 Semi-volatile and GC/ECD

29.2.3.1 Standards are generally replaced every 6 months or sooner if necessary.

29.2.4 Metals

29.2.4.1 Stock standards are generally used up to the date of expiration.

29.2.4.2 Working standards for metals analysis are prepared on a daily basis.

29.2.5 Wet Chemistry

29.2.5.1 Stock standards are generally used up to the date of expiration.

29.2.5.2 Working standards are prepared at a frequency prescribed by the analytical method.

29.2.6 Working Solutions, Prepared reagents

29.2.6.1 In addition to items listed in Section 27.12 (where applicable) all prepared solutions and reagents must include the following:

29.2.6.1.1 Date Prepared

29.2.6.1.2 Preparer's Initials

29.3 Proficiency Samples

29.3.1 The lab participates in the NYSDOH proficiency sample program.

29.3.2 In addition, other state regulatory agencies as well as outside vendors such as ERA, Phenova or Absolute Standards provide scheduled proficiency samples for various parameters. The vendor used must be a NELAC/TNI approved PT provider.

29.3.2.1 Other vendors are used to supplement the NYSDOH PT program for parameters not supplied by the NYSDOH that are on the laboratory's scope of accreditation (i.e., other states like NJ).

29.3.3 The NYSDOH proficiency samples are performed twice a year per matrix.

29.3.4 The samples are incorporated into the analytical system and analyzed in the same manner as normal environmental samples utilizing the same staff and methods as used for routine analysis including procedures, equipment, facilities, and frequency of analysis.

29.3.5 The results of proficiency samples are reported on the supplied PT provider report forms.

29.3.6 Results are posted on the appropriate data reporting website.

29.3.6.1 NYSDOH evaluates the data and scores are assigned to each analyte as satisfactory or unsatisfactory.

29.3.6.2 No response is required for satisfactory results.

29.3.6.3 In the case of an unsatisfactory result, a review of the test and its accompanying QC is performed and the cause of the unsatisfactory result is investigated.

29.3.6.4 A report listing the cause and the corrective action is generated. This report may be provided to the pertinent accreditation authorities, when applicable.

29.4 Double Blind Samples

29.4.1 A double blind sample is one that replicates a real environmental sample in composition and appearance.

29.4.2 Laboratory sample bottles are used to prepare whole-volume PT samples by an outside standard vendor company and usually submitted as a fictitious engineering firm.

29.4.3 The full range of services provided to the customer is checked including turn around time, correctness, and customer service.

29.4.4 A report is generated documenting the accuracy of the results submitted.

30.0 Internal Quality Control

30.1 The data acquired from QC procedures are used to estimate the quality of the data to determine the need for corrective action, and to interpret results following corrective actions that were implemented.

30.2 Details of each method stipulated QC is stated in the method standard operating procedure (SOP).

30.3 When no method limits exist, QC limits are generated in-house.

30.4 If less than 20 data points are available, interim QC limits are used, i.e., 70-130% for accuracy and ±20% relative percent difference for precision.

30.5 For spiking data when 20 data points become available, limits are calculated based on the mean recovery ±3 standard deviations.

30.5.1 Results that are slightly *above* the LCS QC limit are not counted toward the allowable number of analytes outside the QC limits.

30.5.2 This situation must still be noted in the case narrative.

30.6 For duplicate data when 20 points become available, limits are calculated based on the mean of the historical difference.

30.7 Quality control measures are assessed and evaluated on an on-going basis to monitor trend analysis through control charts.

30.8 Long standing established limits are generally not updated as long as they are confirmed in order to maintain consistent Q. C.

30.9 Marginal Exceedences (ME)

30.9.1 For methods that contain a large number of analytes in the LCS, it is statistically unlikely that all analytes will be in control.

30.9.2 Upper and Lower marginal exceedence (ME) limits may be established to determine if corrective action is needed (3 standard deviation units around the mean).

30.9.3 An ME is defined as being beyond the LCS control limit but within the marginal exceedence limit.

30.9.4 The ME is calculated as being between 3 and 4 standard deviation units around the mean.

30.9.5 Marginal exceedences must be random. If the same analyte is consistently outside the LCS control limits, the cause must be investigated.

Table 10.0: Spiking Requirements

Number of Analytes in Method	Minimum Number of Analytes to be Spiked	Number of analytes to fall outside the marginal exceedence (ME)
<10	all	0
11 to 30	80%	1
31 to 50	Spike at least 16 parameters.	2
51 to 70		3
71 to 90		4
>90		5

30.10 Matrix Spike/Matrix Spike Duplicates

30.10.1 The components to be spiked shall be as specified by the mandated test method. Any permit specified analytes, as specified by regulation or client requested analytes shall also be included.

30.10.2 If there are no specified components, the laboratory shall spike per the spiking requirements in Table 10.0. (ME do not apply).

30.10.3 The laboratory shall insure that all targeted components are included in the spike mixture over a 2-year period.

30.11 Failure to Meet QC Requirements/Customer Requirements

30.11.1 If the non-conformance requires a resampling or re-extraction, the analyst completes a form and distributes it to the QA Manager and the QC Department.

30.11.2 If there is a specific project manager, they also would receive a copy.

30.11.3 The QA department then reviews the non-compliance and takes action by either contacting the client to inform them and asking for feedback or initiating an investigation by a technical nature to determine the root cause of the problem.

30.11.4 If data must be reported even though all QC requirements were not met, the affected sample results must be qualified in the case narrative (if applicable) or by qualifying the data on the report form.

30.12 Positive Results

30.12.1 All drinking water samples, with positive results without a historical background associated with it are re-prepped and re-analyzed for confirmation prior to reporting the result to the client.

30.12.2 A resample may be collected to confirm results, especially for SOCs.

Table 11.0: Summary of Essential QC for Chemical Analysis

REFERENCE	**TYPE OF CONTROL**	**FREQUENCY**	**CRITERIA**
Negative control	Method blank	1 per batch/matrix type/sample extraction or prep method	Must be less than1/10 of regulatory level or 1/10 any positive result except for normal laboratory contaminants which are addressed in SOPs and methods.
Positive control	Matrix spikes	1 per 20 samples/matrix type/prep method	Advisory only
Positive control	Lab fortified blank	1 per batch/prep procedure	Method dependent
Positive control	Laboratory control Sample	1 per batch/prep procedure	Method dependent
Precision	Matrix spike/matrix spike duplicate or duplicates	1per20/ matrix /prep procedure	Advisory
Method evaluation	Demonstration of capability	Initial verification per analyst	Method dependent
Method evaluation	Calibration	Initially with daily verification	Method dependent
Method evaluation	Proficiency results	NELAC freq	NELAC spec

REFERENCE	TYPE OF CONTROL	FREQUENCY	CRITERIA
Sensitivity	Method detection limit	Yearly	Method dependent
Data reduction	Documentation	Not specified	Protocol dependent
Quality of standards and reagents	Reagent quality checks	Reagent grade	Per label
Quality of standards and reagents	Water quality checks	Bottle checks monthly	Less than reporting limit
Selectivity	Absolute retention time and relative retention time	Method dependent	Instrument dependent
Constant and consistent test conditions	Instrument stability	None specified	Method dependent
Constant and consistent test conditions	Glassware cleaning	Method dependent	Protocol dependent

Table 12.0 Summary of Essential QC for Microbiological Analysis

REQUIREMENTS	TYPE OF CONTROL	FREQUENCY	CRITERIA
Negative control	Sterility checks and Blanks	Method specified	Method specified
Negative control	Un-inoculated control	Method specified	None specified
Positive control	Positive	Monthly	None specified
Precision	Duplicates	5% of suspected positives	None specified
Precision	Proficiency tests	NELAC	None specified
Method Evaluation	Proficiency tests	NELAC	To be specified

REQUIREMENTS	TYPE OF CONTROL	FREQUENCY	CRITERIA
Method Evaluation	Method validation	Method dependent	None specified
Test Performance	Media appropriateness	Check prior to use	None specified
Data Reduction	Analyst counting	Verify ability to count monthly	None specified
Quality of Standards, Reagents and Media	Shelf life for reagents and media	Manufacturer specified	Manufacturer specified
Quality of Standards, Reagents and Media	Water quality	Free from bacterial and inhibitory substances	Method specified
Selectivity	Traceability/selectivity	Reference cultures	Not specified
Selectivity	Confirmation/verification	Method specified	Method specified
Quality of Standards, Reagents and Media	Detergent inhibition	Check detergent lot(initially verify)	Not specified
Constant and Consistent Test Conditions	Contaminant monitoring	Trend analysis	Not specified
Constant and Consistent Test Conditions	Autoclave performance	Within temperature tolerances	Method specified
Constant and Consistent Test Conditions	Performance of volumetric equipment	Manufacturer specified	Manufacturer specified
Constant and Consistent Test	Measurement instruments	Manufacturer specified	Manufacturer specified

REQUIREMENTS	TYPE OF CONTROL	FREQUENCY	CRITERIA
Conditions			

Table 13.0 Purgeable Organics QC Summary

	Tune Performance	System Evaluation	Calibration Check	Instrument Blank	Matrix Spike Sample/ Matrix Spike Duplicate	Matrix Spike Blank	System Monitoring Compound Recoveries	Internal STD Area and RT
Measure Taken	BFB Injection	Initial calibration standards 5 levels	Continuing calibration standard run	Analyze Nanopure water	Run sample spiked with select standard mix	Run reagent water spiked with select standard mix	Add system monitoring compounds	Compare I.S. area and RT of 12 hour Std to samples
Frequency	Every 12 hours	Good until cont. calibration not met or change in system	Every 12 hours	Every 12 hours	One per 20 samples or SDG or matrix or 7 days sampling	One per 20 samples or SDG or matrix or 7 days sampling	All standards, blanks, samples, MS/MSD, MSB	every sample
Accep-tance Criteria	Ion abundance must meet ASP criteria in Table 7.2F	Maximum %RSD and minimum RRF in Table 7.2G	Maximum %D and minimum RRF in Table 7.2G	Common solvents <5 x CRQL Others <CRQL	See lab established limits	See lab established limits	See lab established limits	RT: ± 30 seconds from Std, I.S. area -50% to +100% from Std
Corrective Action	Tune with FC 43 or PFTBA	1.New standard 2.Leak check 3.Column 4.Trap	Recalibrate Using the 5 levels	1.Check spikes for contam-ination 2.Bake instrument 3.Re-analyze samples assoc.	Not required	1.Re-analyze MSB/MS/MSD 2.Check solution 3.Check system	1.Check for calc errors 2.Check inst. 3.Re-analyze	1.Inspect MS system 2.Re-analyze samples

Table 14.0 CLP Semi-Volatile Organics QC Summary

	Tune Performance	System Evalua-tion	Calibratio n Check	Instru-ment Blank	Matrix Spike Sample/ Matrix Spike Duplicate	Matrix Spike Blank	System Monitoring Compound Recoveries	Internal STD Area and RT
Measure Taken	DFTPP Injection	Five calibration standard runs	Continuin g calibration standard run	Analyze Nanopure filtered water	Run sample spiked with select standard in duplicate	Run reagent water with spiked select standard	Spike system monitoring compounds into samples, blank standards, MS, MSD,	Monitor I.S. area and RT of samples and compare samples

							MSB	
Frequency	Every 12 hours	Good until cont. calibration not met or change in system	Every 12 hours	Per Extraction batch	One per 20 samples or SDG or matrix or 7 days collection	One per 20 samples or SDG or matrix or 7 days collection	All standards, blanks, samples, MS standards, MSD, MSB	Every 12 hours
Accept-ance Criteria	Ion abundance must meet ASP criteria in Table 7.3F	Maximum %RSD and minimum RRF in Table 7.3G	Maximum %D and minimum RRF in Table 7.3G	Common phthalate esters <5 x CRQL all others <CRQL	See lab established limits	See lab established limits	See lab established limits	RT: 30 seconds from Std, I.S. area: within – 50% to +100%
Corrective Action	Tune with FC 43 or PFTBA	1.New standard 2.Leak check 3.Column 4.Trap	1.Recalibrate 2.Re-do initial calibration	1.Alleviate phthalate source 2.Re-extract SDG	Advisory	1.Check spiking 2.Re-analyze 3.MS/MSD	1.Check solution 2.Check system 3.Re-analyze	1.Check solutions 2.Check system 3.Re-analyze

Table 15.0 CLP Pesticide/PCBs QC Summary

	Initial and Continuing Calibration Column Resolution	**Initial Calibration Linearity**	**Initial and Continuous Calibration Breakdown**	**Matrix Spike Blank**	**Method Blank**
Measure Taken	Initial and continuing calibration and PEM and resolution check std (RESC)	Determine linearity by analyzing min 3 levels of Std for mixture standard single level for multi-component	Initial and continuing calibration and PEM analyzed and endrin and DDT breakdown calculated in the PEM	Reagent water spiked with select list of analytes and surrogates extracted	Reagent water Spiked with surrogate
Frequency	Initially or when continuing calibration not met or major change to system	Initially or when continuing calibration not met or major change to system	Initially or when continuing calibration not met or major change to system	Each SDG or 7 days or matrix or 20 samples	Each batch of Samples Extracted
Accept-ance Criteria	PEM: all peaks must be 90% resolved on columns Ind. A&B: midpoint conc. Resolution must be ≥90% %D: ≤ 25% of true value, %RSD ≤ 20%, %RSD surrog. ≤ 30% except <25% - and -BHC Resc. 60% resolution Two may be out but must be ≤ 30%		Breakdown of DDT and endrin in the PEM ≤ 20%, combined breakdown ≤ 30%	See Lab established limits	Less than CRQL
Corrective Action	1. Change the parameter (e.g. temp. prog or flow) 2. Re-analyze	Re-calibrate	1. Clip column 2. Clean injection port area	1. Check solution 2. Check instrument response 3. Re extract and reanalyze	1. Determine cause of contamination 2. Re-extract and re-analyses

Table 16.0 Organphosphorus Pesticide QC Summary

	INITIAL CALIBRATION LINEARITY	**CONTINUING CALIBRATION**	**SURROGATE STANDARD RECOVERY**	**MS/MSD**	**LAB FORTIFIED BLANK**	**METHOD BLANK**
Measure Taken	Six calibration standard runs	Analyze continuing Calibration Standard	Run sample spi With select standard In duplicate	Run sample spik W/ select standa In duplicate	Run reagent Water spiked W/ select standa	Analyze Nanopore water
Frequency	Good until calibration not Met or change in syste	Initially and afte Every 10 sample	All standards, blanks, Samples, MS/MSD, LFB	One per 20 sam Or SDG, or Matrix Or 7 day collection	One per 20 sam Or SDG, or mat Or 7 days collection	One per Extraction batch
Acceptance Criteria	%RSD < 20%	%D < 15% on quantitation column	Achieve recoveri	See lab establish limitable limits	See lab establish limtable limits	< CRQL
Corrective Action	1.Linear regressi function used 2.Or second ord function 3.Or quadratic curve	1.reinject 2.new solution 3.instrument corrective action 4.analyze new initial calibratio	1.Check solutio 2.Check system 3.Re-analyze	Advisory	Check solution Check system Re-analyze MSB MS/MSD	Identify source Of contaminatio Re-analyze

Table 17.0 Herbicide QC Summary

	INITIAL CALIBRATIO LINEARITY	**CONTINUING CALIBRATION**	**SURROGATE STANDARD RECOVERY**	**MS/MSD**	**LAB FORTIFIED BLANK**	**METHOD BLANK**
Measure Taken	Six calibration standard runs	Analyze continuing Calibration Standard	Run sample spiked With select standard In duplicate	Run sample spiked W/ select standard In duplicate	Run reagent Water spiked W/ select standard	Analyze Nanopore water
Frequency	Good until calibration not Met or change in system	Initially and after Every 10 samples	All standards, blanks, Samples, MS/MSD, LFB	One per 20 samples Or SDG, or Matrix Or 7 days collection	One per 20 samples Or SDG, or matrix Or 7 days collection	One per Extraction batch
Acceptance Criteria	%RSD < 20%	%D < 15% on quantitation column	Achieve recoveries	Lab established limits	Lab established limits	< CRQL
Corrective Action	1.Linear regression function used 2.Or second order function 3.Or quadratic curve	1.Reinject 2.new solution 3.instrument corrective action 4.analyze new initial calibration	1.Check solution 2.Check system 3.Re-analyze	Advisory	1.Check solution 2.Check system 3.Re-analyze MSB/ MS/MSD	1.Identify source of contamination 2.Re-analyze

Table 18.0 CLP-M TAL Metals QC Summary

	Verification Of Linearity At CRQL	**System Evaluation Calibration**	**Calibration Check ICV and CCV**	**Instrument Blank**	**Spiked Sample**	**Duplicate**	**Preparation Blank**	**ICP Interference Check Sample**	**Laboratory Control Sample (.CS)**	**ICP Serial Dilution**
Measure Taken		Analyze a blank standard independence for calibration levels	Analyze standard independent from calibration	Analyze ICB and CCBs	Sample spiked with analytes	Analyze a sample twice	A prep blank carried through prep and analysis	Analyze ICS, ICS A and ICS B	Carry through prep. & analyze aqueous and solid LCS	Analyze a 5 fold dilution of sample that is 50x IDL
Frequency	After the ICV in each analysis	Each 24 hours of use	10% or every 2 hrs during analysis whichever is more frequent	10% or every 2 hrs during analysis whichever is more frequent	One per matrix and conc. or SDG whichever is more frequent	One per matrix and conc. or SDG which-ever is more frequent	One per SDG or with each batch of samples digested whichever is more frequent	At beginning and end of analysis run of minimum of 2x per 8-hr.whichever is more frequent	One LCS per batch digested per matrix or per SDG whichever is more frequent except Hg and Cn	If analyte conc. is at minimum of factor of 50 above IDL on each group of samples of a similar matrix or for each SDG
Acceptance Criteria	Advisory	± 5% of true value except at CRDL	See Table 7.5B	Absolute value must be less than or equal to the CRDL	Spike recov. Should be between 75-125% except if sample conc. 4x > spike conc.	> 5x CRQL RPD 20%, < 5x CRQL or one above and one below RPD ± CRQL	The absolute value must be less than or equal to CRQL	ICS AB must be within ± 20% of true value	80–120% except Ag & Sb, soil/sed's limits provided 10/LCS	Dilution must be within 10% of the original determination
Corrective Action	None	Re-calculate	1.Stop analysis 2.Correct problem 3.Re-calibrate 4.Re-analyze	1.Stop analysis 2.Correct problem 3.Re-calculate 4.Re-analyze	Flag with "N" and for non-furnace & Hg elements also perform a post-spike	Flag with "*"	If above CRDL, the lowest conc. in the smpls must be 10x blank conc. or re-digested and re-analyzed	1.Stop analysis 2.Correct problem 3.Re-calibrate 4.Re-analyze	1.Terminate 2.Correct 3.Re-digest/ re-analyze	Flag with "E"

Table 19.0 Wet Chemistry QC Summary

Parameter	Method	ICV/ CCV/ Freq	ICV/ CCV Limits	Matrix Spike Freq	Matrix Spike Limits *	ICB/ CCB Freq	ICB/ CCB Limits	DUP Freq	RPD Limits
Alkalinity	SM2320B	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20
BOD	SM5210B	1 per 20	± 20%	NA	NA%	1 per20	± CRQL	1 per 20	± 20%
Chloride	SM4500 ClE	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
Nitrate	353.2	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
Sulfate	SM4500 SO4E	1 per 5	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
TDS	SM2540C	1 per 10	±20%	1 per 20	±25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
TSS	SM2540 D	1 at start of run	±20%	NA	NA	1 per 10	± CRQL	1 per 20	± 20% or CRQL
Color	SM2120B	1 per 10	± 20%	NA	NA	1 per 20	± CRQL	1 per 20	± 20% or CRQL

Turbidity	180.1	1 per 10	± 10%	NA	NA	1 per 10	± CRQL	1 per 20	± 20%
Hex. Chrom	SM3500 CRD	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20%
TPH	1664A	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20%
TOC	SM5310B	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20%
TOC	9060	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	Quad 1 per 20	± 3 SD
Total Phenols	420.1	1 per 10	± 10%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
Ammonia	350.1	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
COD	410.4	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
TKN	351.2	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
Hardness	SM2340C	1 per 10	± 10%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL
Oil & Grease	1664A	1 per 20	± 20 &	1 per 20	± 25%	1 per 20	+ CRQL	1 per 20	± 20% or CRQL
Sulfide	SM4500 SE	1 per 10	± 20%	1 per 20	± 25%	1 per 10	± CRQL	1 per 20	± 20% or CRQL

* = If outside limits, repeat matrix spike analysis once.

31.0 Departures from Documented Policies and Procedures

31.1 All policies and procedures in place in the laboratory must be adhered.

31.2 Departures from documented policies and procedures may be permitted if approved by the QA Manager, Laboratory Manager, or Technical Manager.

31.3 This departure must be fully documented and include the reason for departure and signed and dated by either the Technical Manager, Laboratory Manager, or the QA Manager.

31.4 No departures are permitted unless this procedure is followed.

32.0 Instrument Corrective Action

32.1 Specific corrective action protocols for handling out-of-control QC are stated in each SOP.

32.2 Instrument Corrective Action

32.2.1 The analyst is responsible for reviewing the initial calibration, blank and QC check criteria for adherence to the method requirements prior to initiating sample analysis.

32.2.2 On going QC is checked by the analyst either in real time or the following morning for an overnight run.

32.2.3 The analyst is responsible for reviewing the data in comparison with the QC of the method.

32.2.4 Analysis proceeds if all QC is met and analysis is halted if the QC requirements are not met.

32.2.5 Corrective actions are taken to correct instrument non-compliances that may include:

32.2.5.1 Checking calculation

32.2.5.2 Verification of standard

32.2.5.3 Recalibrating instrument

32.2.5.4 Baking out the instrument, etc.

32.2.6 If the corrective action doesn't correct the instrument non-compliance, the department supervisor is notified and is involved in the decision making process of corrective action.

32.2.7 If due to holding time constraints analysis must proceed, another instrument will be used if available.

32.2.8 If another instrument is not available, the QC Manager and Laboratory Manager are notified and if the QC requirement does not affect the sample results, the sample analysis may be approved and the discrepancy noted on the report or in the case narrative.

32.2.9 The QA Manager or Laboratory Manager may override the QC requirement.

32.2.10 This is documented in the run log by the initials, date and a short statement of the non-compliance and that it was approved.

32.2.11 Either the QA Manager or Laboratory Manager grants approval with the documentation in the run log only.

32.2.12 General procedures are followed to determine when departures from quality control have occurred.

32.3 Due to sampling schedule and time frame of analysis, it is not always possible to repeat the analysis if the quality control measures are not acceptable.

32.4 If a quality control measure is found to be out-of-control and the data is to be reported, all samples associated with the failed quality control measure are reported with the data qualified.

32.4.1 This may occur by the addition of the qualifier to the result:

32.4.1.1 B – analyte detected in method blank

32.4.1.2 E – concentration level over calibration

32.4.1.3 J – estimated result

32.4.2 It may also be documenting the discrepancy in the case narrative (if it is a full data package) or by indicating the non-conformance in the remarks section in the lab report.

32.4.3 A non-conformance report is completed documenting the out-of-control QC event and stating corrective measures to prevent re-occurrence.

33.0 Systems/Internal Audits

33.1 The laboratory has a program of audits to ensure the effective operation of the quality system. Several different types of audit procedures are used in the laboratory. These include the following:

33.1.1 Non-conformance Summary Reports

33.1.1.1 This form is used intra as well as interdepartmental to note any deficiencies, systematic or human errors for specific samples.

33.1.2 LIMs Holding Time Worksheet

33.1.2.1 The ACCESS-based LIMs has the capability to monitor samples and required analyses by holding time.

33.1.2.2 A daily printout lists the sample and the date by which it must be prepared/analyzed.

33.1.2.3 This is reviewed on a daily basis by the Laboratory supervisors to ensure that holding times are met.

33.1.3 Data Package Review

33.1.3.1 All data packages are reviewed by the QA Manager, QA Analyst or departmental supervisors.

33.1.4 Internal Audit of Chain-of- Custody (COC)

33.1.4.1 The QA Manager or designated representative conducts random audits of the internal COC records.

33.1.4.2 A sample is tracked throughout the internal custody of the department to ensure consistency.

33.1.4.3 Since all COC documentation is submitted in the data packages, the COC is also reviewed at that time.

33.1.5 Internal Audit of QC Measures and Records

33.1.5.1 The QA Manager or designated representative conducts random inspections of the various laboratory departments.

33.1.5.2 This may be formal (use of checklist) or informal.

33.1.5.3 These inspections include logbook review, QC records, standard preparation logs and instrument maintenance records.

33.1.5.4 This may include retesting of samples, intralaboraory comparison of results and interlaboratory comparisons.

33.1.6 Data Package Audit

33.1.6.1 On a weekly basis, an update of the status of deliverable requirements is prepared in the QA Department and given to all managers and supervisors to monitor the progress of the data packages.

33.1.6.2 Corrective measures are taken if the department or reporting of the various components of the package is not on schedule.

33.1.7 Methods Audit

33.1.7.1 Analyst reviews of the in-house SOPs are occasionally performed to ensure compliance with the method.

33.1.7.1.1 If no updates are necessary, a review date will be recorded on the SOP cover page with reviewer's signature either manually or electronically.

33.1.7.2 The analyst will review the most recent version of the SOP and make edits if necessary to comply with the method. A new revision may be required.

33.1.8 Quality System Audit

33.1.8.1 An annual quality systems audit of technical activities is performed. These audits are designed to verify that activities are conducted in accordance with the requirements of the laboratory quality system.

33.1.8.2 Internal audits of aspects of the quality system as well as the technical methods utilized in the laboratory are audited according to a schedule implemented by lab management for the year.

33.1.8.3 All aspects of the quality systems in the lab are audited on an annual basis by qualified personnel.

33.1.8.4 The following documents the qualifications and experience of the personnel required to conduct audits and the requirements for documenting audits and follow-up.

33.1.8.4.1 The management team of the lab will be performing the majority of the internal audits. The managers will be independent of the activity that they are auditing.

33.1.8.4.2 The training requirements and experience required for the various training activities is as follows: The staff performing the audits in the laboratory must be experienced in the area in the lab that they are auditing. Training on conducting an audit will be performed for all members of the audit team to allow for consistency. The departmental audits will be performed by individuals with expertise in those areas. The minimum requirements for experience are 5 years working in the lab area. A formalized and consistent approach to documentation of the audit findings and response is established and will be given to the audit team for use in the audit procedure.

33.1.8.4.3 The audits for method review will be a witnessing audit. The auditor will have a copy of the SOP as well as the analytical method. The analyst will perform the method witnessed by the auditor.

Questions will be raised while auditing and an assessment form will be completed by the auditor. A document of the deficiencies/deviations will be forwarded to the department supervisor for review and response. The supervisor will review the audit findings with the analysts and prepare a corrective action form for response to the audit. This will be submitted to the auditor for review and acceptance. A follow-up assessment will occur to ensure that the corrective actions have been implemented. This will also be documented and placed in the audit file. The audit file will be forwarded to the QA Manager for review and retention.

33.1.8.5 In cases where the audit identifies circumstances in which the correctness or validity of test results is questioned, the laboratory must take corrective action immediately and notify all clients whose work may have been affected.

34.0 Performance/External Audits

34.1 Several procedures are in place for monitoring the performance of the product produced by the laboratory.

34.1.1 External Data Validation

34.1.1.1 A minimum of 20% of the data packages produced by the laboratory undergo data validation by an outside service.

34.1.1.2 A report is generated listing the comments by noted by the validator.

34.1.1.3 The QA Manager responds to the comments noted by the validator, and if necessary, corrective action measures are introduced in the appropriate department.

34.1.2 Internal Data Validation

34.1.2.1 The review of the data covers:

34.1.2.1.1 appropriateness of equations used

34.1.2.1.2 correctness of numerical input

34.1.2.1.3 numerical correctness of all calculations (accomplished by re-performing numerical computations)

34.1.2.2 The review process must be thorough enough to verify the results.

34.1.2.3 If the reviewer disagrees with any part of the computations, the reviewer marks through the number with a single line and places the revised number above it.

34.1.2.4 All large corrections are returned to the analyst for modification.

34.1.2.5 The originator of the data shall review any changes made by the reviewer.

34.1.2.6 If the originator agrees with the change, no action is necessary.

34.1.2.7 If the originator disagrees, then both the originator and reviewer must resolve the difference so that they agree with the result presented.

34.1.3 Inter-Laboratory Comparison Testing Programs

34.1.3.1 Testing in regards to blind samples or comparison of data inter-laboratory is performed periodically.

34.1.4 State/Federal Laboratory Audits

34.1.4.1 The laboratory is certified in several states.

34.1.4.2 The laboratory is audited for all methods in use on an ongoing basis.

34.1.5 Consultant/Customer Laboratory Audits

34.1.5.1 Clients may choose to audit the laboratory at any stage during project development and analysis.

34.1.6 Proficiency Sample Program

34.1.6.1 The laboratory participates the NYSDOH Proficiency Program as well as outside PT provider programs.

34.1.7 Double Blind Samples

34.1.7.1 An outside supplier may be utilized to evaluate the capability of the laboratory through the use of double blind samples.

35.0 Corrective and Preventive Action

35.1 Preventive Action

35.1.1 A proactive approach is taken in regards to the initiation of preventative actions where the process includes the identification of opportunities for improvement rather than a reaction to the problem.

35.1.2 Improvements and potential sources of non-conformances, either technical or concerning the quality system, shall be identified on an ongoing basis.

35.1.3 Opportunities for improvements may be identified through management reviews/meetings, quality system reviews, internal and external audits, client feedback/customer complaints or staff observations.

35.1.4 If preventative action is required, plans will be put into place and monitored for effectiveness.

35.1.5 Some examples of preventative action are:

35.1.5.1 The use of holding time worksheets
35.1.5.2 Analyst monitoring of method QC requirements
35.1.5.3 Instrument maintenance
35.1.5.4 Column Replacement
35.1.5.5 Preparation of new solutions as needed
35.1.5.6 Checking calculations
35.1.5.7 Performing re-analysis
35.1.5.8 Schedule changes
35.1.5.9 Data Validation
35.1.5.10 Internal Audits
35.1.5.11 Non-conformance reports
35.1.5.12 Double Blind Samples

35.2 Corrective Action

35.2.1 Corrective Action is implemented to document the reasons behind and remediation for an isolated event or a pattern of events that could potentially raise concerns about data integrity should they not be properly recorded.

35.2.2 The first step in corrective action is to identify the root causes.

35.2.2.1 Potential root causes that are evaluated are problems with:

35.2.2.1.1 Customer requirements
35.2.2.1.2 Samples
35.2.2.1.3 Sample specifications
35.2.2.1.4 Methods and procedures
35.2.2.1.5 Personnel skills and training
35.2.2.1.6 Consumable materials
35.2.2.1.7 Equipment
35.2.2.1.8 Calibration

35.2.3 Where corrective action is needed, the laboratory shall identify potential corrective actions.

35.2.4 Corrective actions are designed to select and implement the action(s) most likely to eliminate the problem and to prevent recurrence.

35.2.5 Corrective actions shall be to a degree appropriate to the magnitude and the risk of the problem.

35.2.6 The QA Manager shall document and implement any required changes resulting from corrective action investigations.

35.2.7 The QA Manager shall monitor the results to ensure that the corrective actions taken have been effective.

35.2.8 Where the identification of non-conformances or departures casts doubts on the laboratory's compliance with its own policies and procedures, or on its compliance with regulations, the laboratory shall ensure that the appropriate areas of activity are audited as soon as possible.

35.2.9 An agreed upon time frame shall be determined, as appropriate, for the completion of corrective measures. The time frame for notifying clients of events that cast doubt on the validity of results is immediately.

36.0 Quality System Report to Management

36.1 On an annual basis the laboratory's executive management performs a review of the laboratories quality system and environmental testing activities to ensure their continuing suitability and effectiveness, and to introduce necessary changes or improvements.

36.2 The review shall take account of:

- 36.2.1 the suitability of policies and procedures
- 36.2.2 reports from managerial and supervisory personnel
- 36.2.3 the outcome of recent internal audits
- 36.2.4 corrective and preventive actions
- 36.2.5 assessments by external bodies
- 36.2.6 the results of interlaboratory comparisons or proficiency tests
- 36.2.7 changes in the volume and type of the work
- 36.2.8 client feedback
- 36.2.9 complaints
- 36.2.10 other relevant factors, such as quality control activities, resources and staff training

36.3 Findings from management reviews and the actions that arise from them shall be recorded.

36.4 All actions will be addressed within 90 days of their identification.

37.0 Procedure for Dealing with Complaints

37.1 Records of all complaints received from clients or other parties are maintained as well as the investigations and potential corrective actions that arise from the compliant.

37.2 Customer Service/Timeliness of Reports/Invoice Issues

- 37.2.1 Complaints that deal with responsiveness to the client are handled by laboratory staff.
- 37.2.2 If a client complains that they have not received resolution to a complaint, the call may be forwarded to the Project Manager, QA Manager or Laboratory Manager for resolution.
- 37.2.3 These issues are documented via email or phone log.

37.3 Quality of Product

37.3.1 All complaints received regarding the quality of the data produced are handled by the QC department.

37.3.2 The date and the name of the person receiving the complaint, source of complaint, resolution and any written material associated with the complaint are documented and kept on file in the project management department.

37.3.3 The form is completed by the individual who received the complaint and forwarded to the QA Manager for investigation.

37.3.4 The complaint is investigated by the QA officer or designee and a technical review of the suspected test is undertaken.

37.3.5 The results of the investigation are documented on a customer complaint form.

37.3.6 This information is to be used by all laboratory personnel that have contact with clients.

37.3.7 These forms need to be filled out each time there is a customer complaint (for example- late results, client left message and was not called back, etc).

37.3.8 These files are located in S:\LABSHARE\NELACLOGS\

38.0 Training and Orientation

38.1 Training for Pace employees is managed through a web-based Learning Management System. After a new employee has been instructed in matters of human resources, they are given instructional materials for the LMS and a password for access.

38.2 A new hire training checklist is provided to the new employee that lists training items for the employee to work through either independently on LMS or with their supervisor or trainer. The training items that can be completed independently include:

- Reading through applicable Standard Operating Procedures;
- Reviewing the Quality Manual and Chemical Hygiene Plan;

- Core training modules such as quality control indicators, basic laboratory skills, etc.;
- Quality Systems training including traceability of measurements, method calibration, calibration verification, accuracy, precision and uncertainty of measurements, corrective actions, documentation, and root cause analysis;
- Data Integrity/Ethics training.

38.3 The new employee's Department Supervisor provides the employee with a basic understanding of the role of the laboratory within the structure of PASI and the basic elements of that individual's position. Supervised training uses the following techniques:

- Hands-on training
- Training checklists/worksheets
- Lectures and training sessions
- Method-specific training
- Conferences and seminars
- Short courses
- Specialized training by instrument manufacturers
- Proficiency testing programs.
- On-line courses

38.4 Group Supervisors/Leaders are responsible for providing documentation of training and proficiency for each employee under their supervision. The employee’s training file indicates what procedures an analyst or a technician is capable of performing, either independently or with supervision. The files also include documentation of continuing capability. Training documentation files for each person are maintained by the Quality Office either in hardcopy format or within the LMS.

38.5 All procedures and training records are maintained and available for review during laboratory audits. These procedures are reviewed/updated periodically by laboratory management.

39.0 Data Integrity System

39.1 The data integrity system at PASI provides assurances to management that a highly ethical approach is being applied to all planning, training and implementation of methods. Data integrity is crucial to the success of our company and Pace Analytical is committed to creating and maintaining a culture of quality throughout the organization. To accomplish this goal, PASI has implemented a data integrity system that encompasses the following four requirements:

39.1.1 A data integrity training program: standardized training is given to each new employee and a yearly refresher is presented to all employees. Key topics addressed by this training include:

39.1.1.1 Need for honesty and transparency in analytical reporting

39.1.1.2 Process for reporting data integrity issues

39.1.1.3 Specific examples of unethical behavior and improper practices

39.1.1.4 Documentation of non-conforming data that is still useful to the data user

39.1.1.5 Consequences and punishments for unethical behavior

39.1.1.6 Examples of monitoring devices used by management to review data and systems

39.1.2 Signed data integrity documentation for all employees: this includes a written quiz following the Ethics training session and written agreement to abide by the Code of Ethics and Standards of Conduct explained in the employee manual.

39.1.3 In-depth, periodic monitoring of data integrity including peer data review and validation, internal raw data audits, proficiency testing studies, etc.

39.1.4 Documentation of any review or investigation into possible data integrity infractions. This documentation, including any disciplinary actions involved, corrective actions taken, and notifications to customers must be retained for a minimum of five years.

39.2 PASI management makes every effort to ensure that personnel are free from any undue pressures that affect the quality of their work including commercial, financial, over scheduling, and working condition pressures.

39.3 Corporate management also provides all PASI facilities a mechanism for confidential reporting of data integrity issues that ensures confidentiality and a receptive environment in which all employees are comfortable discussing items of ethical concern. The anonymous message line is monitored by the Corporate Director of Quality who will ensure that all concerns are evaluated and, where necessary, brought to the attention of executive management and investigated. Any Pace employee can contact corporate management to report an ethical concern by calling the anonymous hotline at 612-607-6431.

40.0 Demonstration of Capability (DOC)

40.1 A demonstration of capability is a procedure to establish the ability of the analyst to generate acceptable accuracy.

40.2 Analysts complete an initial DOC study prior to analyzing samples by a given method or when there is a change in instrument type, personnel or test method.

40.3 The mean recovery and standard deviation of each analyte, taken from 4 replicates of a quality control standard is calculated and compared to method criteria (if available) or in-house control limits.

40.3.1 For parameters where this does not apply, the analysis of authentic samples may be analyzed by another trained analyst with statistically identical results.

40.4 If the parameters meet the required limits analysis may proceed.

40.5 If not, performance is deemed unacceptable for that parameter and corrective measures are taken to determine the problem.

40.6 All attempts to demonstrate capability shall be documented and available for review.

40.7 Analysis is not permitted until acceptable performance has been demonstrated.

40.7.1 A certification statement is completed and the statement and raw data are placed in the employee files, which includes electronic files stored on the network.

40.7.2 The newly trained analyst is permitted to perform sample analysis independently, still under close supervision of the instructor.

40.8 The QA Manager and/or Supervisors maintains all raw data associated with the DOC on file and monitors progression of training of individuals in the various tasks.

40.8.1 Tables for the departments are maintained, reflecting the tests that can be performed by each analyst.

40.8.2 These tables are periodically updated in the computer system to provide a reference for management about capabilities of each employee to perform testing and training requirements.

40.8.3 The analyst's capabilities are verified annually (continuing demonstration of capability) by various means such as proficiency testing, Lab fortified blank analysis, blind duplicate testing or another DOC.

41.0 Policy on Stress Reduction and Quality of Work

41.1 Open communication is encouraged for all employees of the laboratory. The Human Resources Department, the QA Manager and the Laboratory Manager have an open door policy for discussion of issues and concerns.

41.2 Procedures are in place to allow the staff to be free of undue pressures and stress.

41.2.1 These include a means of technical communication to allow for the notification of noncompliant data and the corrective action needed. All analysts are empowered with a stop work authority to allow for maintenance and to notify upper management of the need for corrective action and additional support in correcting an issue.

41.2.2 The department supervisor, QA Manger, and the Technical Managers are all empowered to assist the analyst with technical issues to resolve problems.

41.2.3 A nonconformance form is filled out to allow for notification of noncompliant data and the corrective action.

41.2.4 The case narrative and comment field on lab reports allows for communication to the clients of nonconformances as well.

41.3 An additional means of reducing the stress of the work place has been implemented.

41.3.1 This includes wellness programs to allow for a change of focus from work only to the health and well being of the person. Seminars, group fitness activities such as yoga and healthy lifestyle discussions are part of the program. Several of the seminars that have been held during the work day are as follows:

41.3.1.1 Emotional freedom: Techniques for Immediate Relief of Stress, Anxiety and Cravings, Sleepless in Long Island, Life's Simple 7: Tips for Healthier Living, Beating the Sugar Blues, Wellness from Within-The Mind Body Connection, Symptoms of heart Disease and Strokes.

41.3.1.2 The lab has implemented "fruit Wednesday" where fresh fruit is served all day to allow for a break from the routine.

41.3.1.3 These personal focuses have allowed a break from the work only mentality.

42.0 Standard Operation Procedures

42.1 Electronic copies of SOPs are available to all employees.

42.2 The SOP lists the title, revision number the effective date and signatures of the approving authority.

42.3 SOPs .

42.4 Each method SOP contains the following information or references where the information may be found.

42.5 The information listed in the SOP may not be in the following order:

42.5.1 Identification of test method
42.5.2 Applicable matrix or matrices
42.5.3 Detection limit
42.5.4 Scope and application to be analyzed
42.5.5 Summary of the test method
42.5.6 Definitions
42.5.7 Interference's
42.5.8 Safety
42.5.9 Equipment and supplies
42.5.10 Reagents and standards
42.5.11 Sample collection, preservation, and storage

42.5.12 Quality control

42.5.13 Calibration and standardization

42.5.14 Calculations

42.5.15 Method performance

42.5.16 Pollution prevention

42.5.17 Data assessment and acceptance criteria

42.5.18 Corrective action for out of control data

42.5.19 Contingencies for handling out of control data

42.5.20 Waste management

42.5.21 References

42.5.22 Any tables, diagrams, flow charts and validation data

42.5.23 Equipment/instrument maintenance, computer hardware and software and troubleshooting

43.0 References

1. "New York State Department of Environmental Protection Analytical Services Protocol" October 1995, or most recent approved version.

2. "New York State Department of Environmental Protection Analytical Services Protocol" June 2000, or most recent approved version.

3. "New York State Department of Environmental Protection Analytical Services Protocol" July 2005, or most recent approved version.

4. "Methods for the Determination of Organic Compounds in Drinking Water", EPA/600/4-88/039, USEPA Office of Research and Development, Washington D.C., December 1988, revised July 1991, or most recent approved version.

5. "Method for the Low Level Determination of Total Organic Carbons", USEPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, April 1978, or most recent approved version.

6. "The Determination of Total Organic Halide", Interim Method 450.1, USEPA Environmental Monitoring and Support laboratory, Cincinnati, Ohio, November 1980, or most recent approved version.

7. "Methods for Chemical Analysis of Water and Wastes", E600/4-79/020, USEPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio Revised 1983, or most recent approved version.

8. "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, American Public Health Association (APHA), or most recent approved version.

9. "Analytical Handbook", New York State Department of Health, Analytical Methods Toxicology Institute, Division of Laboratories and Research, Albany, New York, Revised January 1986, or most recent approved version.

10. "Methods for the Determination of Organic Compounds in Drinking Water", Supplement I, EPA600/4-90/020, USEPA Office of Research and Development, Washington, D.C., December 1988, revised July 1991, or most recent approved version.

11. "Methods for the Determination of Organic Compounds in Drinking Water -Supplement II", EPA/600/R-92/129, USEPA Office of Research and Development, Washington, D.C., December 1988, revised July 1991, or most recent approved version.

12. "Test Methods for Evaluating Solid Waste", EPA/SW-846, USEPA, Water Characterization Branch, Update 3 Dec. 1996, or most recent approved version.

13. "Handbook for Analytical Quality control in Water and Wastewater Laboratories". USEPA, Office of Research and Development, Cincinnati, Ohio 1979, or most recent approved version.

14. "Methods for Organochlorine Pesticides and Chlorophenoxy Acid Herbicides in Drinking Water and Raw Source Water", EPA/600/4-81/053, USEPA, EMSL Cincinnati, Ohio July 1978, or most recent approved version.

15. "Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water":, USEPA, EMSL, USEPA Cincinnati, Ohio, Revised December 1988, or most recent approved version.

16. USEPA Contract Laboratory Protocol Statement of Work for Inorganic Analysis, SOW, ILMO 4.1, Revised 1999, or most recent approved version.

17. USEPA Contract Laboratory Protocol Statement of Work For Organic, OLMO 4.2 Revised May 1999, or most recent approved version.

18. "Compendium of Methods for the Determination of Air Pollutants in Indoor Air". USEPA Office of Research and Development, Washington, D.C., April 1990, or most recent approved version.

19. "Guidance for Performing Tests On Dredged Material to be Disposed of in Ocean Waters", US Army Corps of Engineers, December 1984, or most recent approved version.

20. "EPA Regulations On Test Procedures for the Analysis of Pollutants", USEPA 40 CFR 136, October 1984, revised August 1990, or most recent approved version.

21. "NIOSH Manual of Analytical Methods, Fourth Edition", U. S. Department of Health and Human Services, Cincinnati, Ohio, August 1994, or most recent approved version.

22. "Analytical Handbook", New York State Department of Health, Laboratory of Organic Analytical Chemistry, Albany, NY 1988, or most recent approved version.

23. "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA/600/4-84/041, USEPA Environmental Monitoring System Laboratory, April 1984, Revised June 1998, or most recent approved version.

24. "Protocol for the Collection and Analysis of Volatile POHCs Using VOST", Environdyne Engineers, Inc., St. Louis, Missouri, March 1984, or most recent approved version.

25. "Validation of the VOST Protocol, Volume 2 – Field Validation Phase", NTIS, PEI Associates, Inc., Cincinnati, Ohio, January 1986, or most recent approved version.

26. "USEPA Contract Laboratory Program – Volatile Organics Analysis of Ambient Air', Revised VCAA 01.0, December 1991, or most recent approved version.

27. "USEPA Contract Laboratory Program – Metal Analysis of Ambient Air", Revised MAA 01.0, December 1991, or most recent approved version.

28. "USEPA Contract Laboratory Program – Semi-volatile Organics Analysis of Ambient Air",

Revised SVAA 01.0, January 1992, or most recent approved version.

29. “Superfund Analytical Methods for Low Concentration Water for Organics Analysis”, EPA/540/R-94/087, USEPA Office of Solid Waste and Emergency Response, Cincinnati, Ohio, December 1994, or most recent approved version.

30. “Methods for the Determination of Inorganic Substances in Environmental Samples”, EPA/600/R-93/100, USEPA Office of Research and Development, Washington, D.C., August 1993, or most recent approved version.

31. “USEPA Contract Laboratory Program – Multimedia High – Concentration”, 50W No. Rev 9/88 including Rev. 4/89, or most recent approved version.

32. “Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air’, USEPA Office of Research and Development, Research Triangle Park N.C. EPA/600/4-89/018, June 1988, or most recent approved version.

33. “Environmental Laboratory Approval Program Certification Manual”, New York State Department of Health, Wadsworth Center, 10/99 update, or most recent approved version.

34. “Methods and Guidance for Analysis of Water”, USEPA Office of Water, Washington, D.C., EPA 827 C97001, April 1997, or most recent approved version.

35. “Determination of Metals in Environmental Samples”, Supplement I, EPA 600/R-94/11, May 1994, or most recent approved version.

36. “Methods for the Determination of Organic Compounds in Drinking Water -Supplement III”, EPA/600/R-95/131, USEPA Office of Research and Development, Washington, D.C., December 1988, revised August 1995, or most recent approved version.

37. “Standard Methods for the Examination of Water and Wastewater”, 19th Edition, 1995, American Public Health Association (APHA), or most recent approved version.

38. “Manual for the Certification of Laboratories Analyzing Drinking Water, Criteria and Procedures Quality Assurance” USEPA Office of Water, Office of Ground Water and Drinking Water, Technical Support Center, Cincinnati, Ohio 45268, EPA 815-R-05-004, January 2005, Fifth Edition.

39. "Definition and Procedure for the Determination of the Method Detection Limit- Revision 1.11” 40 CFR Part 136, Appendix B

40. National Environmental Laboratory Accreditation Conference (NELAC) Constitution, Bylaws and Standard, approved June 5, 2003, (EPA/600/R-04/003)

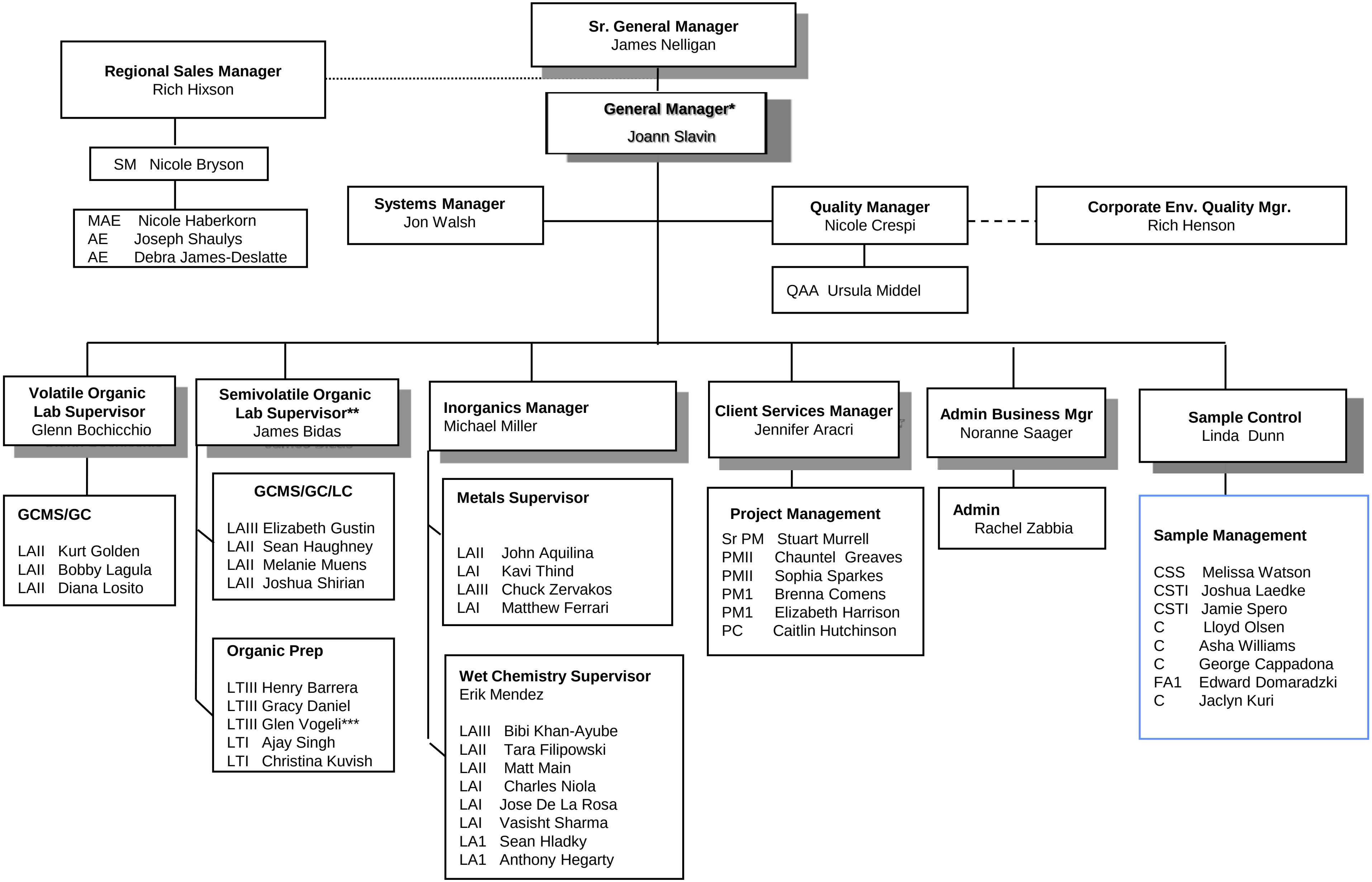
41. 2009 TNI Laboratory Accreditation Standards

42. ISO/IEC 17025:2005, General requirements for the competence of testing and calibration laboratories.

QUALITY ASSURANCE
QUALITY CONTROL MANUAL
Appendix

Section 1.0 Organizational Chart

Pace Long Island



Sr. General Manager
James Nelligan

Regional Sales Manager
Rich Hixson

SM Nicole Bryson

MAE Nicole Haberkorn
AE Joseph Shaulys
AE Debra James-Deslatte

General Manager*
Joann Slavin

Systems Manager
Jon Walsh

Quality Manager
Nicole Crespi

Corporate Env. Quality Mgr.
Rich Henson

QAA Ursula Middel

Volatile Organic Lab Supervisor
Glenn Bochicchio

GCMS/GC

LAII Kurt Golden
LAII Bobby Lagula
LAII Diana Losito

Semivolatile Organic Lab Supervisor**
James Bidas

GCMS/GC/LC

LAIII Elizabeth Gustin
LAII Sean Haughney
LAII Melanie Muens
LAII Joshua Shirian

Organic Prep

LTIII Henry Barrera
LTIII Gracy Daniel
LTIII Glen Vogeli***
LTI Ajay Singh
LTI Christina Kuvish

Inorganics Manager
Michael Miller

Metals Supervisor

LAII John Aquilina
LAI Kavi Thind
LAIII Chuck Zervakos
LAI Matthew Ferrari

Wet Chemistry Supervisor
Erik Mendez

LAIII Bibi Khan-Ayube
LAII Tara Filipowski
LAII Matt Main
LAI Charles Niola
LAI Jose De La Rosa
LAI Vasisht Sharma
LA1 Sean Hladky
LA1 Anthony Hegarty

Client Services Manager
Jennifer Aracri

Project Management

Sr PM Stuart Murrell
PMII Chauntel Greaves
PMII Sophia Sparkes
PM1 Brenna Comens
PM1 Elizabeth Harrison
PC Caitlin Hutchinson

Admin Business Mgr
Noranne Saager

Admin
Rachel Zabbia

Sample Control
Linda Dunn

Sample Management

CSS Melissa Watson
CSTI Joshua Laedke
CSTI Jamie Spero
C Lloyd Olsen
C Asha Williams
C George Cappadona
FA1 Edward Domaradzki
C Jaclyn Kuri

*TNI Technical Director

**Waste Coordinator

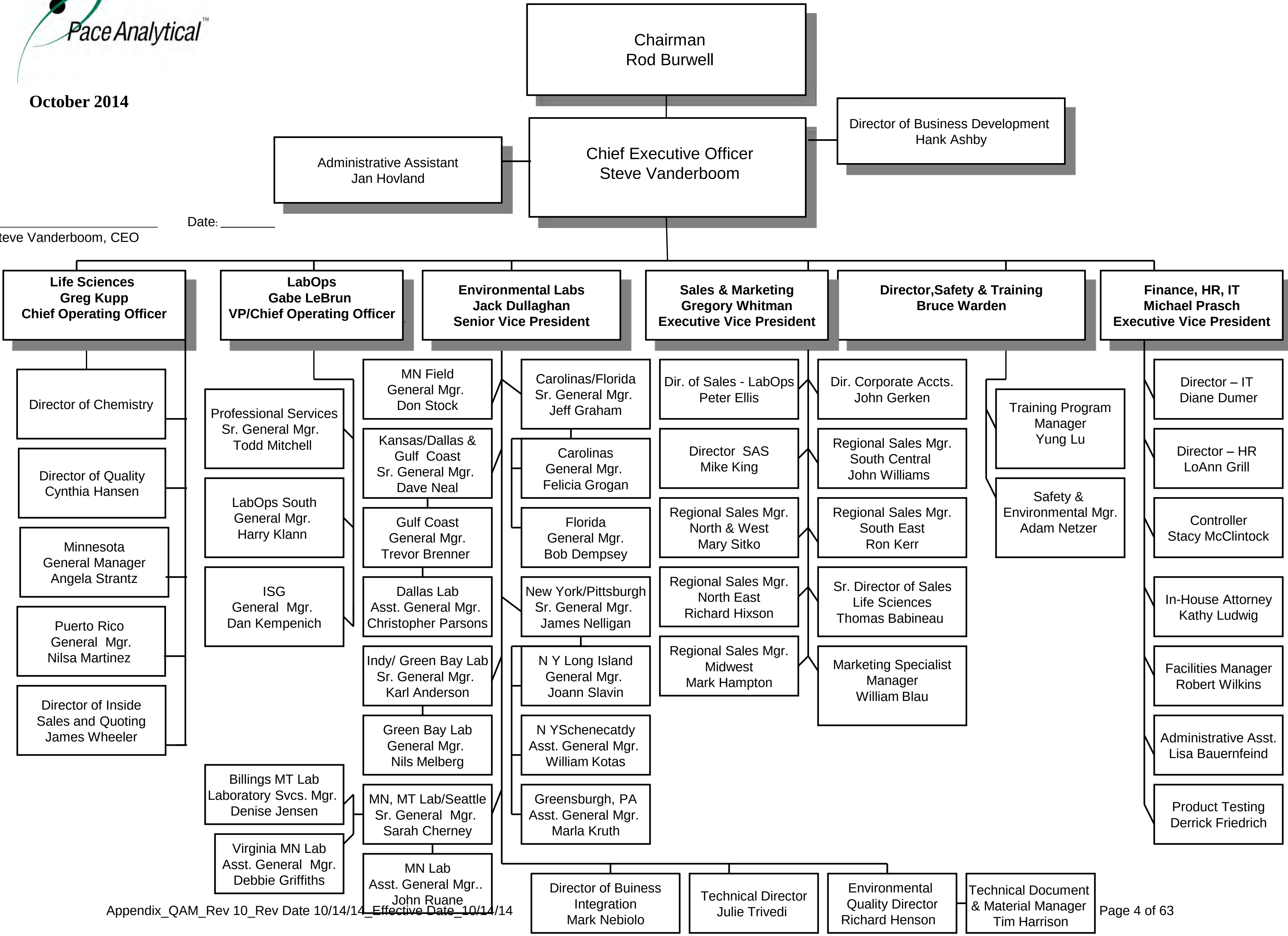
***Safety Officer

Last Revised: September 11, 2014
Last Reviewed: September 11, 2014

CORPORATE/MANAGEMENT STRUCTURE

October 2014

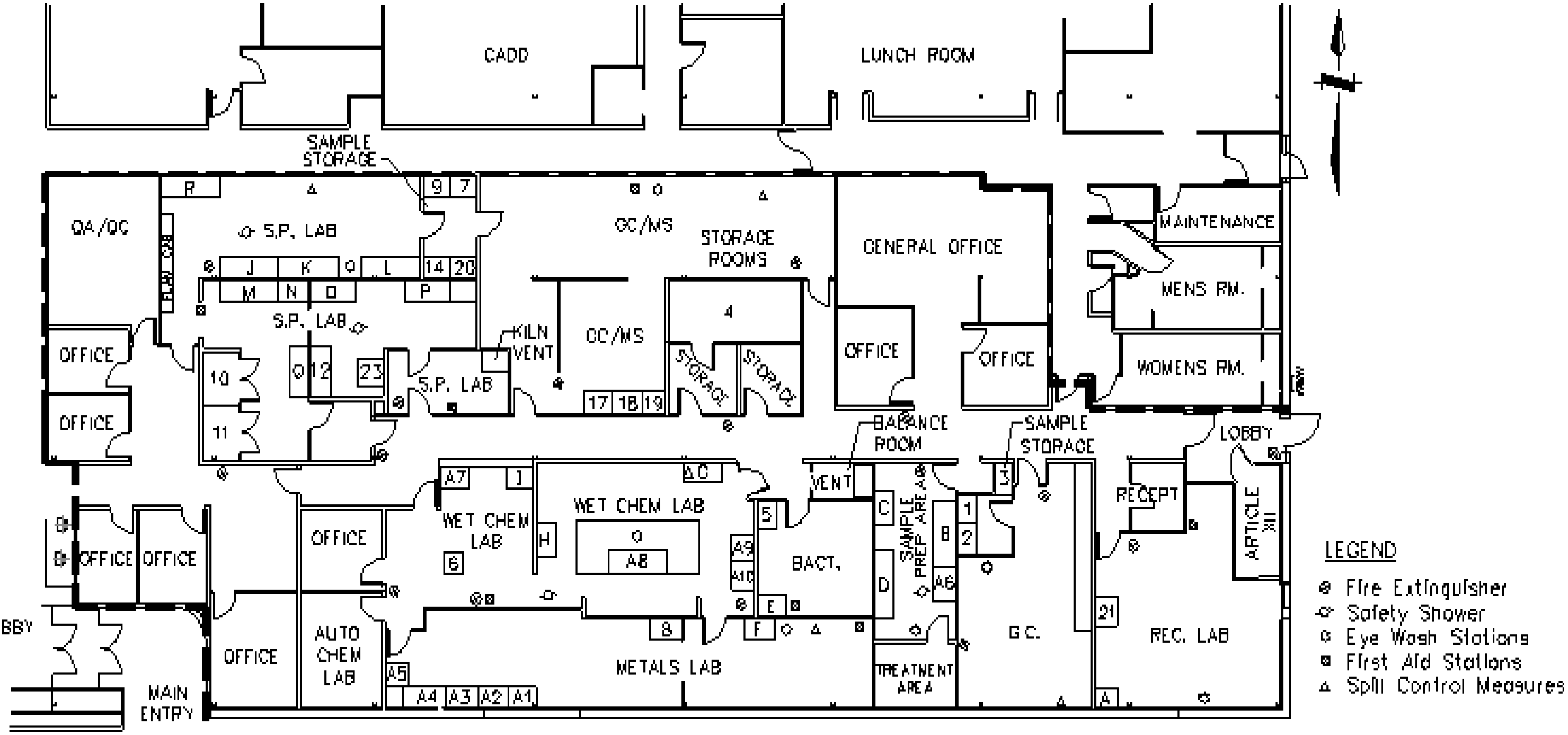
______________________ Date: ________
Steve Vanderboom, CEO



- Chairman Rod Burwell
  - Chief Executive Officer Steve Vanderboom
    - Administrative Assistant Jan Hovland
    - Director of Business Development Hank Ashby
    - **Life Sciences – Greg Kupp – Chief Operating Officer**
      - Director of Chemistry
      - Director of Quality – Cynthia Hansen
      - Minnesota General Manager – Angela Strantz
      - Puerto Rico General Mgr. – Nilsa Martinez
      - Director of Inside Sales and Quoting – James Wheeler
    - **LabOps – Gabe LeBrun – VP/Chief Operating Officer**
      - Professional Services Sr. General Mgr. – Todd Mitchell
      - LabOps South General Mgr. – Harry Klann
      - ISG General Mgr. – Dan Kempenich
    - **Environmental Labs – Jack Dullaghan – Senior Vice President**
      - MN Field General Mgr. – Don Stock
      - Kansas/Dallas & Gulf Coast Sr. General Mgr. – Dave Neal
        - Gulf Coast General Mgr. – Trevor Brenner
          - Dallas Lab Asst. General Mgr. – Christopher Parsons
      - Indy/ Green Bay Lab Sr. General Mgr. – Karl Anderson
        - Green Bay Lab General Mgr. – Nils Melberg
      - MN, MT Lab/Seattle Sr. General Mgr. – Sarah Cherney
        - MN Lab Asst. General Mgr.. – John Ruane
        - Billings MT Lab Laboratory Svcs. Mgr. – Denise Jensen
        - Virginia MN Lab Asst. General Mgr. – Debbie Griffiths
      - Carolinas/Florida Sr. General Mgr. – Jeff Graham
        - Carolinas General Mgr. – Felicia Grogan
        - Florida General Mgr. – Bob Dempsey
      - New York/Pittsburgh Sr. General Mgr. – James Nelligan
        - N Y Long Island General Mgr. – Joann Slavin
        - N YSchenecatdy Asst. General Mgr. – William Kotas
        - Greensburgh, PA Asst. General Mgr. – Marla Kruth
      - Director of Buiness Integration – Mark Nebiolo
      - Technical Director – Julie Trivedi
      - Environmental Quality Director – Richard Henson
      - Technical Document & Material Manager – Tim Harrison
    - **Sales & Marketing – Gregory Whitman – Executive Vice President**
      - Dir. of Sales - LabOps – Peter Ellis
      - Director SAS – Mike King
      - Regional Sales Mgr. North & West – Mary Sitko
      - Regional Sales Mgr. North East – Richard Hixson
      - Regional Sales Mgr. Midwest – Mark Hampton
      - Dir. Corporate Accts. – John Gerken
      - Regional Sales Mgr. South Central – John Williams
      - Regional Sales Mgr. South East – Ron Kerr
      - Sr. Director of Sales Life Sciences – Thomas Babineau
      - Marketing Specialist Manager – William Blau
    - **Director,Safety & Training – Bruce Warden**
      - Training Program Manager – Yung Lu
      - Safety & Environmental Mgr. – Adam Netzer
    - **Finance, HR, IT – Michael Prasch – Executive Vice President**
      - Director – IT – Diane Dumer
      - Director – HR – LoAnn Grill
      - Controller – Stacy McClintock
      - In-House Attorney – Kathy Ludwig
      - Facilities Manager – Robert Wilkins
      - Administrative Asst. – Lisa Bauernfeind
      - Product Testing – Derrick Friedrich

Section 2.0 Floor Plan

LABORATORY FLOOR PLAN



REFRIGERATOR NUMBER	
1 -	Standards (GC)
2 -	Potable H2O Samples VOA (GC)
3 -	Not in Use
4 -	Walk-in Refrigerator
5 -	Bacteriology Lab Samples
6 -	Wet Chem Routine
7 -	Wet Chem
8 -	Metals CLP
9 -	BNA Extracts
10-	Routine BNA/Pest Samples
11-	CLP BNA/Pest Samples

REFRIGERATOR NUMBER	
12 -	Drinking H2O BNA/Pest Samples
13 -	Not in Use
14 -	Semi-volatile Extracts Non-Evidentiary
15 -	Not in Use
16 -	Not Currently in Use
17 -	GC/MS Volatile Evidentiary
18 -	VOA Standards Freezer
19 -	GC/MS Volatile Non-Evidentiary
20 -	Semi-VOA Standards Freezer
21 -	Receiving
22	Not in Use
23	Semi-volatile Extracts

CABINET NUMBER (METALS)	
A1 -	Water (not digested)
A2 -	Water (not digested)
A3 -	Furnace Digestate
A4 -	Evening Access
A5 -	Flame Digestate
A6 -	Evidentiary Sample Digestate
A7 -	Flame Digestate
A8 -	Flame Digestate
A9 -	Furnace Digestate
A10-	Furnace Digestate

FUME HOODS	
A -	Receiving-3' hood
B -	Inorganic Sample Prep-8' hood
C -	Inorganic Sample Prep-4' hood
D -	Inorganic Sample Prep-8' hood
E -	None
F -	Metals Lab-4' hood
G -	Wet Chem Lab-5' hood
H -	Wet Chem Lab-5' hood
I -	Wet Chem Lab-4' hood

FUME HOODS (SPECIAL PROCESS)	
J -	8' hood Concentrations
K -	8' hood
l -	8' hood Auto-extractions Standard Pre
M -	8' hood w/sink
N -	4' hood
O -	6' hood
P -	6' hood Herbicide Extractions
Q -	6' hood Soil Extractions
R	10' hood Atuo Extractions

Note: Limited Access Laboratories (locked) are: GC, GC/MS, Metals, Bacteriology, Special Process

Revised 4/00

Section 3.0 Accredited Test Methods

Matrix	Analyte	Method	Technology
NW	Biochemical Oxygen Demand	SM 5210B-01,-11	TITR
NW	Carbonaceous BOD	SM 5210B-01,-11	TITR
NW	Chemical Oxygen Demand	EPA 410.4 Rev. 2.0	COLOR
NW	Settleable Solids	SM 2540 F-97,-11	GRAV
NW	Solids, Total Dissolved	SM 2540 C-97,-11	GRAV
NW	Solids, Total Suspended	SM 2540 D-97,-11	GRAV
NW	Solids, Total	SM 2540 B-97,-11	GRAV
NW	Solids, Volatile	SM 2540 E-97,-11	GRAV
NW	Coliform, Fecal	SM 9221C,E-06	FB-QN
NW	Standard Plate Count	SimPlate	F-HPC-QN
NW	Coliform, Total	SM 9221B-06	FB-QN
NW	Enterococci	ASTM D6503-99	PAF-QN
NW	Enterococci	Enterolert	PAF-QN
NW	Acidity	SM 2310B-97,-11	TITR
NW	Alkalinity	SM 2320B-97,-11	TITR
NW	Chloride	EPA 300.0 Rev. 2.1	IC-COND
NW	Chloride	SM 4500-Cl- E-97,-11	COLOR
NW	Chloride	EPA 9056A	IC-COND
NW	Fluoride, Total	EPA 300.0 Rev. 2.1	IC-COND
NW	Fluoride, Total	EPA 9056A	IC-COND
NW	Calcium Hardness	EPA 200.7 Rev. 4.4	ICP-AES
NW	Hardness, Total	SM 2340C-97,-11	TITR
NW	Hardness, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Sulfate (as SO4)	EPA 300.0 Rev. 2.1	IC-COND
NW	Sulfate (as SO4)	EPA 9056A	IC-COND
NW	Ammonia (as N)	SM 4500-NH3 H-97,-11	AUTO
NW	Ammonia (as N)	EPA 350.1 Rev. 2.0	AUTO
NW	Ammonia (as N)	SM 4500-NH3 B-97,-11	PREP
NW	Kjeldahl Nitrogen, Total	EPA 351.2 Rev. 2.0	AUTO
NW	Nitrate (as N)	EPA 353.2 Rev. 2.0	AUTO
NW	Nitrate (as N)	EPA 300.0 Rev. 2.1	IC-COND
NW	Nitrate (as N)	EPA 9056A	IC-COND
NW	Nitrite (as N)	EPA 353.2 Rev. 2.0	AUTO
NW	Nitrite (as N)	EPA 300.0 Rev. 2.1	IC-COND
NW	Nitrite (as N)	EPA 9056A	IC-COND
NW	Orthophosphate (as P)	EPA 300.0 Rev. 2.1	IC-COND
NW	Orthophosphate (as P)	SM 4500-P E-99,-11	COLOR
NW	Orthophosphate (as P)	EPA 9056A	IC-COND
NW	Phosphorus, Total	SM 4500-P B(5)-99,-11	PREP
NW	Phosphorus, Total	SM 4500-P E-99,-11	COLOR
NW	Barium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Barium, Total	EPA 3005A	PREP
NW	Barium, Total	EPA 6010C	ICP-AES
NW	Barium, Total	EPA 6020A	ICP-MS
NW	Barium, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Cadmium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Cadmium, Total	EPA 3005A	PREP
NW	Cadmium, Total	EPA 6010C	ICP-AES
NW	Cadmium, Total	EPA 6020A	ICP-MS
NW	Cadmium, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Calcium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Calcium, Total	EPA 3005A	PREP
NW	Calcium, Total	EPA 6010C	ICP-AES
NW	Chromium, Total	EPA 200.7 Rev. 4.4	ICP-AES

Matrix	Analyte	Method	Technology
NW	Chromium, Total	EPA 3005A	PREP
NW	Chromium, Total	EPA 6010C	ICP-AES
NW	Chromium, Total	EPA 6020A	ICP-MS
NW	Chromium, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Copper, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Copper, Total	EPA 3005A	PREP
NW	Copper, Total	EPA 6010C	ICP-AES
NW	Copper, Total	EPA 6020A	ICP-MS
NW	Copper, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Iron, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Iron, Total	EPA 3005A	PREP
NW	Iron, Total	EPA 6010C	ICP-AES
NW	Lead, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Lead, Total	EPA 3005A	PREP
NW	Lead, Total	EPA 6010C	ICP-AES
NW	Lead, Total	EPA 6020A	ICP-MS
NW	Lead, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Magnesium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Magnesium, Total	EPA 3005A	PREP
NW	Magnesium, Total	EPA 6010C	ICP-AES
NW	Manganese, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Manganese, Total	EPA 3005A	PREP
NW	Manganese, Total	EPA 6010C	ICP-AES
NW	Manganese, Total	EPA 6020A	ICP-MS
NW	Manganese, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Nickel, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Nickel, Total	EPA 3005A	PREP
NW	Nickel, Total	EPA 6010C	ICP-AES
NW	Nickel, Total	EPA 6020A	ICP-MS
NW	Nickel, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Potassium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Potassium, Total	EPA 3005A	PREP
NW	Potassium, Total	EPA 6010C	ICP-AES
NW	Silver, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Silver, Total	EPA 3005A	PREP
NW	Silver, Total	EPA 6010C	ICP-AES
NW	Silver, Total	EPA 6020A	ICP-MS
NW	Silver, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Sodium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Sodium, Total	EPA 3005A	PREP
NW	Sodium, Total	EPA 6010C	ICP-AES
NW	Strontium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Strontium, Total	EPA 3005A	PREP
NW	Strontium, Total	EPA 6010C	ICP-AES
NW	Strontium, Total	EPA 6020A	ICP-MS
NW	Strontium, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Aluminum, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Aluminum, Total	EPA 3005A	PREP
NW	Aluminum, Total	EPA 6010C	ICP-AES
NW	Aluminum, Total	EPA 6020A	ICP-MS
NW	Aluminum, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Antimony, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Antimony, Total	EPA 3005A	PREP
NW	Antimony, Total	EPA 6010C	ICP-AES

Matrix	Analyte	Method	Technology
NW	Antimony, Total	EPA 6020A	ICP-MS
NW	Antimony, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Arsenic, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Arsenic, Total	EPA 3005A	PREP
NW	Arsenic, Total	EPA 6010C	ICP-AES
NW	Arsenic, Total	EPA 6020A	ICP-MS
NW	Arsenic, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Beryllium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Beryllium, Total	EPA 3005A	PREP
NW	Beryllium, Total	EPA 6010C	ICP-AES
NW	Beryllium, Total	EPA 6020A	ICP-MS
NW	Beryllium, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Chromium VI	EPA 7196A	COLOR
NW	Chromium VI	SM 3500-Cr B-09,-11	COLOR
NW	Mercury, Total	EPA 245.1 Rev. 3.0	CVAAS
NW	Mercury, Total	EPA 7470A	CVAAS
NW	Selenium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Selenium, Total	EPA 3005A	PREP
NW	Selenium, Total	EPA 6010C	ICP-AES
NW	Selenium, Total	EPA 6020A	ICP-MS
NW	Selenium, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Vanadium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Vanadium, Total	EPA 3005A	PREP
NW	Vanadium, Total	EPA 6010C	ICP-AES
NW	Vanadium, Total	EPA 6020A	ICP-MS
NW	Vanadium, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Zinc, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Zinc, Total	EPA 3005A	PREP
NW	Zinc, Total	EPA 6010C	ICP-AES
NW	Zinc, Total	EPA 6020A	ICP-MS
NW	Zinc, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Cobalt, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Cobalt, Total	EPA 3005A	PREP
NW	Cobalt, Total	EPA 6010C	ICP-AES
NW	Cobalt, Total	EPA 6020A	ICP-MS
NW	Cobalt, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Gold, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Molybdenum, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Molybdenum, Total	EPA 3005A	PREP
NW	Molybdenum, Total	EPA 6010C	ICP-AES
NW	Molybdenum, Total	EPA 6020A	ICP-MS
NW	Molybdenum, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Thallium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Thallium, Total	EPA 3005A	PREP
NW	Thallium, Total	EPA 6010C	ICP-AES
NW	Thallium, Total	EPA 6020A	ICP-MS
NW	Thallium, Total	EPA 200.8 Rev. 5.4	ICP-MS
NW	Tin, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Tin, Total	EPA 6010C	ICP-AES
NW	Titanium, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Titanium, Total	EPA 6010C	ICP-AES
NW	Acrolein (Propenal)	EPA 5030C	PREP
NW	Acrolein (Propenal)	EPA 8260C	GC-MS
NW	Acrolein (Propenal)	EPA 624	GC-MS

Matrix	Analyte	Method	Technology
NW	Acrylonitrile	EPA 5030C	PREP
NW	Acrylonitrile	EPA 8260C	GC-MS
NW	Acrylonitrile	EPA 624	GC-MS
NW	Ethyl methacrylate	EPA 8260C	GC-MS
NW	Methyl acrylonitrile	EPA 8260C	GC-MS
NW	Methyl methacrylate	EPA 8260C	GC-MS
NW	Benzidine	EPA 3510C	PREP
NW	Benzidine	EPA 3520C	PREP
NW	Benzidine	EPA 625	GC-MS
NW	Benzidine	EPA 8270D	GC-MS
NW	3,3'-Dichlorobenzidine	EPA 3510C	PREP
NW	3,3'-Dichlorobenzidine	EPA 3520C	PREP
NW	3,3'-Dichlorobenzidine	EPA 625	GC-MS
NW	3,3'-Dichlorobenzidine	EPA 8270D	GC-MS
NW	3,3'-Dimethylbenzidine	EPA 8270D	GC-MS
NW	1-Chloronaphthalene	EPA 8270D	GC-MS
NW	2-Chloronaphthalene	EPA 3510C	PREP
NW	2-Chloronaphthalene	EPA 3520C	PREP
NW	2-Chloronaphthalene	EPA 625	GC-MS
NW	2-Chloronaphthalene	EPA 8270D	GC-MS
NW	Hexachlorobenzene	EPA 3510C	PREP
NW	Hexachlorobenzene	EPA 3520C	PREP
NW	Hexachlorobenzene	EPA 625	GC-MS
NW	Hexachlorobenzene	EPA 8270D	GC-MS
NW	Hexachlorobutadiene	EPA 3510C	PREP
NW	Hexachlorobutadiene	EPA 3520C	PREP
NW	Hexachlorobutadiene	EPA 625	GC-MS
NW	Hexachlorobutadiene	EPA 8270D	GC-MS
NW	Hexachloroethane	EPA 3510C	PREP
NW	Hexachloroethane	EPA 3520C	PREP
NW	Hexachloroethane	EPA 625	GC-MS
NW	Hexachloroethane	EPA 8270D	GC-MS
NW	Hexachlorocyclopentadiene	EPA 3510C	PREP
NW	Hexachlorocyclopentadiene	EPA 3520C	PREP
NW	Hexachlorocyclopentadiene	EPA 625	GC-MS
NW	Hexachlorocyclopentadiene	EPA 8270D	GC-MS
NW	Hexachloropropene	EPA 8270D	GC-MS
NW	Pentachlorobenzene	EPA 8270D	GC-MS
NW	1,2,3-Trichlorobenzene	EPA 8260C	GC-MS
NW	1,2,4-Trichlorobenzene	EPA 3510C	PREP
NW	1,2,4-Trichlorobenzene	EPA 3520C	PREP
NW	1,2,4-Trichlorobenzene	EPA 625	GC-MS
NW	1,2,4-Trichlorobenzene	EPA 8270D	GC-MS
NW	1,2,4,5-Tetrachlorobenzene	EPA 8270D	GC-MS
NW	Bis(2-chloroethyl)ether	EPA 3510C	PREP
NW	Bis(2-chloroethyl)ether	EPA 3520C	PREP
NW	Bis(2-chloroethyl)ether	EPA 625	GC-MS
NW	Bis(2-chloroethyl)ether	EPA 8270D	GC-MS
NW	Bis(2-chloroisopropyl) ether	EPA 3510C	PREP
NW	Bis(2-chloroisopropyl) ether	EPA 3520C	PREP
NW	Bis(2-chloroisopropyl) ether	EPA 625	GC-MS
NW	Bis(2-chloroisopropyl) ether	EPA 8270D	GC-MS
NW	Bis(2-chloroethoxy)methane	EPA 3510C	PREP
NW	Bis(2-chloroethoxy)methane	EPA 3520C	PREP

Matrix	Analyte	Method	Technology
NW	Bis(2-chloroethoxy)methane	EPA 625	GC-MS
NW	Bis(2-chloroethoxy)methane	EPA 8270D	GC-MS
NW	4-Chlorophenylphenyl ether	EPA 3510C	PREP
NW	4-Chlorophenylphenyl ether	EPA 3520C	PREP
NW	4-Chlorophenylphenyl ether	EPA 625	GC-MS
NW	4-Chlorophenylphenyl ether	EPA 8270D	GC-MS
NW	4-Bromophenylphenyl ether	EPA 3510C	PREP
NW	4-Bromophenylphenyl ether	EPA 3520C	PREP
NW	4-Bromophenylphenyl ether	EPA 625	GC-MS
NW	4-Bromophenylphenyl ether	EPA 8270D	GC-MS
NW	1,3-Dinitrobenzene	EPA 8270D	GC-MS
NW	1,3,5-Trinitrobenzene	EPA 8270D	GC-MS
NW	1,4-Naphthoquinone	EPA 8270D	GC-MS
NW	2,4-Dinitrotoluene	EPA 3510C	PREP
NW	2,4-Dinitrotoluene	EPA 3520C	PREP
NW	2,4-Dinitrotoluene	EPA 625	GC-MS
NW	2,4-Dinitrotoluene	EPA 8270D	GC-MS
NW	2,6-Dinitrotoluene	EPA 3510C	PREP
NW	2,6-Dinitrotoluene	EPA 3520C	PREP
NW	2,6-Dinitrotoluene	EPA 625	GC-MS
NW	2,6-Dinitrotoluene	EPA 8270D	GC-MS
NW	Isophorone	EPA 3510C	PREP
NW	Isophorone	EPA 3520C	PREP
NW	Isophorone	EPA 625	GC-MS
NW	Isophorone	EPA 8270D	GC-MS
NW	Nitrobenzene	EPA 3510C	PREP
NW	Nitrobenzene	EPA 3520C	PREP
NW	Nitrobenzene	EPA 625	GC-MS
NW	Nitrobenzene	EPA 8270D	GC-MS
NW	N-Nitrosodiethylamine	EPA 8270D	GC-MS
NW	N-Nitrosodimethylamine	EPA 3510C	PREP
NW	N-Nitrosodimethylamine	EPA 3520C	PREP
NW	N-Nitrosodimethylamine	EPA 625	GC-MS
NW	N-Nitrosodimethylamine	EPA 8270D	GC-MS
NW	N-Nitrosodiphenylamine	EPA 3510C	PREP
NW	N-Nitrosodiphenylamine	EPA 3520C	PREP
NW	N-Nitrosodiphenylamine	EPA 625	GC-MS
NW	N-Nitrosodiphenylamine	EPA 8270D	GC-MS
NW	N-Nitrosodi-n-butylamine	EPA 8270D	GC-MS
NW	N-nitrosomethylethylamine	EPA 8270D	GC-MS
NW	N-Nitrosodi-n-propylamine	EPA 3510C	PREP
NW	N-Nitrosodi-n-propylamine	EPA 3520C	PREP
NW	N-Nitrosodi-n-propylamine	EPA 625	GC-MS
NW	N-Nitrosodi-n-propylamine	EPA 8270D	GC-MS
NW	N-nitrosopiperidine	EPA 8270D	GC-MS
NW	N-Nitrosopyrrolidine	EPA 8270D	GC-MS
NW	Benzyl butyl phthalate	EPA 3510C	PREP
NW	Benzyl butyl phthalate	EPA 3520C	PREP
NW	Benzyl butyl phthalate	EPA 625	GC-MS
NW	Benzyl butyl phthalate	EPA 8270D	GC-MS
NW	Bis(2-ethylhexyl) phthalate	EPA 3510C	PREP
NW	Bis(2-ethylhexyl) phthalate	EPA 3520C	PREP
NW	Bis(2-ethylhexyl) phthalate	EPA 625	GC-MS
NW	Bis(2-ethylhexyl) phthalate	EPA 8270D	GC-MS

Matrix	Analyte	Method	Technology
NW	Diethyl phthalate	EPA 3510C	PREP
NW	Diethyl phthalate	EPA 3520C	PREP
NW	Diethyl phthalate	EPA 625	GC-MS
NW	Diethyl phthalate	EPA 8270D	GC-MS
NW	Dimethyl phthalate	EPA 3510C	PREP
NW	Dimethyl phthalate	EPA 3520C	PREP
NW	Dimethyl phthalate	EPA 625	GC-MS
NW	Dimethyl phthalate	EPA 8270D	GC-MS
NW	Di-n-butyl phthalate	EPA 3510C	PREP
NW	Di-n-butyl phthalate	EPA 3520C	PREP
NW	Di-n-butyl phthalate	EPA 625	GC-MS
NW	Di-n-butyl phthalate	EPA 8270D	GC-MS
NW	Di-n-octyl phthalate	EPA 3510C	PREP
NW	Di-n-octyl phthalate	EPA 3520C	PREP
NW	Di-n-octyl phthalate	EPA 625	GC-MS
NW	Di-n-octyl phthalate	EPA 8270D	GC-MS
NW	PCB-1016	EPA 3510C	PREP
NW	PCB-1016	EPA 8082A	GC-ECD
NW	PCB-1016	EPA 608	GC-ECD
NW	PCB-1221	EPA 3510C	PREP
NW	PCB-1221	EPA 8082A	GC-ECD
NW	PCB-1221	EPA 608	GC-ECD
NW	PCB-1232	EPA 3510C	PREP
NW	PCB-1232	EPA 8082A	GC-ECD
NW	PCB-1232	EPA 608	GC-ECD
NW	PCB-1242	EPA 3510C	PREP
NW	PCB-1242	EPA 8082A	GC-ECD
NW	PCB-1242	EPA 608	GC-ECD
NW	PCB-1248	EPA 3510C	PREP
NW	PCB-1248	EPA 8082A	GC-ECD
NW	PCB-1248	EPA 608	GC-ECD
NW	PCB-1254	EPA 3510C	PREP
NW	PCB-1254	EPA 8082A	GC-ECD
NW	PCB-1254	EPA 608	GC-ECD
NW	PCB-1260	EPA 3510C	PREP
NW	PCB-1260	EPA 8082A	GC-ECD
NW	PCB-1260	EPA 608	GC-ECD
NW	PCB-1262	EPA 8082A	GC-ECD
NW	PCB-1268	EPA 8082A	GC-ECD
NW	2-Acetylaminofluorene	EPA 8270D	GC-MS
NW	Acenaphthene	EPA 3510C	PREP
NW	Acenaphthene	EPA 3520C	PREP
NW	Acenaphthene	EPA 625	GC-MS
NW	Acenaphthene	EPA 8270D	GC-MS
NW	Anthracene	EPA 3510C	PREP
NW	Anthracene	EPA 3520C	PREP
NW	Anthracene	EPA 625	GC-MS
NW	Anthracene	EPA 8270D	GC-MS
NW	Acenaphthylene	EPA 3510C	PREP
NW	Acenaphthylene	EPA 3520C	PREP
NW	Acenaphthylene	EPA 625	GC-MS
NW	Acenaphthylene	EPA 8270D	GC-MS
NW	Benzo(a)anthracene	EPA 3510C	PREP
NW	Benzo(a)anthracene	EPA 3520C	PREP

Matrix	Analyte	Method	Technology
NW	Benzo(a)anthracene	EPA 625	GC-MS
NW	Benzo(a)anthracene	EPA 8270D	GC-MS
NW	Benzo(a)pyrene	EPA 3510C	PREP
NW	Benzo(a)pyrene	EPA 3520C	PREP
NW	Benzo(a)pyrene	EPA 625	GC-MS
NW	Benzo(a)pyrene	EPA 8270D	GC-MS
NW	Benzo(b)fluoranthene	EPA 3510C	PREP
NW	Benzo(b)fluoranthene	EPA 3520C	PREP
NW	Benzo(b)fluoranthene	EPA 625	GC-MS
NW	Benzo(b)fluoranthene	EPA 8270D	GC-MS
NW	Benzo(ghi)perylene	EPA 3510C	PREP
NW	Benzo(ghi)perylene	EPA 3520C	PREP
NW	Benzo(ghi)perylene	EPA 625	GC-MS
NW	Benzo(ghi)perylene	EPA 8270D	GC-MS
NW	Benzo(k)fluoranthene	EPA 3510C	PREP
NW	Benzo(k)fluoranthene	EPA 3520C	PREP
NW	Benzo(k)fluoranthene	EPA 625	GC-MS
NW	Benzo(k)fluoranthene	EPA 8270D	GC-MS
NW	Chrysene	EPA 3510C	PREP
NW	Chrysene	EPA 3520C	PREP
NW	Chrysene	EPA 625	GC-MS
NW	Chrysene	EPA 8270D	GC-MS
NW	Dibenzo(a,h)anthracene	EPA 3510C	PREP
NW	Dibenzo(a,h)anthracene	EPA 3520C	PREP
NW	Dibenzo(a,h)anthracene	EPA 625	GC-MS
NW	Dibenzo(a,h)anthracene	EPA 8270D	GC-MS
NW	7,12-Dimethylbenzyl (a) anthracene	EPA 8270D	GC-MS
NW	Fluoranthene	EPA 3510C	PREP
NW	Fluoranthene	EPA 3520C	PREP
NW	Fluoranthene	EPA 625	GC-MS
NW	Fluoranthene	EPA 8270D	GC-MS
NW	Fluorene	EPA 3510C	PREP
NW	Fluorene	EPA 3520C	PREP
NW	Fluorene	EPA 625	GC-MS
NW	Fluorene	EPA 8270D	GC-MS
NW	Indeno(1,2,3-cd)pyrene	EPA 3510C	PREP
NW	Indeno(1,2,3-cd)pyrene	EPA 3520C	PREP
NW	Indeno(1,2,3-cd)pyrene	EPA 625	GC-MS
NW	Indeno(1,2,3-cd)pyrene	EPA 8270D	GC-MS
NW	Naphthalene	EPA 3510C	PREP
NW	Naphthalene	EPA 3520C	PREP
NW	Naphthalene	EPA 625	GC-MS
NW	Naphthalene	EPA 8270D	GC-MS
NW	3-Methylcholanthrene	EPA 8270D	GC-MS
NW	Phenanthrene	EPA 3510C	PREP
NW	Phenanthrene	EPA 3520C	PREP
NW	Phenanthrene	EPA 625	GC-MS
NW	Phenanthrene	EPA 8270D	GC-MS
NW	Pyrene	EPA 3510C	PREP
NW	Pyrene	EPA 3520C	PREP
NW	Pyrene	EPA 625	GC-MS
NW	Pyrene	EPA 8270D	GC-MS
NW	Acenaphthene Low Level	EPA 3510C	PREP
NW	Acenaphthene Low Level	EPA 8270D SIM	GC-MS

Matrix	Analyte	Method	Technology
NW	Acenaphthylene Low Level	EPA 3510C	PREP
NW	Acenaphthylene Low Level	EPA 8270D SIM	GC-MS
NW	Anthracene Low Level	EPA 3510C	PREP
NW	Anthracene Low Level	EPA 8270D SIM	GC-MS
NW	Benzo(a)anthracene Low Level	EPA 3510C	PREP
NW	Benzo(a)anthracene Low Level	EPA 8270D SIM	GC-MS
NW	Benzo(b)fluoranthene Low Level	EPA 3510C	PREP
NW	Benzo(b)fluoranthene Low Level	EPA 8270D SIM	GC-MS
NW	Benzo(k)fluoranthene Low Level	EPA 3510C	PREP
NW	Benzo(k)fluoranthene Low Level	EPA 8270D SIM	GC-MS
NW	Benzo(g,h,i)perylene Low Level	EPA 3510C	PREP
NW	Benzo(g,h,i)perylene Low Level	EPA 8270D SIM	GC-MS
NW	Benzo(a)pyrene Low Level	EPA 3510C	PREP
NW	Benzo(a)pyrene Low Level	EPA 8270D SIM	GC-MS
NW	Chrysene Low Level	EPA 3510C	PREP
NW	Chrysene Low Level	EPA 8270D SIM	GC-MS
NW	Dibenzo(a,h)anthracene Low Level	EPA 3510C	PREP
NW	Dibenzo(a,h)anthracene Low Level	EPA 8270D SIM	GC-MS
NW	Fluoranthene Low Level	EPA 3510C	PREP
NW	Fluoranthene Low Level	EPA 8270D SIM	GC-MS
NW	Fluorene Low Level	EPA 3510C	PREP
NW	Fluorene Low Level	EPA 8270D SIM	GC-MS
NW	Indeno(1,2,3-cd)pyrene Low Level	EPA 3510C	PREP
NW	Indeno(1,2,3-cd)pyrene Low Level	EPA 8270D SIM	GC-MS
NW	Naphthalene Low Level	EPA 3510C	PREP
NW	Naphthalene Low Level	EPA 8270D SIM	GC-MS
NW	Phenanthrene Low Level	EPA 3510C	PREP
NW	Phenanthrene Low Level	EPA 8270D SIM	GC-MS
NW	Pyrene Low Level	EPA 3510C	PREP
NW	Pyrene Low Level	EPA 8270D SIM	GC-MS
NW	4-Chloro-3-methylphenol	EPA 3510C	PREP
NW	4-Chloro-3-methylphenol	EPA 3520C	PREP
NW	4-Chloro-3-methylphenol	EPA 625	GC-MS
NW	4-Chloro-3-methylphenol	EPA 8270D	GC-MS
NW	2-Chlorophenol	EPA 3510C	PREP
NW	2-Chlorophenol	EPA 3520C	PREP
NW	2-Chlorophenol	EPA 625	GC-MS
NW	2-Chlorophenol	EPA 8270D	GC-MS
NW	2,4-Dichlorophenol	EPA 3510C	PREP
NW	2,4-Dichlorophenol	EPA 3520C	PREP
NW	2,4-Dichlorophenol	EPA 625	GC-MS
NW	2,4-Dichlorophenol	EPA 8270D	GC-MS
NW	2,6-Dichlorophenol	EPA 8270D	GC-MS
NW	2,4-Dimethylphenol	EPA 3510C	PREP
NW	2,4-Dimethylphenol	EPA 3520C	PREP
NW	2,4-Dimethylphenol	EPA 625	GC-MS
NW	2,4-Dimethylphenol	EPA 8270D	GC-MS
NW	2,4-Dinitrophenol	EPA 3510C	PREP
NW	2,4-Dinitrophenol	EPA 3520C	PREP
NW	2,4-Dinitrophenol	EPA 625	GC-MS
NW	2,4-Dinitrophenol	EPA 8270D	GC-MS
NW	2-Methyl-4,6-dinitrophenol	EPA 3510C	PREP
NW	2-Methyl-4,6-dinitrophenol	EPA 3520C	PREP
NW	2-Methyl-4,6-dinitrophenol	EPA 625	GC-MS

Matrix	Analyte	Method	Technology
NW	2-Methyl-4,6-dinitrophenol	EPA 8270D	GC-MS
NW	2-Nitrophenol	EPA 3520C	PREP
NW	2-Nitrophenol	EPA 625	GC-MS
NW	2-Nitrophenol	EPA 8270D	GC-MS
NW	4-Nitrophenol	EPA 3520C	PREP
NW	4-Nitrophenol	EPA 625	GC-MS
NW	4-Nitrophenol	EPA 8270D	GC-MS
NW	2-Methylphenol	EPA 3510C	PREP
NW	2-Methylphenol	EPA 3520C	PREP
NW	2-Methylphenol	EPA 625	GC-MS
NW	2-Methylphenol	EPA 8270D	GC-MS
NW	3-Methylphenol	EPA 8270D	GC-MS
NW	4-Methylphenol	EPA 3510C	PREP
NW	4-Methylphenol	EPA 3520C	PREP
NW	4-Methylphenol	EPA 625	GC-MS
NW	4-Methylphenol	EPA 8270D	GC-MS
NW	Cresols, Total	EPA 625	GC-MS
NW	Cresols, Total	EPA 8270D	GC-MS
NW	Pentachlorophenol	EPA 3510C	PREP
NW	Pentachlorophenol	EPA 3520C	PREP
NW	Pentachlorophenol	EPA 625	GC-MS
NW	Pentachlorophenol	EPA 8270D	GC-MS
NW	Phenol	EPA 3510C	PREP
NW	Phenol	EPA 3520C	PREP
NW	Phenol	EPA 625	GC-MS
NW	Phenol	EPA 8270D	GC-MS
NW	2,3,4,6 Tetrachlorophenol	EPA 8270D	GC-MS
NW	2,4,5-Trichlorophenol	EPA 3520C	PREP
NW	2,4,5-Trichlorophenol	EPA 625	GC-MS
NW	2,4,5-Trichlorophenol	EPA 8270D	GC-MS
NW	2,4,6-Trichlorophenol	EPA 3510C	PREP
NW	2,4,6-Trichlorophenol	EPA 3520C	PREP
NW	2,4,6-Trichlorophenol	EPA 625	GC-MS
NW	2,4,6-Trichlorophenol	EPA 8270D	GC-MS
NW	1,2,4-Trichlorobenzene, Volatile	EPA 5030C	PREP
NW	1,2,4-Trichlorobenzene, Volatile	EPA 8260C	GC-MS
NW	Benzene	EPA 5030C	PREP
NW	Benzene	EPA 8260C	GC-MS
NW	Benzene	EPA 624	GC-MS
NW	Bromobenzene	EPA 8260C	GC-MS
NW	Chlorobenzene	EPA 5030C	PREP
NW	Chlorobenzene	EPA 8260C	GC-MS
NW	Chlorobenzene	EPA 624	GC-MS
NW	1,2-Dichlorobenzene	EPA 5030C	PREP
NW	1,2-Dichlorobenzene	EPA 8260C	GC-MS
NW	1,2-Dichlorobenzene	EPA 624	GC-MS
NW	1,3-Dichlorobenzene	EPA 5030C	PREP
NW	1,3-Dichlorobenzene	EPA 8260C	GC-MS
NW	1,3-Dichlorobenzene	EPA 624	GC-MS
NW	1,4-Dichlorobenzene	EPA 5030C	PREP
NW	1,4-Dichlorobenzene	EPA 8260C	GC-MS
NW	1,4-Dichlorobenzene	EPA 624	GC-MS
NW	1,2,4-Trimethylbenzene	EPA 5030C	PREP
NW	1,2,4-Trimethylbenzene	EPA 8260C	GC-MS

Matrix	Analyte	Method	Technology
NW	1,3,5-Trimethylbenzene	EPA 5030C	PREP
NW	1,3,5-Trimethylbenzene	EPA 8260C	GC-MS
NW	2-Chlorotoluene	EPA 8260C	GC-MS
NW	4-Chlorotoluene	EPA 8260C	GC-MS
NW	Ethyl benzene	EPA 5030C	PREP
NW	Ethyl benzene	EPA 8260C	GC-MS
NW	Ethyl benzene	EPA 624	GC-MS
NW	Isopropylbenzene	EPA 8260C	GC-MS
NW	Naphthalene, Volatile	EPA 5030C	PREP
NW	Naphthalene, Volatile	EPA 8260C	GC-MS
NW	n-Butylbenzene	EPA 8260C	GC-MS
NW	n-Propylbenzene	EPA 8260C	GC-MS
NW	p-Isopropyltoluene (P-Cymene)	EPA 8260C	GC-MS
NW	Toluene	EPA 5030C	PREP
NW	Toluene	EPA 8260C	GC-MS
NW	Toluene	EPA 624	GC-MS
NW	Total Xylenes	EPA 5030C	PREP
NW	Total Xylenes	EPA 8260C	GC-MS
NW	Total Xylenes	EPA 624	GC-MS
NW	m/p-Xylenes	EPA 5030C	PREP
NW	m/p-Xylenes	EPA 8260C	GC-MS
NW	m/p-Xylenes	EPA 624	GC-MS
NW	o-Xylene	EPA 5030C	PREP
NW	o-Xylene	EPA 8260C	GC-MS
NW	o-Xylene	EPA 624	GC-MS
NW	sec-Butylbenzene	EPA 8260C	GC-MS
NW	tert-Butylbenzene	EPA 8260C	GC-MS
NW	Styrene	EPA 5030C	PREP
NW	Styrene	EPA 8260C	GC-MS
NW	Styrene	EPA 624	GC-MS
NW	Bromochloromethane	EPA 5030C	PREP
NW	Bromochloromethane	EPA 8260C	GC-MS
NW	Bromodichloromethane	EPA 5030C	PREP
NW	Bromodichloromethane	EPA 8260C	GC-MS
NW	Bromodichloromethane	EPA 624	GC-MS
NW	Bromoform	EPA 5030C	PREP
NW	Bromoform	EPA 8260C	GC-MS
NW	Bromoform	EPA 624	GC-MS
NW	Bromomethane	EPA 5030C	PREP
NW	Bromomethane	EPA 8260C	GC-MS
NW	Bromomethane	EPA 624	GC-MS
NW	Carbon tetrachloride	EPA 5030C	PREP
NW	Carbon tetrachloride	EPA 8260C	GC-MS
NW	Carbon tetrachloride	EPA 624	GC-MS
NW	Chloroethane	EPA 5030C	PREP
NW	Chloroethane	EPA 8260C	GC-MS
NW	Chloroethane	EPA 624	GC-MS
NW	2-Chloro-1,3-butadiene (Chloroprene)	EPA 5030C	PREP
NW	2-Chloro-1,3-butadiene (Chloroprene)	EPA 8260C	GC-MS
NW	2-Chloroethylvinyl ether	EPA 5030C	PREP
NW	2-Chloroethylvinyl ether	EPA 8260C	GC-MS
NW	2-Chloroethylvinyl ether	EPA 624	GC-MS
NW	Chloroform	EPA 5030C	PREP
NW	Chloroform	EPA 8260C	GC-MS

Matrix	Analyte	Method	Technology
NW	Chloroform	EPA 624	GC-MS
NW	Chloromethane	EPA 5030C	PREP
NW	Chloromethane	EPA 8260C	GC-MS
NW	Chloromethane	EPA 624	GC-MS
NW	3-Chloropropene (Allyl chloride)	EPA 5030C	PREP
NW	3-Chloropropene (Allyl chloride)	EPA 8260C	GC-MS
NW	Dibromochloromethane	EPA 5030C	PREP
NW	Dibromochloromethane	EPA 8260C	GC-MS
NW	Dibromochloromethane	EPA 624	GC-MS
NW	Dibromomethane	EPA 5030C	PREP
NW	Dibromomethane	EPA 8260C	GC-MS
NW	Dichlorodifluoromethane	EPA 5030C	PREP
NW	Dichlorodifluoromethane	EPA 8260C	GC-MS
NW	Dichlorodifluoromethane	EPA 624	GC-MS
NW	trans-1,4-Dichloro-2-butene	EPA 5030C	PREP
NW	trans-1,4-Dichloro-2-butene	EPA 8260C	GC-MS
NW	1,1-Dichloroethane	EPA 5030C	PREP
NW	1,1-Dichloroethane	EPA 8260C	GC-MS
NW	1,1-Dichloroethane	EPA 624	GC-MS
NW	1,2-Dichloroethane	EPA 5030C	PREP
NW	1,2-Dichloroethane	EPA 8260C	GC-MS
NW	1,2-Dichloroethane	EPA 624	GC-MS
NW	1,1-Dichloroethene	EPA 5030C	PREP
NW	1,1-Dichloroethene	EPA 8260C	GC-MS
NW	1,1-Dichloroethene	EPA 624	GC-MS
NW	cis-1,2-Dichloroethene	EPA 5030C	PREP
NW	cis-1,2-Dichloroethene	EPA 8260C	GC-MS
NW	cis-1,2-Dichloroethene	EPA 624	GC-MS
NW	trans-1,2-Dichloroethene	EPA 5030C	PREP
NW	trans-1,2-Dichloroethene	EPA 8260C	GC-MS
NW	trans-1,2-Dichloroethene	EPA 624	GC-MS
NW	1,1-Dichloropropene	EPA 5030C	PREP
NW	1,1-Dichloropropene	EPA 8260C	GC-MS
NW	1,2-Dichloropropane	EPA 5030C	PREP
NW	1,2-Dichloropropane	EPA 8260C	GC-MS
NW	1,2-Dichloropropane	EPA 624	GC-MS
NW	1,3-Dichloropropane	EPA 5030C	PREP
NW	1,3-Dichloropropane	EPA 8260C	GC-MS
NW	2,2-Dichloropropane	EPA 5030C	PREP
NW	2,2-Dichloropropane	EPA 8260C	GC-MS
NW	trans-1,3-Dichloropropene	EPA 5030C	PREP
NW	trans-1,3-Dichloropropene	EPA 8260C	GC-MS
NW	trans-1,3-Dichloropropene	EPA 624	GC-MS
NW	cis-1,3-Dichloropropene	EPA 5030C	PREP
NW	cis-1,3-Dichloropropene	EPA 8260C	GC-MS
NW	cis-1,3-Dichloropropene	EPA 624	GC-MS
NW	1,2-Dibromo-3-chloropropane	EPA 5030C	PREP
NW	1,2-Dibromo-3-chloropropane	EPA 8260C	GC-MS
NW	1,2-Dibromo-3-chloropropane	EPA 8011	GC-ECD
NW	1,2-Dibromoethane	EPA 5030C	PREP
NW	1,2-Dibromoethane	EPA 8260C	GC-MS
NW	1,2-Dibromoethane	EPA 8011	GC-ECD
NW	Hexachlorobutadiene, Volatile	EPA 5030C	PREP
NW	Hexachlorobutadiene, Volatile	EPA 8260C	GC-MS

Matrix	Analyte	Method	Technology
NW	Methylene chloride	EPA 5030C	PREP
NW	Methylene chloride	EPA 8260C	GC-MS
NW	Methylene chloride	EPA 624	GC-MS
NW	Methylene chloride	EPA 1624B	GC-MS
NW	Methyl iodide	EPA 8260C	GC-MS
NW	1,1,1,2-Tetrachloroethane	EPA 5030C	PREP
NW	1,1,1,2-Tetrachloroethane	EPA 8260C	GC-MS
NW	1,1,2,2-Tetrachloroethane	EPA 5030C	PREP
NW	1,1,2,2-Tetrachloroethane	EPA 8260C	GC-MS
NW	1,1,2,2-Tetrachloroethane	EPA 624	GC-MS
NW	Tetrachloroethene	EPA 5030C	PREP
NW	Tetrachloroethene	EPA 8260C	GC-MS
NW	Tetrachloroethene	EPA 624	GC-MS
NW	1,1,1-Trichloroethane	EPA 5030C	PREP
NW	1,1,1-Trichloroethane	EPA 8260C	GC-MS
NW	1,1,1-Trichloroethane	EPA 624	GC-MS
NW	1,1,2-Trichloroethane	EPA 5030C	PREP
NW	1,1,2-Trichloroethane	EPA 8260C	GC-MS
NW	1,1,2-Trichloroethane	EPA 624	GC-MS
NW	Trichloroethene	EPA 5030C	PREP
NW	Trichloroethene	EPA 8260C	GC-MS
NW	Trichloroethene	EPA 624	GC-MS
NW	Trichlorofluoromethane	EPA 5030C	PREP
NW	Trichlorofluoromethane	EPA 8260C	GC-MS
NW	Trichlorofluoromethane	EPA 624	GC-MS
NW	1,2,3-Trichloropropane	EPA 5030C	PREP
NW	1,2,3-Trichloropropane	EPA 8260C	GC-MS
NW	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C	GC-MS
NW	Vinyl chloride	EPA 5030C	PREP
NW	Vinyl chloride	EPA 8260C	GC-MS
NW	Vinyl chloride	EPA 624	GC-MS
NW	Aldrin	EPA 8081B	GC-ECD
NW	Aldrin	EPA 3510C	PREP
NW	Aldrin	EPA 3520C	PREP
NW	Aldrin	EPA 608	GC-ECD
NW	alpha-BHC	EPA 8081B	GC-ECD
NW	alpha-BHC	EPA 3510C	PREP
NW	alpha-BHC	EPA 3520C	PREP
NW	alpha-BHC	EPA 608	GC-ECD
NW	beta-BHC	EPA 8081B	GC-ECD
NW	beta-BHC	EPA 3510C	PREP
NW	beta-BHC	EPA 3520C	PREP
NW	beta-BHC	EPA 608	GC-ECD
NW	delta-BHC	EPA 8081B	GC-ECD
NW	delta-BHC	EPA 3510C	PREP
NW	delta-BHC	EPA 3520C	PREP
NW	delta-BHC	EPA 608	GC-ECD
NW	Lindane	EPA 8081B	GC-ECD
NW	Lindane	EPA 3510C	PREP
NW	Lindane	EPA 3520C	PREP
NW	Lindane	EPA 608	GC-ECD
NW	alpha-Chlordane	EPA 8081B	GC-ECD
NW	alpha-Chlordane	EPA 3510C	PREP
NW	alpha-Chlordane	EPA 3520C	PREP

Matrix	Analyte	Method	Technology
NW	gamma-Chlordane	EPA 8081B	GC-ECD
NW	gamma-Chlordane	EPA 3510C	PREP
NW	gamma-Chlordane	EPA 3520C	PREP
NW	Chlordane Total	EPA 8081B	GC-ECD
NW	Chlordane Total	EPA 3510C	PREP
NW	Chlordane Total	EPA 3520C	PREP
NW	Chlordane Total	EPA 608	GC-ECD
NW	Chlorobenzilate	EPA 8270D	GC-MS
NW	4,4'-DDD	EPA 8081B	GC-ECD
NW	4,4'-DDD	EPA 3510C	PREP
NW	4,4'-DDD	EPA 3520C	PREP
NW	4,4'-DDD	EPA 608	GC-ECD
NW	4,4'-DDE	EPA 8081B	GC-ECD
NW	4,4'-DDE	EPA 3510C	PREP
NW	4,4'-DDE	EPA 3520C	PREP
NW	4,4'-DDE	EPA 608	GC-ECD
NW	4,4'-DDT	EPA 8081B	GC-ECD
NW	4,4'-DDT	EPA 3510C	PREP
NW	4,4'-DDT	EPA 3520C	PREP
NW	4,4'-DDT	EPA 608	GC-ECD
NW	Diallate	EPA 8270D	GC-MS
NW	Dieldrin	EPA 8081B	GC-ECD
NW	Dieldrin	EPA 3510C	PREP
NW	Dieldrin	EPA 3520C	PREP
NW	Dieldrin	EPA 608	GC-ECD
NW	Endosulfan I	EPA 8081B	GC-ECD
NW	Endosulfan I	EPA 3510C	PREP
NW	Endosulfan I	EPA 3520C	PREP
NW	Endosulfan I	EPA 608	GC-ECD
NW	Endosulfan II	EPA 8081B	GC-ECD
NW	Endosulfan II	EPA 3510C	PREP
NW	Endosulfan II	EPA 3520C	PREP
NW	Endosulfan II	EPA 608	GC-ECD
NW	Endosulfan sulfate	EPA 8081B	GC-ECD
NW	Endosulfan sulfate	EPA 3510C	PREP
NW	Endosulfan sulfate	EPA 3520C	PREP
NW	Endosulfan sulfate	EPA 608	GC-ECD
NW	Endrin	EPA 8081B	GC-ECD
NW	Endrin	EPA 3510C	PREP
NW	Endrin	EPA 3520C	PREP
NW	Endrin	EPA 608	GC-ECD
NW	Endrin aldehyde	EPA 8081B	GC-ECD
NW	Endrin aldehyde	EPA 3510C	PREP
NW	Endrin aldehyde	EPA 3520C	PREP
NW	Endrin aldehyde	EPA 608	GC-ECD
NW	Endrin Ketone	EPA 8081B	GC-ECD
NW	Heptachlor	EPA 8081B	GC-ECD
NW	Heptachlor	EPA 3510C	PREP
NW	Heptachlor	EPA 3520C	PREP
NW	Heptachlor	EPA 608	GC-ECD
NW	Heptachlor epoxide	EPA 8081B	GC-ECD
NW	Heptachlor epoxide	EPA 3510C	PREP
NW	Heptachlor epoxide	EPA 3520C	PREP
NW	Heptachlor epoxide	EPA 608	GC-ECD

Matrix	Analyte	Method	Technology
NW	Isodrin	EPA 8081B	GC-ECD
NW	Isodrin	EPA 8270D	GC-MS
NW	Kepone	EPA 8270D	GC-MS
NW	Mirex	EPA 8081B	GC-ECD
NW	Methoxychlor	EPA 8081B	GC-ECD
NW	Methoxychlor	EPA 3510C	PREP
NW	Methoxychlor	EPA 3520C	PREP
NW	Methoxychlor	EPA 608	GC-ECD
NW	PCNB	EPA 8270D	GC-MS
NW	Toxaphene	EPA 8081B	GC-ECD
NW	Toxaphene	EPA 3510C	PREP
NW	Toxaphene	EPA 3520C	PREP
NW	Toxaphene	EPA 608	GC-ECD
NW	2,4-D	EPA 8151A	GC-ECD
NW	2,4-DB	EPA 8151A	GC-ECD
NW	Dalapon	EPA 8151A	GC-ECD
NW	Dicamba	EPA 8151A	GC-ECD
NW	Dinoseb	EPA 8151A	GC-ECD
NW	Dinoseb	EPA 8270D	GC-MS
NW	2,4,5-T	EPA 8151A	GC-ECD
NW	2,4,5-TP (Silvex)	EPA 8151A	GC-ECD
NW	Atrazine	EPA 8270D	GC-MS
NW	Azinphos methyl	EPA 8141B	GC-NPD
NW	Chlorpyriphos	EPA 8141B	GC-NPD
NW	Diazinon	EPA 8141B	GC-NPD
NW	Disulfoton	EPA 8141B	GC-NPD
NW	Demeton-O	EPA 8141B	GC-NPD
NW	Demeton-S	EPA 8141B	GC-NPD
NW	Dimethoate	EPA 8141B	GC-NPD
NW	Dimethoate	EPA 8270D	GC-MS
NW	Famphur	EPA 8141B	GC-NPD
NW	Famphur	EPA 8270D	GC-MS
NW	Malathion	EPA 8141B	GC-NPD
NW	Parathion ethyl	EPA 8141B	GC-NPD
NW	Parathion ethyl	EPA 8270D	GC-MS
NW	Parathion methyl	EPA 8141B	GC-NPD
NW	Phorate	EPA 8141B	GC-NPD
NW	Phorate	EPA 8270D	GC-MS
NW	Sulfotepp	EPA 8270D	GC-MS
NW	Thionazin	EPA 8141B	GC-NPD
NW	Thionazin	EPA 8270D	GC-MS
NW	Benzyl chloride	EPA 8260C	GC-MS
NW	Turbidity	EPA 180.1 Rev. 2.0	COLOR
NW	Boron, Total	EPA 200.7 Rev. 4.4	ICP-AES
NW	Boron, Total	EPA 3005A	PREP
NW	Boron, Total	EPA 6010C	ICP-AES
NW	Bromide	EPA 300.0 Rev. 2.1	IC-COND
NW	Bromide	EPA 9056A	IC-COND
NW	Color	SM 2120B-01,-11	COLOR
NW	Corrosivity	SM 2330	CALC
NW	Cyanide, Total	SM 4500-CN B or C-99,-11	PREP
NW	Cyanide, Total	EPA 9014	COLOR
NW	Cyanide, Total	SM 4500-CN E-99,-11	COLOR
NW	Cyanide, Total	EPA 9010C	PREP

Matrix	Analyte	Method	Technology
NW	Oil and Grease Total Recoverable (HEM)	EPA 1664A	GRAV
NW	Organic Carbon, Total	SM 5310B-00,-11	IR
NW	Organic Carbon, Total	EPA 9060A	IR
NW	Perchlorate	EPA 314.0	IC-COND
NW	Phenols	EPA 420.1 Rev. 1978	COLOR
NW	Phenols	EPA 9065	COLOR
NW	Silica, Dissolved	EPA 200.7 Rev. 4.4	ICP-AES
NW	Silica, Dissolved	EPA 6010C	ICP-AES
NW	Specific Conductance	EPA 120.1 Rev. 1982	COND
NW	Surfactant (MBAS)	SM 5540C-00,-11	COLOR
NW	Sulfide (as S)	SM 4500-S2- F-00,-11	TITR
NW	Sulfide (as S)	EPA 9030B	PREP
NW	Sulfide (as S)	EPA 9034	TITR
NW	Total Petroleum Hydrocarbons	EPA 1664A	GRAV
NW	Aniline	EPA 625	GC-MS
NW	Aniline	EPA 8270D	GC-MS
NW	4-Chloroaniline	EPA 8270D	GC-MS
NW	1-Naphthylamine	EPA 8270D	GC-MS
NW	1,2-Diphenylhydrazine	EPA 8270D	GC-MS
NW	2-Naphthylamine	EPA 8270D	GC-MS
NW	2-Nitroaniline	EPA 8270D	GC-MS
NW	3-Nitroaniline	EPA 8270D	GC-MS
NW	4-Nitroaniline	EPA 8270D	GC-MS
NW	5-Nitro-o-toluidine	EPA 8270D	GC-MS
NW	Carbazole	EPA 625	GC-MS
NW	Carbazole	EPA 8270D	GC-MS
NW	Diphenylamine	EPA 8270D	GC-MS
NW	Methapyrilene	EPA 8270D	GC-MS
NW	1,4-Phenylenediamine	EPA 8270D	GC-MS
NW	Pronamide	EPA 8270D	GC-MS
NW	Propionitrile	EPA 8260C	GC-MS
NW	Pyridine	EPA 625	GC-MS
NW	Pyridine	EPA 8270D	GC-MS
NW	Acetone	EPA 5030C	PREP
NW	Acetone	EPA 8260C	GC-MS
NW	Acetone	EPA 1624B	GC-MS
NW	Acetonitrile	EPA 8260C	GC-MS
NW	2-Butanone (Methylethyl ketone)	EPA 5030C	PREP
NW	2-Butanone (Methylethyl ketone)	EPA 8260C	GC-MS
NW	Carbon Disulfide	EPA 8260C	GC-MS
NW	Cyclohexane	EPA 8260C	GC-MS
NW	Di-ethyl ether	EPA 8260C	GC-MS
NW	1,4-Dioxane	EPA 8260C	GC-MS
NW	Ethyl Acetate	EPA 1666	GC-MS
NW	Ethyl Acetate	EPA 8260C	GC-MS
NW	2-Hexanone	EPA 5030C	PREP
NW	2-Hexanone	EPA 8260C	GC-MS
NW	Isobutyl alcohol	EPA 8260C	GC-MS
NW	Isopropanol	EPA 8260C	GC-MS
NW	Isopropyl Acetate	EPA 1666	GC-MS
NW	Methyl acetate	EPA 8260C	GC-MS
NW	Methyl cyclohexane	EPA 8260C	GC-MS
NW	4-Methyl-2-Pentanone	EPA 5030C	PREP
NW	4-Methyl-2-Pentanone	EPA 8260C	GC-MS

Matrix	Analyte	Method	Technology
NW	n-Amyl Acetate	EPA 1666	GC-MS
NW	2-Nitropropane	EPA 8260C	GC-MS
NW	o-Toluidine	EPA 8270D	GC-MS
NW	Vinyl acetate	EPA 5030C	PREP
NW	Vinyl acetate	EPA 8260C	GC-MS
NW	Acetophenone	EPA 625	GC-MS
NW	Acetophenone	EPA 8270D	GC-MS
NW	alpha-Terpineol	EPA 625	GC-MS
NW	4-Amino biphenyl	EPA 8270D	GC-MS
NW	Aramite	EPA 8270D	GC-MS
NW	Benzoic Acid	EPA 8270D	GC-MS
NW	Benzyl alcohol	EPA 8270D	GC-MS
NW	Benzaldehyde	EPA 8270D	GC-MS
NW	1,1'-Biphenyl	EPA 8270D	GC-MS
NW	Caprolactam	EPA 8270D	GC-MS
NW	1,2-Dichlorobenzene, Semi-volatile	EPA 3510C	PREP
NW	1,2-Dichlorobenzene, Semi-volatile	EPA 3520C	PREP
NW	1,2-Dichlorobenzene, Semi-volatile	EPA 8270D	GC-MS
NW	1,3-Dichlorobenzene, Semi-volatile	EPA 3510C	PREP
NW	1,3-Dichlorobenzene, Semi-volatile	EPA 3520C	PREP
NW	1,3-Dichlorobenzene, Semi-volatile	EPA 8270D	GC-MS
NW	1,4-Dichlorobenzene, Semi-volatile	EPA 3510C	PREP
NW	1,4-Dichlorobenzene, Semi-volatile	EPA 3520C	PREP
NW	1,4-Dichlorobenzene, Semi-volatile	EPA 8270D	GC-MS
NW	Dibenzofuran	EPA 3510C	PREP
NW	Dibenzofuran	EPA 3520C	PREP
NW	Dibenzofuran	EPA 8270D	GC-MS
NW	p-Dimethylaminoazobenzene	EPA 8270D	GC-MS
NW	Ethyl methanesulfonate	EPA 8270D	GC-MS
NW	Isosafrole	EPA 8270D	GC-MS
NW	Methyl methanesulfonate	EPA 8270D	GC-MS
NW	2-Methylnaphthalene	EPA 3510C	PREP
NW	2-Methylnaphthalene	EPA 3520C	PREP
NW	2-Methylnaphthalene	EPA 8270D	GC-MS
NW	n-Decane	EPA 625	GC-MS
NW	n-Octadecane	EPA 625	GC-MS
NW	2-Picoline	EPA 8270D	GC-MS
NW	Phenacetin	EPA 8270D	GC-MS
NW	Safrole	EPA 8270D	GC-MS
NW	O,O,O-Triethyl phosphorothioate	EPA 8270D	GC-MS
NW	Di-isopropyl ether	EPA 8260C	GC-MS
NW	Ethanol	EPA 8260C	GC-MS
NW	tert-butyl ethyl ether (ETBE)	EPA 8260C	GC-MS
NW	Methyl tert-butyl ether	EPA 5030C	PREP
NW	Methyl tert-butyl ether	EPA 8260C	GC-MS
NW	tert-amyl alcohol	EPA 8260C	GC-MS
NW	tert-amyl methyl ether (TAME)	EPA 8260C	GC-MS
NW	tert-butyl alcohol	EPA 8260C	GC-MS
NW	Acetylene	RSK-175	GC-FID
NW	Ethane	RSK-175	GC-FID
NW	Ethene (Ethylene)	RSK-175	GC-FID
NW	Methane	RSK-175	GC-FID
NW	Propane	RSK-175	GC-FID
NW	Diesel Range Organics	EPA 3510C	PREP

Matrix	Analyte	Method	Technology
NW	Diesel Range Organics	EPA 8270D	GC-MS
NW	Diesel Range Organics	EPA 8015D	GC-FID
NW	Gasoline Range Organics	EPA 5030C	PREP
NW	Gasoline Range Organics	EPA 8260C	GC-MS
NW	Gasoline Range Organics	EPA 8015D	GC-FID
PW	Coliform, Total / E. coli (Qualitative)	SM 18-22 9223B (-97) (Colilert)	CF-QL
PW	Standard Plate Count	SimPlate	F-HPC-QN
PW	Arsenic, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Barium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Barium, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Cadmium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Cadmium, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Chromium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Chromium, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Copper, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Copper, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Iron, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Lead, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Mercury, Total	EPA 245.1 Rev. 3.0	CVAAS
PW	Mercury, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Manganese, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Manganese, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Selenium, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Silver, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Silver, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Zinc, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Zinc, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Aluminum, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Aluminum, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Antimony, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Beryllium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Beryllium, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Molybdenum, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Molybdenum, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Nickel, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Nickel, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Thallium, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Vanadium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Vanadium, Total	EPA 200.8 Rev. 5.4	ICP-MS
PW	Boron, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Calcium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Magnesium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Potassium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Sodium, Total	EPA 200.7 Rev. 4.4	ICP-AES
PW	Alkalinity	SM 18-22 2320B (-97)	TITR
PW	Chloride	EPA 300.0 Rev. 2.1	IC-COND
PW	Chloride	SM 21-22 4500-Cl- E (-97)	COLOR
PW	Color	SM 18-22 2120B (-01)	COLOR
PW	Corrosivity	SM 18-22 2330	CALC
PW	Specific Conductance	EPA 120.1 Rev. 1982	COND
PW	Specific Conductance	SM 18-22 2510B (-97)	COND
PW	Cyanide	SM 18-20 4500-CN C	PREP
PW	Cyanide	SM 18-22 4500-CN E (-99)	COLOR
PW	Cyanide	SM 18-22 4500-CN G (-99)	PREP

Matrix	Analyte	Method	Technology
PW	Fluoride, Total	EPA 300.0 Rev. 2.1	IC-COND
PW	Calcium Hardness	EPA 200.7 Rev. 4.4	ICP-AES
PW	Nitrate (as N)	EPA 353.2 Rev. 2.0	AUTO
PW	Nitrite (as N)	EPA 353.2 Rev. 2.0	AUTO
PW	Orthophosphate (as P)	EPA 300.0 Rev. 2.1	IC-COND
PW	Orthophosphate (as P)	SM 18-22 4500-P E (-99)	COLOR
PW	Silica, Dissolved	EPA 200.7 Rev. 4.4	ICP-AES
PW	Solids, Total Dissolved	SM 18-22 2540C (-97)	GRAV
PW	Sulfate (as SO4)	EPA 300.0 Rev. 2.1	IC-COND
PW	2,4-D	EPA 515.1	GC-ECD
PW	Dalapon	EPA 515.1	GC-ECD
PW	Dicamba	EPA 515.1	GC-ECD
PW	Dinoseb	EPA 515.1	GC-ECD
PW	Pentachlorophenol	EPA 515.1	GC-ECD
PW	Pentachlorophenol	EPA 525.2	GC-MS
PW	Picloram	EPA 515.1	GC-ECD
PW	2,4,5-TP (Silvex)	EPA 515.1	GC-ECD
PW	Alachlor	EPA 505	GC-ECD
PW	Alachlor	EPA 508.1	GC-ECD
PW	Alachlor	EPA 525.2	GC-MS
PW	Aldrin	EPA 505	GC-ECD
PW	Aldrin	EPA 508.1	GC-ECD
PW	Aldrin	EPA 525.2	GC-MS
PW	Atrazine	EPA 505	GC-ECD
PW	Atrazine	EPA 525.2	GC-MS
PW	Butachlor	EPA 525.2	GC-MS
PW	Chlordane Total	EPA 505	GC-ECD
PW	Chlordane Total	EPA 508.1	GC-ECD
PW	Chlordane Total	EPA 525.2	GC-MS
PW	Dieldrin	EPA 505	GC-ECD
PW	Dieldrin	EPA 508.1	GC-ECD
PW	Dieldrin	EPA 525.2	GC-MS
PW	Endrin	EPA 505	GC-ECD
PW	Endrin	EPA 508.1	GC-ECD
PW	Endrin	EPA 525.2	GC-MS
PW	Heptachlor	EPA 505	GC-ECD
PW	Heptachlor	EPA 508.1	GC-ECD
PW	Heptachlor	EPA 525.2	GC-MS
PW	Heptachlor epoxide	EPA 505	GC-ECD
PW	Heptachlor epoxide	EPA 508.1	GC-ECD
PW	Heptachlor epoxide	EPA 525.2	GC-MS
PW	Lindane	EPA 505	GC-ECD
PW	Lindane	EPA 508.1	GC-ECD
PW	Lindane	EPA 525.2	GC-MS
PW	Methoxychlor	EPA 505	GC-ECD
PW	Methoxychlor	EPA 508.1	GC-ECD
PW	Methoxychlor	EPA 525.2	GC-MS
PW	Metolachlor	EPA 525.2	GC-MS
PW	Metribuzin	EPA 525.2	GC-MS
PW	Propachlor	EPA 525.2	GC-MS
PW	Simazine	EPA 505	GC-ECD
PW	Simazine	EPA 525.2	GC-MS
PW	Toxaphene	EPA 505	GC-ECD
PW	Toxaphene	EPA 508.1	GC-ECD

Matrix	Analyte	Method	Technology
PW	Trifluralin	EPA 525.2	GC-MS
PW	Aldicarb	EPA 531.1	HPLC-FLUOR
PW	Aldicarb Sulfone	EPA 531.1	HPLC-FLUOR
PW	Aldicarb Sulfoxide	EPA 531.1	HPLC-FLUOR
PW	Carbaryl	EPA 531.1	HPLC-FLUOR
PW	Carbofuran	EPA 531.1	HPLC-FLUOR
PW	3-Hydroxy Carbofuran	EPA 531.1	HPLC-FLUOR
PW	Methomyl	EPA 531.1	HPLC-FLUOR
PW	Oxamyl	EPA 531.1	HPLC-FLUOR
PW	Turbidity	EPA 180.1 Rev. 2.0	COLOR
PW	Benzo(a)pyrene	EPA 525.2	GC-MS
PW	Di (2-ethylhexyl) adipate	EPA 525.2	GC-MS
PW	Bis(2-ethylhexyl) phthalate	EPA 525.2	GC-MS
PW	Diquat	EPA 549.2	HPLC-UV
PW	Endothall	EPA 548.1	GC-MS
PW	Glyphosate	EPA 547	HPLC-UV
PW	Hexachlorobenzene	EPA 505	GC-ECD
PW	Hexachlorobenzene	EPA 525.2	GC-MS
PW	Hexachlorocyclopentadiene	EPA 505	GC-ECD
PW	Hexachlorocyclopentadiene	EPA 525.2	GC-MS
PW	Methyl iodide	EPA 524.2	GC-MS
PW	Odor	SM 18-22 2150B (-97)	99
PW	Organic Carbon, Total	SM 19-22 5310B (-00)	IR
PW	Perchlorate	EPA 314.0	IC-COND
PW	Surfactant (MBAS)	SM 18-22 5540C (-00)	COLOR
PW	UV 254	SM 19-22 5910B (-00)	COLOR
PW	PCB Screen	EPA 505	GC-ECD
PW	PCB Screen	EPA 508.1	GC-ECD
PW	PCB,Total (as decachlorobiphenyl)	EPA 508A	GC-ECD
PW	Bromodichloromethane	EPA 524.2	GC-MS
PW	Bromoform	EPA 524.2	GC-MS
PW	Dibromochloromethane	EPA 524.2	GC-MS
PW	Chloroform	EPA 524.2	GC-MS
PW	Total Trihalomethanes	EPA 524.2	GC-MS
PW	Bromochloromethane	EPA 524.2	GC-MS
PW	Bromomethane	EPA 524.2	GC-MS
PW	Carbon tetrachloride	EPA 524.2	GC-MS
PW	Chloroethane	EPA 524.2	GC-MS
PW	Chloromethane	EPA 524.2	GC-MS
PW	Dibromomethane	EPA 524.2	GC-MS
PW	Dichlorodifluoromethane	EPA 524.2	GC-MS
PW	1,1-Dichloroethane	EPA 524.2	GC-MS
PW	1,2-Dichloroethane	EPA 524.2	GC-MS
PW	1,1-Dichloroethene	EPA 524.2	GC-MS
PW	cis-1,2-Dichloroethene	EPA 524.2	GC-MS
PW	trans-1,2-Dichloroethene	EPA 524.2	GC-MS
PW	1,2-Dichloropropane	EPA 524.2	GC-MS
PW	1,3-Dichloropropane	EPA 524.2	GC-MS
PW	2,2-Dichloropropane	EPA 524.2	GC-MS
PW	1,1-Dichloropropene	EPA 524.2	GC-MS
PW	cis-1,3-Dichloropropene	EPA 524.2	GC-MS
PW	trans-1,3-Dichloropropene	EPA 524.2	GC-MS
PW	Methylene chloride	EPA 524.2	GC-MS
PW	1,1,1,2-Tetrachloroethane	EPA 524.2	GC-MS

Matrix	Analyte	Method	Technology
PW	1,1,2,2-Tetrachloroethane	EPA 524.2	GC-MS
PW	Tetrachloroethene	EPA 524.2	GC-MS
PW	1,1,1-Trichloroethane	EPA 524.2	GC-MS
PW	1,1,2-Trichloroethane	EPA 524.2	GC-MS
PW	Trichloroethene	EPA 524.2	GC-MS
PW	Trichlorofluoromethane	EPA 524.2	GC-MS
PW	1,2,3-Trichloropropane	EPA 524.2	GC-MS
PW	Vinyl chloride	EPA 524.2	GC-MS
PW	Benzene	EPA 524.2	GC-MS
PW	Bromobenzene	EPA 524.2	GC-MS
PW	n-Butylbenzene	EPA 524.2	GC-MS
PW	sec-Butylbenzene	EPA 524.2	GC-MS
PW	tert-Butylbenzene	EPA 524.2	GC-MS
PW	Chlorobenzene	EPA 524.2	GC-MS
PW	2-Chlorotoluene	EPA 524.2	GC-MS
PW	4-Chlorotoluene	EPA 524.2	GC-MS
PW	1,2-Dichlorobenzene	EPA 524.2	GC-MS
PW	1,3-Dichlorobenzene	EPA 524.2	GC-MS
PW	1,4-Dichlorobenzene	EPA 524.2	GC-MS
PW	Ethyl benzene	EPA 524.2	GC-MS
PW	Hexachlorobutadiene	EPA 524.2	GC-MS
PW	Isopropylbenzene	EPA 524.2	GC-MS
PW	p-Isopropyltoluene (P-Cymene)	EPA 524.2	GC-MS
PW	n-Propylbenzene	EPA 524.2	GC-MS
PW	Styrene	EPA 524.2	GC-MS
PW	Toluene	EPA 524.2	GC-MS
PW	1,2,3-Trichlorobenzene	EPA 524.2	GC-MS
PW	1,2,4-Trichlorobenzene	EPA 524.2	GC-MS
PW	1,2,4-Trimethylbenzene	EPA 524.2	GC-MS
PW	1,3,5-Trimethylbenzene	EPA 524.2	GC-MS
PW	Total Xylenes	EPA 524.2	GC-MS
PW	1,2-Dibromoethane	EPA 504.1	GC-ECD
PW	1,2-Dibromo-3-chloropropane	EPA 504.1	GC-ECD
PW	Bromide	EPA 300.0 Rev. 2.1	IC-COND
PW	Chlorate	EPA 300.1 Rev. 1.0	IC-COND
PW	Dibromoacetic acid	EPA 552.2	GC-ECD
PW	Dichloroacetic acid	EPA 552.2	GC-ECD
PW	Monobromoacetic acid	EPA 552.2	GC-ECD
PW	Monochloroacetic acid	EPA 552.2	GC-ECD
PW	Trichloroacetic acid	EPA 552.2	GC-ECD
PW	Bromochloroacetic acid	EPA 552.2	GC-ECD
PW	Naphthalene	EPA 524.2	GC-MS
PW	Methyl tert-butyl ether	EPA 524.2	GC-MS
PW	Acetylene	RSK-175	GC-FID
PW	Ethane	RSK-175	GC-FID
PW	Ethene (Ethylene)	RSK-175	GC-FID
PW	Methane	RSK-175	GC-FID
PW	Propane	RSK-175	GC-FID
AI	Hexachlorobutadiene	EPA TO-17	GC-MS
AI	Hexachlorobutadiene	EPA TO-15	GC-MS
AI	Hexachloroethane	EPA TO-15	GC-MS
AI	1,2,4-Trichlorobenzene	EPA TO-17	GC-MS
AI	1,2,4-Trichlorobenzene	EPA TO-15	GC-MS
AI	Bromodichloromethane	EPA TO-15	GC-MS

Matrix	Analyte	Method	Technology
AI	Bromoform	EPA TO-17	GC-MS
AI	Bromoform	EPA TO-15	GC-MS
AI	Bromomethane	EPA TO-15	GC-MS
AI	Carbon tetrachloride	EPA TO-17	GC-MS
AI	Carbon tetrachloride	EPA TO-15	GC-MS
AI	Chloroform	EPA TO-17	GC-MS
AI	Chloroform	EPA TO-15	GC-MS
AI	Chloroethane	EPA TO-15	GC-MS
AI	Chloromethane	EPA TO-15	GC-MS
AI	Dibromochloromethane	EPA TO-15	GC-MS
AI	Dichlorodifluoromethane	EPA TO-15	GC-MS
AI	1,2-Dibromoethane	EPA TO-17	GC-MS
AI	1,2-Dibromoethane	EPA TO-15	GC-MS
AI	1,1-Dichloroethane	EPA TO-17	GC-MS
AI	1,1-Dichloroethane	EPA TO-15	GC-MS
AI	1,2-Dichloroethane	EPA TO-17	GC-MS
AI	1,2-Dichloroethane	EPA TO-15	GC-MS
AI	cis-1,2-Dichloroethene	EPA TO-17	GC-MS
AI	cis-1,2-Dichloroethene	EPA TO-15	GC-MS
AI	trans-1,2-Dichloroethene	EPA TO-15	GC-MS
AI	1,1-Dichloroethene	EPA TO-17	GC-MS
AI	1,1-Dichloroethene	EPA TO-15	GC-MS
AI	1,2-Dichloropropane	EPA TO-17	GC-MS
AI	1,2-Dichloropropane	EPA TO-15	GC-MS
AI	cis-1,3-Dichloropropene	EPA TO-17	GC-MS
AI	cis-1,3-Dichloropropene	EPA TO-15	GC-MS
AI	trans-1,3-Dichloropropene	EPA TO-17	GC-MS
AI	trans-1,3-Dichloropropene	EPA TO-15	GC-MS
AI	Methylene chloride	EPA TO-17	GC-MS
AI	Methylene chloride	EPA TO-15	GC-MS
AI	1,1,2,2-Tetrachloroethane	EPA TO-17	GC-MS
AI	1,1,2,2-Tetrachloroethane	EPA TO-15	GC-MS
AI	Tetrachloroethene	EPA TO-17	GC-MS
AI	Tetrachloroethene	EPA TO-15	GC-MS
AI	1,1,1-Trichloroethane	EPA TO-17	GC-MS
AI	1,1,1-Trichloroethane	EPA TO-15	GC-MS
AI	1,1,2-Trichloroethane	EPA TO-17	GC-MS
AI	1,1,2-Trichloroethane	EPA TO-15	GC-MS
AI	Trichloroethene	EPA TO-17	GC-MS
AI	Trichloroethene	EPA TO-15	GC-MS
AI	Trichlorofluoromethane	EPA TO-15	GC-MS
AI	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA TO-15	GC-MS
AI	Vinyl bromide	EPA TO-17	GC-MS
AI	Vinyl bromide	EPA TO-15	GC-MS
AI	Vinyl chloride	EPA TO-17	GC-MS
AI	Vinyl chloride	EPA TO-15	GC-MS
AI	Benzyl chloride	EPA TO-15	GC-MS
AI	Naphthalene	EPA TO-15	GC-MS
AI	Benzene	EPA TO-17	GC-MS
AI	Benzene	EPA TO-15	GC-MS
AI	Chlorobenzene	EPA TO-17	GC-MS
AI	Chlorobenzene	EPA TO-15	GC-MS
AI	2-Chlorotoluene	EPA TO-15	GC-MS
AI	1,2-Dichlorobenzene	EPA TO-17	GC-MS

Matrix	Analyte	Method	Technology
AI	1,2-Dichlorobenzene	EPA TO-15	GC-MS
AI	1,4-Dichlorobenzene	EPA TO-17	GC-MS
AI	1,4-Dichlorobenzene	EPA TO-15	GC-MS
AI	1,3-Dichlorobenzene	EPA TO-17	GC-MS
AI	1,3-Dichlorobenzene	EPA TO-15	GC-MS
AI	Ethyl benzene	EPA TO-17	GC-MS
AI	Ethyl benzene	EPA TO-15	GC-MS
AI	Isopropylbenzene	EPA TO-17	GC-MS
AI	Isopropylbenzene	EPA TO-15	GC-MS
AI	Toluene	EPA TO-17	GC-MS
AI	Toluene	EPA TO-15	GC-MS
AI	Total Xylenes	EPA TO-17	GC-MS
AI	Total Xylenes	EPA TO-15	GC-MS
AI	o-Xylene	EPA TO-17	GC-MS
AI	o-Xylene	EPA TO-15	GC-MS
AI	m/p-Xylenes	EPA TO-17	GC-MS
AI	m/p-Xylenes	EPA TO-15	GC-MS
AI	1,2,4-Trimethylbenzene	EPA TO-15	GC-MS
AI	1,3,5-Trimethylbenzene	EPA TO-15	GC-MS
AI	Styrene	EPA TO-17	GC-MS
AI	Styrene	EPA TO-15	GC-MS
AI	Acetone	EPA TO-17	GC-MS
AI	Acetone	EPA TO-15	GC-MS
AI	1,3-Butadiene	EPA TO-15	GC-MS
AI	2-Butanone (Methylethyl ketone)	EPA TO-17	GC-MS
AI	2-Butanone (Methylethyl ketone)	EPA TO-15	GC-MS
AI	Carbon Disulfide	EPA TO-17	GC-MS
AI	Carbon Disulfide	EPA TO-15	GC-MS
AI	Cyclohexane	EPA TO-15	GC-MS
AI	1,2-Dichlorotetrafluoroethane	EPA TO-15	GC-MS
AI	1,4-Dioxane	EPA TO-17	GC-MS
AI	1,4-Dioxane	EPA TO-15	GC-MS
AI	Hexane	EPA TO-15	GC-MS
AI	n-Heptane	EPA TO-15	GC-MS
AI	Isopropanol	EPA TO-15	GC-MS
AI	4-Methyl-2-Pentanone	EPA TO-17	GC-MS
AI	4-Methyl-2-Pentanone	EPA TO-15	GC-MS
AI	Methyl tert-butyl ether	EPA TO-17	GC-MS
AI	Methyl tert-butyl ether	EPA TO-15	GC-MS
AI	tert-butyl alcohol	EPA TO-15	GC-MS
AI	2,2,4-Trimethylpentane	EPA TO-15	GC-MS
AI	Vinyl acetate	EPA TO-15	GC-MS
AI	Acrylonitrile	EPA TO-15	GC-MS
AI	Methyl methacrylate	EPA TO-15	GC-MS
SW	Ignitability	EPA 1010A	99
SW	Corrosivity	EPA 9040C	POT
SW	Corrosivity	EPA 9045D	POT
SW	Corrosivity	EPA 1110A	GRAV
SW	TCLP	EPA 1311	99
SW	Synthetic Precipitation Leaching Proc.	EPA 1312	99
SW	Free Liquids	EPA 9095B	PA
SW	Barium, Total	EPA 3005A	PREP
SW	Barium, Total	EPA 3050B	PREP
SW	Barium, Total	EPA 6010C	ICP-AES

Matrix	Analyte	Method	Technology
SW	Barium, Total	EPA 6020A	ICP-MS
SW	Cadmium, Total	EPA 3005A	PREP
SW	Cadmium, Total	EPA 3050B	PREP
SW	Cadmium, Total	EPA 6010C	ICP-AES
SW	Cadmium, Total	EPA 6020A	ICP-MS
SW	Calcium, Total	EPA 3005A	PREP
SW	Calcium, Total	EPA 3050B	PREP
SW	Calcium, Total	EPA 6010C	ICP-AES
SW	Chromium, Total	EPA 3005A	PREP
SW	Chromium, Total	EPA 3050B	PREP
SW	Chromium, Total	EPA 6010C	ICP-AES
SW	Chromium, Total	EPA 6020A	ICP-MS
SW	Copper, Total	EPA 3005A	PREP
SW	Copper, Total	EPA 3050B	PREP
SW	Copper, Total	EPA 6010C	ICP-AES
SW	Copper, Total	EPA 6020A	ICP-MS
SW	Iron, Total	EPA 6010C	ICP-AES
SW	Lead, Total	EPA 3005A	PREP
SW	Lead, Total	EPA 3050B	PREP
SW	Lead, Total	EPA 6010C	ICP-AES
SW	Lead, Total	EPA 6020A	ICP-MS
SW	Nickel, Total	EPA 3005A	PREP
SW	Nickel, Total	EPA 3050B	PREP
SW	Nickel, Total	EPA 6010C	ICP-AES
SW	Nickel, Total	EPA 6020A	ICP-MS
SW	Magnesium, Total	EPA 3005A	PREP
SW	Magnesium, Total	EPA 3050B	PREP
SW	Magnesium, Total	EPA 6010C	ICP-AES
SW	Manganese, Total	EPA 3005A	PREP
SW	Manganese, Total	EPA 3050B	PREP
SW	Manganese, Total	EPA 6010C	ICP-AES
SW	Manganese, Total	EPA 6020A	ICP-MS
SW	Potassium, Total	EPA 3005A	PREP
SW	Potassium, Total	EPA 3050B	PREP
SW	Potassium, Total	EPA 6010C	ICP-AES
SW	Silver, Total	EPA 3005A	PREP
SW	Silver, Total	EPA 3050B	PREP
SW	Silver, Total	EPA 6010C	ICP-AES
SW	Silver, Total	EPA 6020A	ICP-MS
SW	Sodium, Total	EPA 3050B	PREP
SW	Sodium, Total	EPA 6010C	ICP-AES
SW	Strontium, Total	EPA 3005A	PREP
SW	Strontium, Total	EPA 3050B	PREP
SW	Strontium, Total	EPA 6010C	ICP-AES
SW	Aluminum, Total	EPA 3005A	PREP
SW	Aluminum, Total	EPA 3050B	PREP
SW	Aluminum, Total	EPA 6010C	ICP-AES
SW	Aluminum, Total	EPA 6020A	ICP-MS
SW	Antimony, Total	EPA 3005A	PREP
SW	Antimony, Total	EPA 3050B	PREP
SW	Antimony, Total	EPA 6010C	ICP-AES
SW	Antimony, Total	EPA 6020A	ICP-MS
SW	Arsenic, Total	EPA 3005A	PREP
SW	Arsenic, Total	EPA 3050B	PREP

Matrix	Analyte	Method	Technology
SW	Arsenic, Total	EPA 6010C	ICP-AES
SW	Arsenic, Total	EPA 6020A	ICP-MS
SW	Beryllium, Total	EPA 3005A	PREP
SW	Beryllium, Total	EPA 3050B	PREP
SW	Beryllium, Total	EPA 6010C	ICP-AES
SW	Beryllium, Total	EPA 6020A	ICP-MS
SW	Chromium VI	EPA 7196A	COLOR
SW	Chromium VI	EPA 3060A	PREP
SW	Mercury, Total	EPA 7471B	CVAAS
SW	Selenium, Total	EPA 3005A	PREP
SW	Selenium, Total	EPA 3050B	PREP
SW	Selenium, Total	EPA 6010C	ICP-AES
SW	Selenium, Total	EPA 6020A	ICP-MS
SW	Vanadium, Total	EPA 3005A	PREP
SW	Vanadium, Total	EPA 3050B	PREP
SW	Vanadium, Total	EPA 6010C	ICP-AES
SW	Vanadium, Total	EPA 6020A	ICP-MS
SW	Zinc, Total	EPA 3005A	PREP
SW	Zinc, Total	EPA 3050B	PREP
SW	Zinc, Total	EPA 6010C	ICP-AES
SW	Zinc, Total	EPA 6020A	ICP-MS
SW	Cobalt, Total	EPA 3005A	PREP
SW	Cobalt, Total	EPA 3050B	PREP
SW	Cobalt, Total	EPA 6010C	ICP-AES
SW	Cobalt, Total	EPA 6020A	ICP-MS
SW	Molybdenum, Total	EPA 3005A	PREP
SW	Molybdenum, Total	EPA 3050B	PREP
SW	Molybdenum, Total	EPA 6010C	ICP-AES
SW	Molybdenum, Total	EPA 6020A	ICP-MS
SW	Thallium, Total	EPA 3005A	PREP
SW	Thallium, Total	EPA 3050B	PREP
SW	Thallium, Total	EPA 6010C	ICP-AES
SW	Thallium, Total	EPA 6020A	ICP-MS
SW	Tin, Total	EPA 3005A	PREP
SW	Tin, Total	EPA 3050B	PREP
SW	Tin, Total	EPA 6010C	ICP-AES
SW	Acrolein (Propenal)	EPA 5035A-L	PREP
SW	Acrolein (Propenal)	EPA 5035A-H	PREP
SW	Acrolein (Propenal)	EPA 8260C	GC-MS
SW	Acrylonitrile	EPA 5035A-L	PREP
SW	Acrylonitrile	EPA 5035A-H	PREP
SW	Acrylonitrile	EPA 8260C	GC-MS
SW	Ethyl methacrylate	EPA 8260C	GC-MS
SW	Methyl acrylonitrile	EPA 8260C	GC-MS
SW	Methyl methacrylate	EPA 8260C	GC-MS
SW	1-Chloronaphthalene	EPA 8270D	GC-MS
SW	2-Chloronaphthalene	EPA 3545A	PREP
SW	2-Chloronaphthalene	EPA 8270D	GC-MS
SW	Hexachlorobenzene	EPA 3545A	PREP
SW	Hexachlorobenzene	EPA 8270D	GC-MS
SW	Hexachlorobutadiene	EPA 3545A	PREP
SW	Hexachlorobutadiene	EPA 8270D	GC-MS
SW	Hexachlorocyclopentadiene	EPA 3545A	PREP
SW	Hexachlorocyclopentadiene	EPA 8270D	GC-MS

Matrix	Analyte	Method	Technology
SW	Hexachloroethane	EPA 3545A	PREP
SW	Hexachloroethane	EPA 8270D	GC-MS
SW	Hexachloropropene	EPA 8270D	GC-MS
SW	Pentachlorobenzene	EPA 3545A	PREP
SW	Pentachlorobenzene	EPA 8270D	GC-MS
SW	1,2,3-Trichlorobenzene	EPA 5035A-L	PREP
SW	1,2,3-Trichlorobenzene	EPA 5035A-H	PREP
SW	1,2,3-Trichlorobenzene	EPA 8260C	GC-MS
SW	1,2,4-Trichlorobenzene	EPA 3545A	PREP
SW	1,2,4-Trichlorobenzene	EPA 8270D	GC-MS
SW	1,2,4,5-Tetrachlorobenzene	EPA 8270D	GC-MS
SW	Bis(2-chloroethyl)ether	EPA 3545A	PREP
SW	Bis(2-chloroethyl)ether	EPA 8270D	GC-MS
SW	Bis(2-chloroethoxy)methane	EPA 3545A	PREP
SW	Bis(2-chloroethoxy)methane	EPA 8270D	GC-MS
SW	Bis(2-chloroisopropyl) ether	EPA 3545A	PREP
SW	Bis(2-chloroisopropyl) ether	EPA 8270D	GC-MS
SW	4-Bromophenylphenyl ether	EPA 3545A	PREP
SW	4-Bromophenylphenyl ether	EPA 8270D	GC-MS
SW	4-Chlorophenylphenyl ether	EPA 3545A	PREP
SW	4-Chlorophenylphenyl ether	EPA 8270D	GC-MS
SW	2,4-Dinitrotoluene	EPA 3545A	PREP
SW	2,4-Dinitrotoluene	EPA 8270D	GC-MS
SW	2,6-Dinitrotoluene	EPA 3545A	PREP
SW	2,6-Dinitrotoluene	EPA 8270D	GC-MS
SW	1,3-Dinitrobenzene	EPA 8270D	GC-MS
SW	Isophorone	EPA 3545A	PREP
SW	Isophorone	EPA 8270D	GC-MS
SW	1,4-Naphthoquinone	EPA 8270D	GC-MS
SW	Nitrobenzene	EPA 3545A	PREP
SW	Nitrobenzene	EPA 8270D	GC-MS
SW	Pyridine	EPA 8270D	GC-MS
SW	1,3,5-Trinitrobenzene	EPA 8270D	GC-MS
SW	Benzyl butyl phthalate	EPA 3545A	PREP
SW	Benzyl butyl phthalate	EPA 8270D	GC-MS
SW	Bis(2-ethylhexyl) phthalate	EPA 3545A	PREP
SW	Bis(2-ethylhexyl) phthalate	EPA 8270D	GC-MS
SW	Diethyl phthalate	EPA 3545A	PREP
SW	Diethyl phthalate	EPA 8270D	GC-MS
SW	Dimethyl phthalate	EPA 3545A	PREP
SW	Dimethyl phthalate	EPA 8270D	GC-MS
SW	Di-n-butyl phthalate	EPA 3545A	PREP
SW	Di-n-butyl phthalate	EPA 8270D	GC-MS
SW	Di-n-octyl phthalate	EPA 3545A	PREP
SW	Di-n-octyl phthalate	EPA 8270D	GC-MS
SW	PCB-1016	EPA 3580A	PREP
SW	PCB-1016	EPA 3545A	PREP
SW	PCB-1016	EPA 8082A	GC-ECD
SW	PCB-1221	EPA 3580A	PREP
SW	PCB-1221	EPA 3545A	PREP
SW	PCB-1221	EPA 8082A	GC-ECD
SW	PCB-1232	EPA 3580A	PREP
SW	PCB-1232	EPA 3545A	PREP
SW	PCB-1232	EPA 8082A	GC-ECD

Matrix	Analyte	Method	Technology
SW	PCB-1242	EPA 3580A	PREP
SW	PCB-1242	EPA 3545A	PREP
SW	PCB-1242	EPA 8082A	GC-ECD
SW	PCB-1248	EPA 3580A	PREP
SW	PCB-1248	EPA 3545A	PREP
SW	PCB-1248	EPA 8082A	GC-ECD
SW	PCB-1254	EPA 3580A	PREP
SW	PCB-1254	EPA 3545A	PREP
SW	PCB-1254	EPA 8082A	GC-ECD
SW	PCB-1260	EPA 3580A	PREP
SW	PCB-1260	EPA 3545A	PREP
SW	PCB-1260	EPA 8082A	GC-ECD
SW	PCB-1262	EPA 8082A	GC-ECD
SW	PCB-1268	EPA 8082A	GC-ECD
SW	PCBs in Oil	EPA 3580A	PREP
SW	PCBs in Oil	EPA 8082A	GC-ECD
SW	2-Acetylaminofluorene	EPA 8270D	GC-MS
SW	Acenaphthene	EPA 3545A	PREP
SW	Acenaphthene	EPA 8270D	GC-MS
SW	Anthracene	EPA 3545A	PREP
SW	Anthracene	EPA 8270D	GC-MS
SW	Acenaphthylene	EPA 3545A	PREP
SW	Acenaphthylene	EPA 8270D	GC-MS
SW	Benzo(a)anthracene	EPA 3545A	PREP
SW	Benzo(a)anthracene	EPA 8270D	GC-MS
SW	Benzo(a)pyrene	EPA 3545A	PREP
SW	Benzo(a)pyrene	EPA 8270D	GC-MS
SW	Benzo(b)fluoranthene	EPA 3545A	PREP
SW	Benzo(b)fluoranthene	EPA 8270D	GC-MS
SW	Benzo(ghi)perylene	EPA 3545A	PREP
SW	Benzo(ghi)perylene	EPA 8270D	GC-MS
SW	Benzo(k)fluoranthene	EPA 3545A	PREP
SW	Benzo(k)fluoranthene	EPA 8270D	GC-MS
SW	Chrysene	EPA 3545A	PREP
SW	Chrysene	EPA 8270D	GC-MS
SW	Dibenzo(a,h)anthracene	EPA 3545A	PREP
SW	Dibenzo(a,h)anthracene	EPA 8270D	GC-MS
SW	7,12-Dimethylbenzyl (a) anthracene	EPA 8270D	GC-MS
SW	Fluoranthene	EPA 3545A	PREP
SW	Fluoranthene	EPA 8270D	GC-MS
SW	Fluorene	EPA 3545A	PREP
SW	Fluorene	EPA 8270D	GC-MS
SW	Indeno(1,2,3-cd)pyrene	EPA 3545A	PREP
SW	Indeno(1,2,3-cd)pyrene	EPA 8270D	GC-MS
SW	3-Methylcholanthrene	EPA 8270D	GC-MS
SW	Naphthalene	EPA 3545A	PREP
SW	Naphthalene	EPA 8270D	GC-MS
SW	Phenanthrene	EPA 3545A	PREP
SW	Phenanthrene	EPA 8270D	GC-MS
SW	Pyrene	EPA 3545A	PREP
SW	Pyrene	EPA 8270D	GC-MS
SW	Acenaphthylene Low Level	EPA 3545A	PREP
SW	Acenaphthylene Low Level	EPA 8270D SIM	GC-MS
SW	Acenaphthene Low Level	EPA 3545A	PREP

Matrix	Analyte	Method	Technology
SW	Acenaphthene Low Level	EPA 8270D SIM	GC-MS
SW	Anthracene Low Level	EPA 3545A	PREP
SW	Anthracene Low Level	EPA 8270D SIM	GC-MS
SW	Benzo(a)anthracene Low Level	EPA 3545A	PREP
SW	Benzo(a)anthracene Low Level	EPA 8270D SIM	GC-MS
SW	Benzo(b)fluoranthene Low Level	EPA 3545A	PREP
SW	Benzo(b)fluoranthene Low Level	EPA 8270D SIM	GC-MS
SW	Benzo(k)fluoranthene Low Level	EPA 3545A	PREP
SW	Benzo(k)fluoranthene Low Level	EPA 8270D SIM	GC-MS
SW	Benzo(g,h,i)perylene Low Level	EPA 3545A	PREP
SW	Benzo(g,h,i)perylene Low Level	EPA 8270D SIM	GC-MS
SW	Benzo(a)pyrene Low Level	EPA 3545A	PREP
SW	Benzo(a)pyrene Low Level	EPA 8270D SIM	GC-MS
SW	Chrysene Low Level	EPA 3545A	PREP
SW	Chrysene Low Level	EPA 8270D SIM	GC-MS
SW	Dibenzo(a,h)anthracene Low Level	EPA 3545A	PREP
SW	Dibenzo(a,h)anthracene Low Level	EPA 8270D SIM	GC-MS
SW	Fluoranthene Low Level	EPA 3545A	PREP
SW	Fluoranthene Low Level	EPA 8270D SIM	GC-MS
SW	Fluorene Low Level	EPA 3545A	PREP
SW	Fluorene Low Level	EPA 8270D SIM	GC-MS
SW	Indeno(1,2,3-cd)pyrene Low Level	EPA 3545A	PREP
SW	Indeno(1,2,3-cd)pyrene Low Level	EPA 8270D SIM	GC-MS
SW	Naphthalene Low Level	EPA 3545A	PREP
SW	Naphthalene Low Level	EPA 8270D SIM	GC-MS
SW	Phenanthrene Low Level	EPA 3545A	PREP
SW	Phenanthrene Low Level	EPA 8270D SIM	GC-MS
SW	Pyrene Low Level	EPA 3545A	PREP
SW	Pyrene Low Level	EPA 8270D SIM	GC-MS
SW	4-Chloro-3-methylphenol	EPA 3545A	PREP
SW	4-Chloro-3-methylphenol	EPA 8270D	GC-MS
SW	2-Chlorophenol	EPA 3545A	PREP
SW	2-Chlorophenol	EPA 8270D	GC-MS
SW	2,4-Dichlorophenol	EPA 3545A	PREP
SW	2,4-Dichlorophenol	EPA 8270D	GC-MS
SW	2,6-Dichlorophenol	EPA 8270D	GC-MS
SW	2,4-Dimethylphenol	EPA 3545A	PREP
SW	2,4-Dimethylphenol	EPA 8270D	GC-MS
SW	2,4-Dinitrophenol	EPA 3545A	PREP
SW	2,4-Dinitrophenol	EPA 8270D	GC-MS
SW	2-Methylphenol	EPA 3545A	PREP
SW	2-Methylphenol	EPA 8270D	GC-MS
SW	3-Methylphenol	EPA 8270D	GC-MS
SW	4-Methylphenol	EPA 3545A	PREP
SW	4-Methylphenol	EPA 8270D	GC-MS
SW	2-Methyl-4,6-dinitrophenol	EPA 3545A	PREP
SW	2-Methyl-4,6-dinitrophenol	EPA 8270D	GC-MS
SW	2-Nitrophenol	EPA 3545A	PREP
SW	2-Nitrophenol	EPA 8270D	GC-MS
SW	4-Nitrophenol	EPA 3545A	PREP
SW	4-Nitrophenol	EPA 8270D	GC-MS
SW	Pentachlorophenol	EPA 3545A	PREP
SW	Pentachlorophenol	EPA 8270D	GC-MS
SW	Phenol	EPA 3545A	PREP

Matrix	Analyte	Method	Technology
SW	Phenol	EPA 8270D	GC-MS
SW	2,3,4,6 Tetrachlorophenol	EPA 8270D	GC-MS
SW	2,4,6-Trichlorophenol	EPA 3545A	PREP
SW	2,4,6-Trichlorophenol	EPA 8270D	GC-MS
SW	2,4,5-Trichlorophenol	EPA 3545A	PREP
SW	2,4,5-Trichlorophenol	EPA 8270D	GC-MS
SW	1,2,4-Trichlorobenzene, Volatile	EPA 5035A-L	PREP
SW	1,2,4-Trichlorobenzene, Volatile	EPA 5035A-H	PREP
SW	1,2,4-Trichlorobenzene, Volatile	EPA 8260C	GC-MS
SW	Benzene	EPA 5035A-L	PREP
SW	Benzene	EPA 5035A-H	PREP
SW	Benzene	EPA 8260C	GC-MS
SW	n-Butylbenzene	EPA 5035A-L	PREP
SW	n-Butylbenzene	EPA 5035A-H	PREP
SW	n-Butylbenzene	EPA 8260C	GC-MS
SW	sec-Butylbenzene	EPA 5035A-L	PREP
SW	sec-Butylbenzene	EPA 5035A-H	PREP
SW	sec-Butylbenzene	EPA 8260C	GC-MS
SW	tert-Butylbenzene	EPA 5035A-L	PREP
SW	tert-Butylbenzene	EPA 5035A-H	PREP
SW	tert-Butylbenzene	EPA 8260C	GC-MS
SW	Bromobenzene	EPA 5035A-L	PREP
SW	Bromobenzene	EPA 5035A-H	PREP
SW	Bromobenzene	EPA 8260C	GC-MS
SW	Chlorobenzene	EPA 5035A-L	PREP
SW	Chlorobenzene	EPA 5035A-H	PREP
SW	Chlorobenzene	EPA 8260C	GC-MS
SW	2-Chlorotoluene	EPA 8260C	GC-MS
SW	4-Chlorotoluene	EPA 8260C	GC-MS
SW	1,2-Dichlorobenzene	EPA 5035A-L	PREP
SW	1,2-Dichlorobenzene	EPA 5035A-H	PREP
SW	1,2-Dichlorobenzene	EPA 8260C	GC-MS
SW	1,3-Dichlorobenzene	EPA 5035A-L	PREP
SW	1,3-Dichlorobenzene	EPA 5035A-H	PREP
SW	1,3-Dichlorobenzene	EPA 8260C	GC-MS
SW	1,4-Dichlorobenzene	EPA 5035A-L	PREP
SW	1,4-Dichlorobenzene	EPA 5035A-H	PREP
SW	1,4-Dichlorobenzene	EPA 8260C	GC-MS
SW	Ethyl benzene	EPA 5035A-L	PREP
SW	Ethyl benzene	EPA 5035A-H	PREP
SW	Ethyl benzene	EPA 8260C	GC-MS
SW	Isopropylbenzene	EPA 5035A-L	PREP
SW	Isopropylbenzene	EPA 5035A-H	PREP
SW	Isopropylbenzene	EPA 8260C	GC-MS
SW	p-Isopropyltoluene (P-Cymene)	EPA 5035A-L	PREP
SW	p-Isopropyltoluene (P-Cymene)	EPA 5035A-H	PREP
SW	p-Isopropyltoluene (P-Cymene)	EPA 8260C	GC-MS
SW	Naphthalene, Volatile	EPA 5035A-L	PREP
SW	Naphthalene, Volatile	EPA 5035A-H	PREP
SW	Naphthalene, Volatile	EPA 8260C	GC-MS
SW	n-Propylbenzene	EPA 5035A-L	PREP
SW	n-Propylbenzene	EPA 5035A-H	PREP
SW	n-Propylbenzene	EPA 8260C	GC-MS
SW	Toluene	EPA 5035A-L	PREP

Matrix	Analyte	Method	Technology
SW	Toluene	EPA 5035A-H	PREP
SW	Toluene	EPA 8260C	GC-MS
SW	Total Xylenes	EPA 5035A-L	PREP
SW	Total Xylenes	EPA 5035A-H	PREP
SW	Total Xylenes	EPA 8260C	GC-MS
SW	m/p-Xylenes	EPA 5035A-L	PREP
SW	m/p-Xylenes	EPA 5035A-H	PREP
SW	m/p-Xylenes	EPA 8260C	GC-MS
SW	o-Xylene	EPA 5035A-L	PREP
SW	o-Xylene	EPA 5035A-H	PREP
SW	o-Xylene	EPA 8260C	GC-MS
SW	1,2,4-Trimethylbenzene	EPA 8260C	GC-MS
SW	1,3,5-Trimethylbenzene	EPA 8260C	GC-MS
SW	Styrene	EPA 5035A-L	PREP
SW	Styrene	EPA 5035A-H	PREP
SW	Styrene	EPA 8260C	GC-MS
SW	Bromochloromethane	EPA 5035A-L	PREP
SW	Bromochloromethane	EPA 5035A-H	PREP
SW	Bromochloromethane	EPA 8260C	GC-MS
SW	Bromodichloromethane	EPA 5035A-L	PREP
SW	Bromodichloromethane	EPA 5035A-H	PREP
SW	Bromodichloromethane	EPA 8260C	GC-MS
SW	Bromoform	EPA 5035A-L	PREP
SW	Bromoform	EPA 5035A-H	PREP
SW	Bromoform	EPA 8260C	GC-MS
SW	Bromomethane	EPA 5035A-L	PREP
SW	Bromomethane	EPA 5035A-H	PREP
SW	Bromomethane	EPA 8260C	GC-MS
SW	Carbon tetrachloride	EPA 5035A-L	PREP
SW	Carbon tetrachloride	EPA 5035A-H	PREP
SW	Carbon tetrachloride	EPA 8260C	GC-MS
SW	Chloroethane	EPA 5035A-L	PREP
SW	Chloroethane	EPA 5035A-H	PREP
SW	Chloroethane	EPA 8260C	GC-MS
SW	2-Chloro-1,3-butadiene (Chloroprene)	EPA 5035A-L	PREP
SW	2-Chloro-1,3-butadiene (Chloroprene)	EPA 5035A-H	PREP
SW	2-Chloro-1,3-butadiene (Chloroprene)	EPA 8260C	GC-MS
SW	2-Chloroethylvinyl ether	EPA 5035A-L	PREP
SW	2-Chloroethylvinyl ether	EPA 5035A-H	PREP
SW	2-Chloroethylvinyl ether	EPA 8260C	GC-MS
SW	Chloroform	EPA 5035A-L	PREP
SW	Chloroform	EPA 5035A-H	PREP
SW	Chloroform	EPA 8260C	GC-MS
SW	Chloromethane	EPA 5035A-L	PREP
SW	Chloromethane	EPA 5035A-H	PREP
SW	Chloromethane	EPA 8260C	GC-MS
SW	trans-1,4-Dichloro-2-butene	EPA 5035A-L	PREP
SW	trans-1,4-Dichloro-2-butene	EPA 5035A-H	PREP
SW	trans-1,4-Dichloro-2-butene	EPA 8260C	GC-MS
SW	1,2-Dibromo-3-chloropropane	EPA 5035A-L	PREP
SW	1,2-Dibromo-3-chloropropane	EPA 5035A-H	PREP
SW	1,2-Dibromo-3-chloropropane	EPA 8260C	GC-MS
SW	1,2-Dibromoethane	EPA 5035A-L	PREP
SW	1,2-Dibromoethane	EPA 5035A-H	PREP

Matrix	Analyte	Method	Technology
SW	1,2-Dibromoethane	EPA 8260C	GC-MS
SW	3-Chloropropene (Allyl chloride)	EPA 5035A-L	PREP
SW	3-Chloropropene (Allyl chloride)	EPA 5035A-H	PREP
SW	3-Chloropropene (Allyl chloride)	EPA 8260C	GC-MS
SW	cis-1,3-Dichloropropene	EPA 5035A-L	PREP
SW	cis-1,3-Dichloropropene	EPA 5035A-H	PREP
SW	cis-1,3-Dichloropropene	EPA 8260C	GC-MS
SW	trans-1,3-Dichloropropene	EPA 5035A-L	PREP
SW	trans-1,3-Dichloropropene	EPA 5035A-H	PREP
SW	trans-1,3-Dichloropropene	EPA 8260C	GC-MS
SW	Dibromochloromethane	EPA 5035A-L	PREP
SW	Dibromochloromethane	EPA 5035A-H	PREP
SW	Dibromochloromethane	EPA 8260C	GC-MS
SW	Dibromomethane	EPA 5035A-L	PREP
SW	Dibromomethane	EPA 5035A-H	PREP
SW	Dibromomethane	EPA 8260C	GC-MS
SW	Dichlorodifluoromethane	EPA 5035A-L	PREP
SW	Dichlorodifluoromethane	EPA 5035A-H	PREP
SW	Dichlorodifluoromethane	EPA 8260C	GC-MS
SW	1,1-Dichloroethane	EPA 5035A-L	PREP
SW	1,1-Dichloroethane	EPA 5035A-H	PREP
SW	1,1-Dichloroethane	EPA 8260C	GC-MS
SW	1,2-Dichloroethane	EPA 5035A-L	PREP
SW	1,2-Dichloroethane	EPA 5035A-H	PREP
SW	1,2-Dichloroethane	EPA 8260C	GC-MS
SW	1,1-Dichloroethene	EPA 5035A-L	PREP
SW	1,1-Dichloroethene	EPA 5035A-H	PREP
SW	1,1-Dichloroethene	EPA 8260C	GC-MS
SW	cis-1,2-Dichloroethene	EPA 5035A-L	PREP
SW	cis-1,2-Dichloroethene	EPA 5035A-H	PREP
SW	cis-1,2-Dichloroethene	EPA 8260C	GC-MS
SW	trans-1,2-Dichloroethene	EPA 5035A-L	PREP
SW	trans-1,2-Dichloroethene	EPA 5035A-H	PREP
SW	trans-1,2-Dichloroethene	EPA 8260C	GC-MS
SW	1,1-Dichloropropene	EPA 5035A-L	PREP
SW	1,1-Dichloropropene	EPA 5035A-H	PREP
SW	1,1-Dichloropropene	EPA 8260C	GC-MS
SW	1,2-Dichloropropane	EPA 5035A-L	PREP
SW	1,2-Dichloropropane	EPA 5035A-H	PREP
SW	1,2-Dichloropropane	EPA 8260C	GC-MS
SW	1,3-Dichloropropane	EPA 5035A-L	PREP
SW	1,3-Dichloropropane	EPA 5035A-H	PREP
SW	1,3-Dichloropropane	EPA 8260C	GC-MS
SW	2,2-Dichloropropane	EPA 5035A-L	PREP
SW	2,2-Dichloropropane	EPA 5035A-H	PREP
SW	2,2-Dichloropropane	EPA 8260C	GC-MS
SW	Hexachlorobutadiene, Volatile	EPA 5035A-L	PREP
SW	Hexachlorobutadiene, Volatile	EPA 5035A-H	PREP
SW	Hexachlorobutadiene, Volatile	EPA 8260C	GC-MS
SW	Methylene chloride	EPA 5035A-L	PREP
SW	Methylene chloride	EPA 5035A-H	PREP
SW	Methylene chloride	EPA 8260C	GC-MS
SW	Methyl iodide	EPA 8260C	GC-MS
SW	1,1,1,2-Tetrachloroethane	EPA 5035A-L	PREP

Matrix	Analyte	Method	Technology
SW	1,1,1,2-Tetrachloroethane	EPA 5035A-H	PREP
SW	1,1,1,2-Tetrachloroethane	EPA 8260C	GC-MS
SW	1,1,2,2-Tetrachloroethane	EPA 5035A-L	PREP
SW	1,1,2,2-Tetrachloroethane	EPA 5035A-H	PREP
SW	1,1,2,2-Tetrachloroethane	EPA 8260C	GC-MS
SW	Tetrachloroethene	EPA 5035A-L	PREP
SW	Tetrachloroethene	EPA 5035A-H	PREP
SW	Tetrachloroethene	EPA 8260C	GC-MS
SW	1,1,1-Trichloroethane	EPA 5035A-L	PREP
SW	1,1,1-Trichloroethane	EPA 5035A-H	PREP
SW	1,1,1-Trichloroethane	EPA 8260C	GC-MS
SW	1,1,2-Trichloroethane	EPA 5035A-L	PREP
SW	1,1,2-Trichloroethane	EPA 5035A-H	PREP
SW	1,1,2-Trichloroethane	EPA 8260C	GC-MS
SW	Trichloroethene	EPA 5035A-L	PREP
SW	Trichloroethene	EPA 5035A-H	PREP
SW	Trichloroethene	EPA 8260C	GC-MS
SW	Trichlorofluoromethane	EPA 5035A-L	PREP
SW	Trichlorofluoromethane	EPA 5035A-H	PREP
SW	Trichlorofluoromethane	EPA 8260C	GC-MS
SW	1,2,3-Trichloropropane	EPA 5035A-L	PREP
SW	1,2,3-Trichloropropane	EPA 5035A-H	PREP
SW	1,2,3-Trichloropropane	EPA 8260C	GC-MS
SW	1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C	GC-MS
SW	Vinyl chloride	EPA 5035A-L	PREP
SW	Vinyl chloride	EPA 5035A-H	PREP
SW	Vinyl chloride	EPA 8260C	GC-MS
SW	Aldrin	EPA 8081B	GC-ECD
SW	Aldrin	EPA 3545A	PREP
SW	Atrazine	EPA 8270D	GC-MS
SW	alpha-BHC	EPA 8081B	GC-ECD
SW	alpha-BHC	EPA 3545A	PREP
SW	beta-BHC	EPA 8081B	GC-ECD
SW	beta-BHC	EPA 3545A	PREP
SW	delta-BHC	EPA 8081B	GC-ECD
SW	delta-BHC	EPA 3545A	PREP
SW	Lindane	EPA 8081B	GC-ECD
SW	Lindane	EPA 3545A	PREP
SW	alpha-Chlordane	EPA 8081B	GC-ECD
SW	alpha-Chlordane	EPA 3545A	PREP
SW	gamma-Chlordane	EPA 8081B	GC-ECD
SW	gamma-Chlordane	EPA 3545A	PREP
SW	Chlordane Total	EPA 8081B	GC-ECD
SW	Chlordane Total	EPA 3545A	PREP
SW	Chlorobenzilate	EPA 8270D	GC-MS
SW	4,4'-DDD	EPA 8081B	GC-ECD
SW	4,4'-DDD	EPA 3545A	PREP
SW	4,4'-DDE	EPA 8081B	GC-ECD
SW	4,4'-DDE	EPA 3545A	PREP
SW	4,4'-DDT	EPA 8081B	GC-ECD
SW	4,4'-DDT	EPA 3545A	PREP
SW	Diallate	EPA 8270D	GC-MS
SW	Dieldrin	EPA 8081B	GC-ECD
SW	Dieldrin	EPA 3545A	PREP

Matrix	Analyte	Method	Technology
SW	Endosulfan I	EPA 8081B	GC-ECD
SW	Endosulfan I	EPA 3545A	PREP
SW	Endosulfan II	EPA 8081B	GC-ECD
SW	Endosulfan II	EPA 3545A	PREP
SW	Endosulfan sulfate	EPA 8081B	GC-ECD
SW	Endosulfan sulfate	EPA 3545A	PREP
SW	Endrin	EPA 8081B	GC-ECD
SW	Endrin	EPA 3545A	PREP
SW	Endrin aldehyde	EPA 8081B	GC-ECD
SW	Endrin aldehyde	EPA 3545A	PREP
SW	Endrin Ketone	EPA 8081B	GC-ECD
SW	Endrin Ketone	EPA 3545A	PREP
SW	Heptachlor	EPA 8081B	GC-ECD
SW	Heptachlor	EPA 3545A	PREP
SW	Heptachlor epoxide	EPA 8081B	GC-ECD
SW	Heptachlor epoxide	EPA 3545A	PREP
SW	Isodrin	EPA 8270D	GC-MS
SW	Mirex	EPA 8081B	GC-ECD
SW	Methoxychlor	EPA 8081B	GC-ECD
SW	Methoxychlor	EPA 3545A	PREP
SW	Toxaphene	EPA 8081B	GC-ECD
SW	Toxaphene	EPA 3545A	PREP
SW	Pentachloronitrobenzene	EPA 8270D	GC-MS
SW	2,4-DB	EPA 8151A	GC-ECD
SW	2,4-D	EPA 8151A	GC-ECD
SW	2,4,5-T	EPA 8151A	GC-ECD
SW	2,4,5-TP (Silvex)	EPA 8151A	GC-ECD
SW	Dicamba	EPA 8151A	GC-ECD
SW	Dinoseb	EPA 8151A	GC-ECD
SW	Dalapon	EPA 8151A	GC-ECD
SW	Azinphos methyl	EPA 8141B	GC-NPD
SW	Demeton-O	EPA 8141B	GC-NPD
SW	Demeton-S	EPA 8141B	GC-NPD
SW	Diazinon	EPA 8141B	GC-NPD
SW	Dimethoate	EPA 8141B	GC-NPD
SW	Dimethoate	EPA 8270D	GC-MS
SW	Disulfoton	EPA 3545A	PREP
SW	Disulfoton	EPA 8141B	GC-NPD
SW	Ethion	EPA 8141B	GC-NPD
SW	Famphur	EPA 8141B	GC-NPD
SW	Malathion	EPA 8141B	GC-NPD
SW	Parathion ethyl	EPA 8141B	GC-NPD
SW	Parathion ethyl	EPA 8270D	GC-MS
SW	Parathion methyl	EPA 8141B	GC-NPD
SW	Phorate	EPA 8141B	GC-NPD
SW	Phorate	EPA 8270D	GC-MS
SW	Sulfotepp	EPA 8141B	GC-NPD
SW	Thionazin	EPA 8141B	GC-NPD
SW	Thionazin	EPA 8270D	GC-MS
SW	Benzyl chloride	EPA 8260C	GC-MS
SW	Boron, Total	EPA 3005A	PREP
SW	Boron, Total	EPA 3050B	PREP
SW	Boron, Total	EPA 6010C	ICP-AES
SW	Cyanide, Total	EPA 9014	COLOR

Matrix	Analyte	Method	Technology
SW	Cyanide, Total	EPA 9010C	PREP
SW	Lead in Paint	EPA 3050B	PREP
SW	Lead in Paint	EPA 6010C	ICP-AES
SW	Lead in Dust Wipes	EPA 3050B	PREP
SW	Lead in Dust Wipes	EPA 6010C	ICP-AES
SW	Phenols	EPA 9065	COLOR
SW	Sulfide (as S)	EPA 9030B	PREP
SW	Sulfide (as S)	EPA 9034	TITR
SW	Benzidine	EPA 8270D	GC-MS
SW	3,3'-Dichlorobenzidine	EPA 8270D	GC-MS
SW	3,3'-Dimethylbenzidine	EPA 8270D	GC-MS
SW	Acetone	EPA 5035A-L	PREP
SW	Acetone	EPA 5035A-H	PREP
SW	Acetone	EPA 8260C	GC-MS
SW	Acetonitrile	EPA 8260C	GC-MS
SW	Carbon Disulfide	EPA 8260C	GC-MS
SW	Cyclohexane	EPA 8260C	GC-MS
SW	Di-ethyl ether	EPA 8260C	GC-MS
SW	1,4-Dioxane	EPA 8260C	GC-MS
SW	Isobutyl alcohol	EPA 8260C	GC-MS
SW	Isopropanol	EPA 8260C	GC-MS
SW	2-Hexanone	EPA 5035A-L	PREP
SW	2-Hexanone	EPA 5035A-H	PREP
SW	2-Hexanone	EPA 8260C	GC-MS
SW	2-Butanone (Methylethyl ketone)	EPA 5035A-L	PREP
SW	2-Butanone (Methylethyl ketone)	EPA 5035A-H	PREP
SW	2-Butanone (Methylethyl ketone)	EPA 8260C	GC-MS
SW	Methyl acetate	EPA 8260C	GC-MS
SW	Methyl cyclohexane	EPA 8260C	GC-MS
SW	Methyl tert-butyl ether	EPA 5035A-L	PREP
SW	Methyl tert-butyl ether	EPA 5035A-H	PREP
SW	Methyl tert-butyl ether	EPA 8260C	GC-MS
SW	4-Methyl-2-Pentanone	EPA 5035A-L	PREP
SW	4-Methyl-2-Pentanone	EPA 5035A-H	PREP
SW	4-Methyl-2-Pentanone	EPA 8260C	GC-MS
SW	2-Nitropropane	EPA 8260C	GC-MS
SW	Propionitrile	EPA 8260C	GC-MS
SW	o-Toluidine	EPA 8270D	GC-MS
SW	tert-butyl alcohol	EPA 8260C	GC-MS
SW	Vinyl acetate	EPA 5035A-L	PREP
SW	Vinyl acetate	EPA 5035A-H	PREP
SW	Vinyl acetate	EPA 8260C	GC-MS
SW	Acetophenone	EPA 8270D	GC-MS
SW	4-Amino biphenyl	EPA 8270D	GC-MS
SW	Aramite	EPA 8270D	GC-MS
SW	Benzoic Acid	EPA 8270D	GC-MS
SW	Benzyl alcohol	EPA 8270D	GC-MS
SW	Benzaldehyde	EPA 8270D	GC-MS
SW	1,1'-Biphenyl	EPA 8270D	GC-MS
SW	Caprolactam	EPA 8270D	GC-MS
SW	1,2-Dichlorobenzene, Semi-volatile	EPA 3545A	PREP
SW	1,2-Dichlorobenzene, Semi-volatile	EPA 8270D	GC-MS
SW	1,3-Dichlorobenzene, Semi-volatile	EPA 3545A	PREP
SW	1,3-Dichlorobenzene, Semi-volatile	EPA 8270D	GC-MS

Matrix	Analyte	Method	Technology
SW	1,4-Dichlorobenzene, Semi-volatile	EPA 3545A	PREP
SW	1,4-Dichlorobenzene, Semi-volatile	EPA 8270D	GC-MS
SW	Dibenzofuran	EPA 3545A	PREP
SW	Dibenzofuran	EPA 8270D	GC-MS
SW	Ethyl methanesulfonate	EPA 8270D	GC-MS
SW	Isosafrole	EPA 8270D	GC-MS
SW	2-Methylnaphthalene	EPA 3545A	PREP
SW	2-Methylnaphthalene	EPA 8270D	GC-MS
SW	Methyl methanesulfonate	EPA 8270D	GC-MS
SW	Phenacetin	EPA 8270D	GC-MS
SW	2-Picoline	EPA 8270D	GC-MS
SW	Safrole	EPA 8270D	GC-MS
SW	O,O,O-Triethyl phosphorothioate	EPA 8270D	GC-MS
SW	Aniline	EPA 8270D	GC-MS
SW	Carbazole	EPA 8270D	GC-MS
SW	4-Chloroaniline	EPA 8270D	GC-MS
SW	Diphenylamine	EPA 8270D	GC-MS
SW	1-Naphthylamine	EPA 8270D	GC-MS
SW	2-Naphthylamine	EPA 8270D	GC-MS
SW	2-Nitroaniline	EPA 8270D	GC-MS
SW	3-Nitroaniline	EPA 8270D	GC-MS
SW	4-Nitroaniline	EPA 8270D	GC-MS
SW	5-Nitro-o-toluidine	EPA 8270D	GC-MS
SW	Methapyrilene	EPA 8270D	GC-MS
SW	1,4-Phenylenediamine	EPA 8270D	GC-MS
SW	1,2-Diphenylhydrazine	EPA 8270D	GC-MS
SW	Pronamide	EPA 8270D	GC-MS
SW	N-Nitrosodiphenylamine	EPA 3545A	PREP
SW	N-Nitrosodiphenylamine	EPA 8270D	GC-MS
SW	N-Nitrosodimethylamine	EPA 3545A	PREP
SW	N-Nitrosodimethylamine	EPA 8270D	GC-MS
SW	N-Nitrosodiethylamine	EPA 8270D	GC-MS
SW	N-nitrosomethylethylamine	EPA 8270D	GC-MS
SW	N-Nitrosodi-n-butylamine	EPA 8270D	GC-MS
SW	N-Nitrosodi-n-propylamine	EPA 3545A	PREP
SW	N-Nitrosodi-n-propylamine	EPA 8270D	GC-MS
SW	N-nitrosopiperidine	EPA 8270D	GC-MS
SW	N-Nitrosopyrrolidine	EPA 8270D	GC-MS
SW	Bromide	EPA 9056A	IC-COND
SW	Chloride	EPA 9250	COLOR
SW	Chloride	EPA 9056A	IC-COND
SW	Fluoride, Total	EPA 9056A	IC-COND
SW	Sulfate (as SO4)	EPA 9056A	IC-COND
SW	Nitrate (as N)	EPA 9056A	IC-COND
SW	Nitrite (as N)	EPA 9056A	IC-COND
SW	Orthophosphate (as P)	EPA 9056A	IC-COND
SW	Diesel Range Organics	EPA 3545A	PREP
SW	Diesel Range Organics	EPA 8270D	GC-MS
SW	Diesel Range Organics	EPA 8015D	GC-FID
SW	Gasoline Range Organics	EPA 5035A-L	PREP
SW	Gasoline Range Organics	EPA 5035A-H	PREP
SW	Gasoline Range Organics	EPA 8260C	GC-MS
SW	Gasoline Range Organics	EPA 8015D	GC-FID

Section 4.0 Vendors

VendorID	Company	VendorType
Absolute Standard	Absolute Standard	Lab Supplies
Adirondack Environmental Service, Inc	Adirondack Environmental Service, Inc	Subcontractor
ALS Group	ALS Group	Subcontractor
Analytical Chemists	Analytical Chemists	Subcontractor
APPLE	Apple Environmental Services	Sampling Services
bioMerieux, Inc.	bioMerieux, Inc.	Lab Supplies
Brooks Rand LLC	Brooks Rand LLC	Subcontractor
Bulbtronics	Bulbtronics	Lab Supplies
Carnell Engineers	Carnell Engineers	Sampling Services
Certified	CERTIFIED ANALYTICAL GROUP INC.	Subcontractor
Chemical Research Supplies	Chemical Research Supplies	Lab Supplies
Delta Well & Pump Co., Inc.	Delta Well & Pump Co., Inc.	Sampling Services
Dionex	Dionex Corporation	Lab Supplies
EMSL	E.M.S.L.	Subcontractor
EMSL-NJ	E.M.S.L.	Subcontractor
Environmental Assessment & Remediation	Environmental Assessment & Remediation	Sampling Services
Environmental Express	Environmental Express LTD	Lab Supplies
Environmental Resource Associates	Environmental Resource Associates	Lab Supplies
Environmental Sample Technology	Environmental Sample Technology	Lab Supplies
EnviroTest	EnviroTest Laboratories Inc.	Subcontractor
Eurofins	Eurofins Eaton Analytical	Subcontractor
Eurofins-Air	Eurofins	Lab Supplies
Frontier	Frontier Geosciences Inc.	Sampling Services
Global Computers	Global Computers	Office Supplies
Grainger	Grainger	Other
Grasby Nutech	Grasby Nutech	Lab Supplies
H2MPC	H2M, P.C.	Sampling Services
Hach Co.	Hach Company	Lab Supplies
Harry Goldman Water Testing	Harry Goldman Water Testing	Sampling Services
HGO	Harry Goldman Water Testing	Sampling Services
High Purity Stds	High Purity Standards	Lab Supplies
Horizon Technologies	Horizon Technologies	Lab Supplies
Idexx Laboratories	Idexx Laboratories	Lab Supplies
Inorganic Ventures	Inorganic Ventures	Lab Supplies
Inorganics Standards Service	Inorganic Standards Service	Lab Supplies
Intertek	Intertek	Subcontractor
JE Meinhard Associates, Inc.		Lab Supplies
Judy Harry	Data Validation Services	Data Validation
LaMotte Company	Lamotte Company	Lab Supplies
Leeman Labs, Inc.	Leeman Labs, Inc.	Lab Supplies
M & M (Marsid) Printing	Marsid-M & M Group	Office Supplies
MBE- G&G Advertising Inc	G&G Advertising Inc	Office Supplies
MBE- kemron Environmental Services Inc.	Kemron Environmental Services Inc.	Sampling Services
MBE- Mitkem Corporation	Mitkem Corporation	Sampling Services
MBE- Yec Inc	Yec Inc	Sampling Services
META Environmental	META Environmental Inc.	Subcontractor
Microbac	Microbac Laboratories, Inc. - Camp Hill Division	Subcontractor
Millipore Corp	Millipore Corp.	Lab Supplies
MV Labs	MV Laboratories, Inc.	Lab Supplies
Nancy Potak	Nancy Potak	Data Validation
NE LABS	Northeast Laboratories, Inc.	Subcontractor

VendorID	Company	VendorType
Nova Lisa Messengers	Nova Lisa Messengers	Courier
NSI	NSI Solutions Inc.	Lab Supplies
PACE-Minnesota	Pace Analytical Services, Inc.	Subcontractor
PACE-Pennsylvania	Pace Analytical Service, Inc.	Subcontractor
Phenomenex	Phenomenex	Lab Supplies
Pickering Labs	Pickering Laboratories	Lab Supplies
Remel	Remel, Inc.	Lab Supplies
Restek	Restek Corporation	Lab Supplies
Ronco	Ronco Paper Products	Other
Seal Analytical	Seal Analytical	Lab Supplies
Sigma-Aldrich	Sigma-Aldrich	Lab Supplies
SUMMIT	Summit Environmental Technologies, Inc.	Subcontractor
TA - Pittsburgh	Test America - Pittsburgh	Subcontractor
TerraSense, LLC	TerraSense, LLC	Subcontractor
Texas Oil Tech Laboratories, Inc.	Texas Oil Tech Laboratories, Inc.	Subcontractor
Thermo Fisher Scientific	Thermo Fisher Scientific	Lab Supplies
ULTRA	Ultra Scientific	Lab Supplies
Underwriters Labs LLC	UL	Subcontractor
Veolia	Veolia ES Technical Solutions, LLC	Disposal
VWR	VWR International	Lab Supplies
Walsh Messenger	Walsh Messenger	Courier
WBE- Data Validation Services	Data Validation Services	Data Validation
WBE- Hampton-Clarke Inc	Hampton-Clarke Inc	Disposal
WBE- Nancy J Potak	Nancy J Potak	Data Validation
WBE- S&A Scientific Inc	S&A Scientific Inc	Lab Supplies
WBE- Smith Environmental Laboratory Inc	Smith Environmental Laboratory Inc	Other
WBE- Taylor Environmental Group Inc	Taylor Environmental Group Inc	Disposal
WBE-Chemworld	Chemworld Environmental Inc.	Disposal
WBE-Con-Test	Con-Test Analytical Lab Filli LLC	Sampling Services
WBE-Crescent Chemical CO Inc.	Crescent Chemical CO Inc	Lab Supplies
WBE-Cresent Chemical	Cresent Chemical	Lab Supplies
WBE-Freudenthal& Elkowitz	Freudenthal& Elkowitz Consulting group	Sampling Services
WBE-JLC Environmental Consulttants Inc	JLC Environmental Consulttants Inc	Sampling Services
WESTCHESTER	Westchester County Department of Labs and Research	Subcontractor

Pace Analytical®
Long Island Laboratory

Section 5.0 Equipment and Maintenance

Equipment

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condition when rec'd.
GCMS	Gas Chromatograph	Hewlett Packard	5890		GCMS MANUAL FILE CABINET	2908A-21584	1987	Retired
GCMS	Gas Chromatograph	Hewlett Packard	5890 Series II		GCMS MANUAL FILE CABINET	3310A-47249	1995	New
GCMS	Gas Chromatograph	Hewlett Packard	5890 Series II		GCMS MANUAL FILE CABINET	3310A-48125	2007	Refurb
GCMS	Gas Chromatograph	Hewlett Packard	5890 Series II		GCMS MANUAL FILE CABINET	3336A-59615	2008	
GCMS	Gas Chromatograph	Hewlett Packard	6890N		GCMS MANUAL FILE CABINET	US10147039	2001	New
GCMS	Gas Chromatograph	Hewlett Packard	6890N			CN1054046	1998	New
GCMS	Gas Chromatograph	Hewlett Packard	6890N			CN1039012	2005	
GCMS	Gas Chromatograph	Hewlett Packard	6890N			US00039116	2009	
GCMS				As needed: Clean source, clip column, swab injection port liner Daily: change insert, replace septa, check mass calibration Annually: change vacuum pump oil	GCMS MANUAL FILE CABINET	2217A-00303	1984	Retired
GCMS	GC/MS	Hewlett Packard	5971		GCMS MANUAL FILE CABINET	3304A-04413	1993	New
GCMS	GC/MS	Hewlett Packard	5972		GCMS MANUAL FILE CABINET	3501A-02544	1995	New
GCMS	GC/MS	Hewlett Packard	5972			3201A05262	2007	Refurb.
GCMS	GC/MS	Hewlett Packard	5972			3507A7565	2008	Remove
GCMS	GC/MS	Hewlett Packard	5972			3356A00846	2009	
GCMS	GC/MS	Hewlett Packard	5973			U5638-10174	1998	New
GCMS	GC/MS	Hewlett Packard	5973N		GCMS MANUAL FILE CABINET	U5104-51830	2001	New
GCMS	GC/MS	Hewlett Packard	5973i			U5446-21373	2005	New
GCMS	Auto- injector	Hewlett Packard	7673A	Daily: check needles and lines	GCMS MANUAL FILE CABINET	3042A-23605	1989	Retired
GCMS	Auto- injector	Hewlett Packard	7673A		GCMS MANUAL FILE CABINET	3048A-24502	1990	New
GCMS	Auto- injector	Hewlett Packard	7683			CN13822158	2001	New
GCMS	Injector Modules	Hewlett Packard	18593A			2843A-12464		New
GCMS	Injector Modules	Hewlett Packard	18593A			2843A-12474		New
GCMS	Liquid Samplers	Tekmar	ALS2016		GCMS MANUAL FILE CABINET	90052025	1989	New
GCMS	Liquid Samplers	Env. Sample Tech. Inc.	Archon		GCMS MANUAL FILE CABINET	12578	1998	New
GCMS	Liquid Samplers	Env. Sample Tech. Inc.	Archon			MS0811W067	2009	
GCMS	Liquid Samplers	Varian	Archon		GCMS MANUAL FILE CABINET	12565	1998	New

Equipment

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condition when rec'd.
GCMS	Liquid Samplers	Varian	Archon		GCMS MANUAL FILE CABINET	15046	2007	
GCMS	Liquid Samplers	Teledyne Tekmar	SOLA Tek 72			U50515-1007	2005	New
GCMS	Auto- sampler	Custom	Custom		GCMS MANUAL FILE CABINET		1995	New
GCMS	Cryogenic Cap. Interface	Tekmar	M2000			H2M-40099	1987	New
GCMS	Liquid Sample Concentrators	Tekmar	LCS2000		GCMS MANUAL FILE CABINET	88041019	1988	New
GCMS	Liquid Sample Concentrators	Tekmar	LCS2000		GCMS MANUAL FILE CABINET	92086007	1989	
GCMS	Liquid Sample Concentrators	Tekmar	LCS2000		GCMS MANUAL FILE CABINET	90088002		New
GCMS	Liquid Sample Concentrators	Tekmar	LCS2000			97203002		Remove
GCMS	Liquid Sample Concentrators	Tekmar	LCS3000		GCMS MANUAL FILE CABINET	94238021	2007	Refurb
GCMS	Liquid Sample Concentrators	Tekmar	LCS3000		GCMS MANUAL FILE CABINET	97203002	2007	Refurb
GCMS	Liquid Sample Concentrators	Tekmar	LCS3000		GCMS MANUAL FILE CABINET	3631A105564	2008	
GCMS	Liquid Sample Concentrators	Tekmar	LCS3000			334009	2009	
GCMS	LIQUID SAMPLER	EST	CENTRION		GCMS MANUAL FILE CABINET	ECENTS140022210	2009	NEW
GCMS	Liquid Sample Concentrators	Tekmar	Velocity XP			3631a-10564	2005	Refurb
GCMS	Moisture Control Module	Tekmar	14-4700				1990	New
GCMS	Tube Desorber	Envirochem	8916		GCMS MANUAL FILE CABINET	142-1015	1992	New
GCMS	Concentrator	Entech	7100A		Network		2005	New
GCMS	Tube Assembly	Entech	7100		Network	1255	2005	New
GCMS	Autosampler	Entech	7032-L		Network	1051	2005	New
GCMS	Oven Can Cleaning System	Entech	31000A		Network	1154	2005	New
GCMS	L-C Oven (used with Oven Can Cleaning System)	Barnstead International	3513ENT	Calibrate thermometer (quarterly)		1.48205E+12	2005	New
GCMS	Dynamic Diluter	Entech	4601A		Network	1105	2005	New
GCMS	Mass Spectral Library NIST 2008	Hewlett Packard	G1033A		GCMS MANUAL FILE CABINET	(reg.#) 88XA-222L9-ZK577-362S2	2008	New

Equipment

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condition when rec'd.
GCMS	Gas Chromatograph	Hewlett Packard	5890 Series II Plus			3336A53662	2009	Refurb
GCMS	Gas Chromatograph	Hewlett Packard	6890			US00006051	1998	Refurb
GCMS	Gas Chromatograph	Hewlett Packard	6890			US00021803	2009	Refurb
GCMS	GC/MS	Hewlett Packard	5973			US81211085	2009	Refurb
GCMS	GC/MS	Hewlett Packard	5973			US82322040	2005	Refurb
GCMS	GC/MS	Hewlett Packard	5973			US82321965	2009	Refurb
GCMS	Auto Injector	Hewlett Packard	7683			US04516101		
INORG	TOC Analyzer	Teledyne Tekmar	Torch	Monthly:, clean injection port, Semi-annually: Inspect combustion tube	WC MANUAL FILE CABINET	US11019001	2011	New
INORG	DO Meter	YSI	52	Daily:Check solution and membrane	WC MANUAL FILE CABINET	602377	2006	New
INORG	COD Apparatus	Hach	Micro Block		WC File Cabinet	87120-9870	1988	New
INORG	Chlorine Meter	LaMotte	1200				2006	
INORG	Chlorine Meter	LaMotte	1200				2008	
INORG	pH Meter	Orion	420A	Electronics Checked Daily			2000	
INORG	pH Meter	VWR	8000		File cabinet	1370	2005	New
INORG	pH Meter	VWR	Symphony SP70P				2009	
INORG	pH Meter	Corning	Scholar 425		File cabinet	6999	2002	New
INORG	pH Meter	WTW Measurement Systems	Scholar 425				2006	
INORG	Spectrophotometer	Milton Roy	Genesys 5		WC File cabinet	3V062-77019	1995	
INORG	Spectrophotometer	Thermo Spectronic	Spectronic20DX		WC File cabinet	3DV103-51004	2002	New
INORG	Spectrophotometer	Thermo Spectronic	Spectronic20DX		WC File cabinet	3DUG3-35015	2005	New
INORG	Ion Chromatograph	Dionex	ICS 2000		WC File cabinet	0605-0717	2005	New
INORG	Analytical Nephelometer	Hach	2424			351	1977	
INORG	Distillation Systems	Westco	East Dist		WC File cabinet	1130	1996	New
INORG	Distillation Systems	Westco	East Dist		WC File cabinet	1130	2005	New
INORG	Conductivity Meter	VWR Scientific	2052	Daily: check probe and cable	WC File cabinet	103009	2000	New
INORG	Conductivity Meter	HACH	44600			880801122		
INORG	Solid Phase Extractor and Controller for Oil and Grease	Horizon	3000XL		WC File cabinet	210166	2010	New
INORG	Solid Phase Extractor and Controller for Oil and Grease	Horizon	3000XL		WC File cabinet	13-1918	2013	New
INORG	Microscope	Nikon	Labobot 104	Monthly: Clean optics	WC File cabinet	214700	1983	New

Equipment

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condition when rec'd.
INORG	COD Apparatus #2	Hach	DRB200		WC File cabinet	1122349	2004	New
INORG	TALK Instrument	Schott	Titroline Alphaplus		WC File cabinet	65719	2004	New
INORG	Flow Injection Analysis System with Automated Ion Analyzer	Lachat	QuickChem 8500		WC File cabinet	051100-000231	2006	New
INORG	Flow Injection Analysis System with Automated Ion Analyzer	Lachat	QuickChem 8500		WC File cabinet	8120001038	2009	New
INORG	BLOCK DIGESTOR	LACHAT	BD-46		WC File Cabinet	1800-900		
INORG	PCBOD	Man-Tech	VERSION3.0.0.53		WC File Cabinet	BY INSTRU	2006	New
BAC	Coliform Incubator Bath	Thermoscientific	2862			211766-591	2010	
INORG	BOD Incubator	Thermoscientific (Precision)	30mr*2		WC File Cabinet	BOD2A375656-716 BOD1A314003-159	2011	
HPLC	HPLC System for Carbamate 531 and Post Column Derivatizer for 547	Pickering	PCX-5200			401212	2001	
HPLC	System Controller	Shimadzu	SCL-10AVP			C21013502013SA	2001	
HPLC	Liquid Chromatograph	Shimadzu	LC-10ADVP			C20963502299KG	2001	
HPLC	Mixer	Shimadzu	FCV-10ALVP			C21083601369KG	2001	
HPLC	Degasser	Shimadzu	DGU-14A			SS111311	2001	
HPLC	Auto Injector	Shimadzu	SIL-10ADVP			C21053750408US	2001	
HPLC	Fluorescence Detector	Shimadzu	RF-10AXL			C20953850296US	2001	
HPLC	HPLC System for 549	Agilent	HP1100		GC File cabinet		2011	
HPLC	Degasser	Agilent	G1322A			JP63203191	2011	
HPLC	Binary LC Pump	Agilent	G1312A			DE91605129	2011	
HPLC	Autosampler	Agilent	G1313A			DE14917148	2011	
HPLC	Column Com.	Agilent	G1316A			DE91615431	2011	
HPLC	Detector	Agilent	G1315A			DE91605880	2011	
GC	Gas Chromatograph	Hewlett Packard	6890	ECD Detectors: Annually: Wipe test	GC File cabinet	US00033562	1998	

Equipment

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condition when rec'd.
GC	Gas Chromatograph	Hewlett Packard	6890	If needed: Return to factory to refoil.	GC File cabinet	US0023151	2000	
GC	Gas Chromatograph	Hewlett Packard	6890			US0032129	2002	Used
GC	Gas Chromatograph	Hewlett Packard	6890		GC File cabinet	US10221098	2008	Used
GC	Gas Chromatograph	Perkin Elmer	Autosystem		GC File cabinet	610N2120204	1992	New
GC	Flame Ionization Detectors	Perkin Elmer	N611		GC File cabinet		1993	New
GC	Flame Ionization Detectors	Agilent	G1530N		GC File cabinet		2011	
GC	Micro Electron Capture Detector	Hewlett Packard			GC File cabinet	U1789/414239	2000	New
GC	Micro Electron Capture Detector	Hewlett Packard			GC File cabinet	U1790/U0744	2002	New
GC	Micro Electron Capture Detector	Hewlett Packard			GC File cabinet	U2256/U3366	2008	New
GC	Nitrogen Phosphorus Detector	Perkin Elmer			GC File cabinet		1992	New
GC	Autoinjector	Hewlett Packard	7683		GC File cabinet	US94910497	1998	New
GC	Autoinjector	Hewlett Packard	7683		GC File cabinet	US02013524	2000	New
GC	Autoinjector	Hewlett Packard	7683		GC File cabinet	US95110902	2002	New
GC	Autoinjector	Perkin Elmer	Autosystem		GC File cabinet		1992	New
GC	Autoinjector	Hewlett Packard	6890			3533A43695	2008	NEW
GC	Thermal Conductivity Detector	Agilent			GC File cabinet		2010	
METAL	Automated Mercury System	Leeman	Hydra AA	Daily: Check for leaks Monthly: Clean Autosampler and check tubing for wear and discoloration	METALS File cabinet	HA4001	2004	New
METAL	Inductively Coupled Plasma (ICP)	Thermo-Fisher ICAP	6300 Duo MFC		METALS File cabinet	20081811	2008	New
METAL	Inductively Coupled Plasma (ICP)	Thermo-Fisher ICAP	6300 Duo MFC			20095008	2009	New
METAL	Autosampler for 6300 Duo ICAP	Cetac Techologies	ASX-520			050773A520	2008	New
METAL	ICP-MS	Thermal Elemental	X7		METALS File cabinet	X0129	2002	New
METAL	Autosampler for ICP-MS	Cetac Technologies	ASX-510		METALS File cabinet	020201ASX	2002	New
METAL	Turbidity Meter	Hach	2424		METALS File cabinet	351	2009	New

Equipment

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condition when rec'd.
METAL	Hotblock	Environmental Express	SC154		METALS File cabinet	1423C3C1144	2002	New
METAL	Hotblock	Environmental Express	SC154		METALS File cabinet	4298CEC2052	2002	New
METAL	Autosampler for 6300 DJO 1cap	Cetac	ASX-520		METALS File cabinet	060941-A520	2009	New
METAL	Automated Hg System	Teledyne Leeman	Hydra II A		METALS File Cabinet	63641	2013	New
PREP	Dishwasher	Lab Conco	Flask Scrubber		SP File cabinet	41027886	2004	New
PREP	AccuPrep GPC System	J2 Scientific	04A-1094-3.1				2004	OFF LINE
PREP	TCLP Tumbler	Environmental Express	10-Position				1990	
PREP	TCLP Tumbler	Environmental Express	Item#LE1002 12-position			4187-12-503	2006	
PREP	Zero Headspace Extractor	Environmental Express					1990	
PREP	Zero Headspace Extractor	Analytical Testing	C-102				1987	Out of Service
PREP	Zero Headspace Extractor	Analytical Testing	C-102				1989	Out of Service
PREP	Continuous Liquid/Liquid Extractor	Organomation	Rot-X-Tracth 13302		SP File cabinet	22309	2009	New
PREP	Continuous Liquid/Liquid Extractor	Organomation	Rot-X-Tracth		SP File cabinet	9878	1997	New
PREP	Agitator	Glas-col	DC-18		SP File cabinet	252392	1987	New
PREP	Concentrator	Zymark	Turbo-vap		SP File cabinet	TV0639-R7075	1996	New
PREP	Evaporators	Organomation	PN-Evap, 12 position		SP File cabinet	14430	1992	New
PREP	Automated Solvent Extractor	Dionex	ASE2000			3010457	2003	New
PREP	Pensky-Martens Flash Point Tester	Petrotest	12-1624		SP	726021501	2002	Out of Service
PREP	Heating block	Barnstead International	DB28125		SP File cabinet	823040-705627	2004	New
PREP	Sonicator	Branson	1210					Out of Service
PREP	Evaporators	Organomation	PN EVAP-12 Position		SP File cabinet	20638	2009	New
PREP	Vacuum Pump	Welch	1405B-01			21100000459	2011	New
PREP	Flashpoint	Koehler	K16200		SP File Cabinet	R070021171-B	2013	New

Equipment

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condition when rec'd.
PREP	Automated Solvent Extractor	Dionex	ASE350		SP File Cabinet	10120776		New
PREP	GPC	Gilson	GX-271		SP File Cabinet	261A3N052	2013	New
PREP	Hot Plate	IKA	RT15PS1		SP File Cabinet	3380112	2013	New
PREP	Cont. Liq./Liq. Extrctr	Organomation	14169			57957		
RECV	pH Meter (benchtop)	Orion (#1)	420A	Electronics checked daily	Receiving counter	14100		New
RECV	pH meter (portable)	VWR	SympHony (#2)	Electronics checked daily	Receiving counter	C02090		New
RECV	pH meter (portable)	VWR	SympHony (#4)	Electronics checked daily	Receiving counter	C02059		New
RECV	pH meter (portable)	Hach (#5)	SensION+ pH1	Electronics checked daily	Receiving counter	120016		New
RECV	Chlorine residual (portable)	Hach #2	Pocket Colorimeter II	Electronics checked daily	Receiving counter	11040E171996		New
RECV	Chlorine residual (portable)	Hach #5	Pocket Colorimeter II	Electronics checked daily	Receiving counter	11090E182270		New
RECV	Chlorine residual (portable)	Hach #6	Pocket Colorimeter II	Electronics checked daily	Receiving counter	12070E203517		New

Support Equipment/Computers

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condi-tion when rec'd.
GCMS	Printer	Hewlett Packard	LaserJet 4		GCMS File cabinet		1995	
GCMS	Printer	Hewlett Packard	LaserJet 4		GCMS File cabinet		1995	
GCMS	Printer	Hewlett Packard	LaserJet 4				1995	
GCMS	Printer	Hewlett Packard	LaserJet 4				1995	
GCMS	Printer	Hewlett Packard	LaserJet 4				1995	
GCMS	Chemstation/ Enviroquant	Hewlett Packard	1701AA		GCMS File cabinet		1998	
GCMS	Chemstation/ Enviroquant	Hewlett Packard	1701AA		GCMS File cabinet		1998	
GCMS	Chemstation/ Enviroquant	Hewlett Packard	1701AA		GCMS File cabinet		1998	
GCMS	Chemstation/ Enviroquant	Hewlett Packard	1701AA		GCMS File cabinet		1998	
GCMS	Chemstation/ Enviroquant	Hewlett Packard	1701AA		GCMS File cabinet		1998	
GCMS	Chemstation/ Enviroquant	Hewlett Packard	1701CA, BA		GCMS File cabinet		2001	
GCMS	Printer	Hewlett Packard	LaserJet 5				1998	
GCMS	Printer	Hewlett Packard	LaserJet 4100				2001	
GCMS	Printer	Hewlett Packard	LaserJet 4250				2005	
GCMS	Printer	Hewlett Packard	LaserJet 4250				2005	
GCMS	Printer	Hewlett Packard	LaserJet 4250				2005	
INORG	Balance	Mettler Toledo	AX304		WC File cabinet	1125121429	2004	New
INORG	Balance	METTLER TELEDO	X510035		WC File cabinet	1130021418		
INORG	Balance	Ohaus	CS200				2004	
INORG	Balance	Ohaus	GT4100	Out of service			1999	
INORG	Balance	Westco	40/20				2004	
INORG	Balance	Lachat	BD_46				2007	
INORG	Refrigerator-Walk-in			Daily: Record and Verify temperature setting.	WC File cabinet		1998	

Support Equipment/Computers

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec’d.	Condi-tion when rec’d.
INORG	Refrigerator Locking (no spark interior)	Fisher Scientific		Monthly: Clean interior	WC File cabinet		1984	
INORG	Refrigerator Locking	Fisher Scientific		Annually-glass, quarterly-digital: check thermometer against NIST certified thermometer	WC File cabinet		1989	
INORG	Centrifuge	Fisher Scientific			WC File cabinet		1957	
INORG	Drying Ovens	Fisher Scientific	CL ISOTEMP500	Daily: Record and Verify temperature setting. Monthly: clean interior Annually-glass, quarterly-digital: check thermometer against NIST certified thermometer	WC File cabinet	40132	1980	
INORG	Dessicator	Boekel					1997	
INORG	Muffle Furnace	Thermoline			WC File cabinet		1997	
BAC	Autoclave	Market Forge	STM-E Type C	Daily: Sterilization indicator tape Monthly: Clean interior	WC File cabinet	150790	1987	New
BAC	Autoclave	Market Forge	STM-E Type C		WC File cabinet	213371	2003	New
BAC	Automatic Pipetting Machine	Brewer	40		WC File cabinet	2064	1983	New
BAC	Automatic Pipetting Machine	Scientific Equip. Prod.	40	Not in service			1984	
INORG	Auto Titrator	Visco	Titroline Alpha		WC File cabinet		1998	
INORG	Coliform Incubator Bath	Labline	Aquabat	e setting.	WC File cabinet	1-Oct	2001	New

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condi-tion when rec'd.
				Monthly: clean interior				
INORG	BOD Incubators	VWR-Sheldon Manufacturing, Inc.	2030	Annually-glass, quarterly-digital: check thermometer against NIST certified thermometer	WC File cabinet	7045306	2007	New
INORG	Dishwasher	WHIRLPOOL	U		WC File cabinet	8575635	2000	New
INORG	DISHWASHER	FRIGIDAIRE			WC FILE CABINET	JH70879413		
BAC	Quant-Tray Sealer	IDEXX	2X		WC File cabinet	3177	2004	New
INORG	Incubator	Labline	100	Daily: Record and Verify temperature setting.		0493-0002	1993	New
BAC		Precision	815	Monthly: clean interior	WC File cabinet	604011627		New
BAC		Precision	815	Annually-glass, quarterly-digital: check thermometer against NIST certified thermometer	WC File cabinet	602041661	2004	New
INORG		Precision				600101596	2005	Used
INORG	Infrared Thermometer	VWR	12777-846				2004	
BAC	UV Light	Spectroline	EA-160			1831229		New
RECV	Refrigerator	Welbilt	W8/210G					
INORG	Boat Sampling Module		183		WC File cabinet	504149001	1991	
METAL	CLP Reporting Software	Khemia	Omega				2000	
METAL	Balance	Sartorius	TE153S		METALS File cabinet		2007	New
PREP	Data System	Omega					2000	

Support Equipment/Computers

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condi-tion when rec'd.
PREP	ICC Clinical Centrifuge	Int'l. Equipment Co.	ICC Clinical				1985	
PREP	Balance	Ohaus	CS-2000				2000	
INORG	Balance	Ohaus	Scout Pro SP202		WC File cabinet	7132191406	2011	New
INORG	ULTRA PURE WATER SYSTEM	THERMO SCIENTIFIC	D11941		WC File cabinet	1.3711E+11	2009	NEW
INORG	OVEN1 STAINLESS STEEL	VWR	1350		WC File cabinet		2010	NEW
INORG	Ph meter	VWR SYMPHONY	114200		WC FILE CABINET	D05772	7/12/2011	NEW
BAC	CIRCULATING HOT WATER BATH	THERMO SCIENTIFIC	2862		WC FILE CABINET	211766-591	11/12/2010	NEW
PREP	Blue M Oven	General Signal		Daily: Record and Verify temperature setting. Monthly: Clean interior Annually-glass, quarterly-digital: check thermometer against NIST certified thermometer			1986	
PREP	Water Bath	VWR	1245-PC		SP File cabinet		2003	
PREP	Kiln	Cress	Firemate FE27		SP File cabinet		1989	
PREP	Kiln	Cress	Firemate FE27		SP File cabinet		2002	
PREP	Water Bath	Boekel	PB-2800			50100025		New
PREP	Water Bath	Thermo	2845			240329-661		New
HPLC	Water Purification System	Aries	414R		GC File cabinet		2008	New
GC	CLP Reporting Software	Khemia	Omega				1994	

Support Equipment/Computers

Section	Instrument Type	Manufacturer	Model #	Preventative Maintenance	Manual location	Serial #	Date Rec'd.	Condi-tion when rec'd.
GC	Computing Integrators/Data System	Perkin Elmer/Nelson	Total Chrom 6.3X		GC File cabinet		2005	
GC	Computing Integrators/Data System	Perkin Elmer/Nelson	Total Chrom 6.3X		GC File cabinet		2005	
GC	Computing Integrators/Data System	Perkin Elmer/Nelson	Total Chrom 6.3X		GC File cabinet		2005	
GC	Computing Integrators/Data System	Perkin Elmer/Nelson	Total Chrom 6.3X		GC File cabinet		2005	
GC	Computing Integrators/Data System	Perkin Elmer/Nelson	Total Chrom 6.3X		GC File cabinet		2005	
GC	Computing Integrators/Data System	Perkin Elmer/Nelson	Total Chrom 6.3X		GC File cabinet		2005	
GC	Balance	Ohaus	CS 200		GC File cabinet		2002	
GC	Balance	Ohaus	CS 2000		GC File cabinet		2007	

Section 6.0 Documents

Document Number	Method or Rev	Document Name	Effective Date
NJDEPLLTO-15	rev.04	Analysis of Volatile Organics in Ambient Air Using Summa or Other Specially Prepared Canisters by GCMS	11/1/11
5041	rev.02	Analysis of Volatile Organics on Sorbent Cartridges from Volatile Organic Sampling Train (VOST)	10/21/09
TO-17	rev.02	Analysis of Volatile Organics on Sorbent Tubes by EPA Method TO-17	2/26/13
TO-15	rev.07	EPA Method TO-15 Analysis of Volatile Organics in Ambient Air Using Summa or Other Specially Prepared Canisters by GCMS/SCAN/SIM	10/13/13
ADMIN002	rev.04	Computers and Programs	7/11/2013
7471B	rev.4	Sample Preparation and Analysis of Mercury in Soil/Sediment by Manual Vapor Technique- Method 7471B	10/1/13
245.1	rev.8	Sample Preparation and Analysis of Mercury in Water by Manual Cold Vapor Technique - Method 245.1	10/1/13
7470A	rev.8	Sample Preparation and Analysis of Mercury in Water by Manual Cold Vapor Technique - Method 7470A	10/1/13
6010C	rev.6	Sample Preparation and Analysis of the Determination of Trace Metals by Inductively Coupled Plasma Atomic Emission Spectroscopy - Method 6010C and Prep. Methods 3005A and 3050B	2/5/14
200.7	rev.10	Sample Preparation and Analysis of the Determination of Trace Metals by Inductively Coupled Plasma Atomic Emission Spectroscopy with Hardness Calculation - Method 200.7	12/30/13
6020A	rev.3	Sample Preparation and Analysis of the Determination of Trace Metals by Inductively Coupled Plasma Atomic Emission Spectroscopy/Mass Spectrometry - Method 6020A and Prep. Methods 3005A and 3050B	8/26/13
200.8	rev.5	Sample Preparation and Analysis of the Determination of Trace Metals by Inductively Coupled Plasma Atomic/ Emission Spectroscopy /Mass Spectroscopy- Method 200.8	10/1/13
S-LI-MB-008-rev.00	ASTM D6503-99 Enterolert	Analysis of Enterococci in Water Using Enterolert ASTM D6503-99	5/14/14
S-LI-MB-007-rev.00	SM 9223B (Colilert 18)	Colilert 18 Method for the Analysis of Total Coliform and E.Coli in Water SM 9223B	5/13/14
S-LI-MB-006-rev.00	SM 9223B (Colilert)	Colilert Method for the Analysis of Total Coliform and E.Coli in Water SM 9223B	5/13/14
S-LI-MB-004-rev.00	SimPlate/SM 9215B	HETEROTROPHIC PLATE COUNT SimPlate™IDEXX,SM 9215B	5/9/14
S-LI-MB-005-rev.00	SM 9221B, C and E	Multiple Tube Fermentation Technique for Members of the Coliform Group SM 9221B, C AND E	5/13/14
Qcult	rev.00	Prep of Bacterial Cultures for QC Testing	7/15/09
1010A	rev.5	Pensky-Martens Closed-Cup method for Determining Ignitability - EPA Method 1010A	10/13/13
S-LI-O-010-rev.00	1312	Synthetic Precipitation Leaching Procedue SPLP	5/23/14
Corr1110A	rev.1	EPA SW846 Method 1110A Corrosivity Towards Steel	7/25/12
S-LI-O-009-rev.00	1311	Toxicity Character Leaching Procedure TCLP	5/21/14
S-LI-Q-002-rev.00	rev.00	Document Control and Management	6/9/2014
S-ALL-Q-003-rev.09	rev. 09	Document Numbering	6/10/2014

Document Number	Method or Rev	Document Name	Effective Date
S-LI-Q-003-rev.01	rev.01	Manual Integration	8/25/2014
S-ALL-Q-029-rev.03	rev.03	Mintminer Data File Review for Data Integrity Monitoring	9/29/2014
S-LI-Q-001-rev.00	rev.00	Preparation of SOPs	6/9/2014
Materials	rev. 3	Preparation of Standards and Reagents, Cleaning of Containers	8/9/2013
UNCERT	rev.01	Procedure for the Measurement of Uncertainty	7/11/2013
TCV001	rev.03	Procedure for Thermometer Calibration Verification	7/10/2013
QCSelect	rev.00	Procedure to Select Samples for use as MS/MSD/MD Analysis	8/13/2013
QAM016	rev.16	Quality Assurance Quality Control Manual	2/14/14
S-ALL-Q-015-rev.01	rev. 15	Review of Lab Management System	6/13/2014
SUBS	rev.00	Subsampling	8/9/2013
pH 4500-H B	rev.02	pH Analysis in Water by Electrometric Technique SM4500-H B	7/11/2011
Cl2 4500Cl G	rev.04	Sample Prep and Analysis Chlorine Residual DPD Method	6/22/2011
RECV	rev.03	Sample Receiving Handbook	7/15/2013
QUICKTAT	rev.02	Standard Operating Procedure for Receipt/Distribution of Quick Turn-around Tests	8/9/2013
Safety Manual/CHP	rev.10	Chemical Hygiene Plan/Safety Manual	5/23/2014
S-LI-S-001-rev.00	rev.00	Rescue Alert System Operation	9/30/2014
522	rev.02	1,4-Dioxane by GCMS- 522	4/15/13
8100mod	rev.1	Analysis of Dielectric Fluids and Petroleum Products by GCMS	8/10/10
549.2	rev.8	Analysis of Diquat in Drinking Water by HPLC	10/10/13
531.1	rev.4	Determination of N-Methylcarbamoyloximes and N-Methylcarbamates in Drinking Water by HPLC	1/12/09
548.1	rev.03	Endothall- 548.1	9/17/13
EPH_r1	rev.01	Extractable TPH (EPH)	3/6/12
GCMS_GRO_DRO	rev.3	Gasoline Range Organics (GRO) by EPA 8260B and Diesel Range Organics (DRO) by EPA Method 8270C	1/28/14
547	rev.4	Glyphosate	5/21/09
552.2	rev.05	Haloacetic Acids- 552.2	10/4/13
625	rev.9	Method 625 - Sample Preparation and Analysis of Base/Neutral Acid Extractable in Water	10/13/13
515.1	rev.09	Prep and Analysis of Chlorinated Herbicides- 515.1	9/20/11
8151A	rev.09	Prep and Analysis of Chlorinated Herbicides- 8151A	10/13/13
608	rev.10	Prep and Analysis of Chlorinated Pesticides- 608	10/13/13
8081B	rev.02	Prep and Analysis of Chlorinated Pesticides- 8081B	10/13/13
508.1	rev.03	Prep and Analysis of Chlorinated Pesticides and PCBs- 508.1	5/27/09
ASP 95-3	rev.07	Prep and Analysis of Chlorinated Pesticides and PCBs- ASP 95-3	1/24/06
OLMO4.2 PEST/PCB	rev.02	Prep and Analysis of Chlorinated Pesticides and PCBs- OLM04.02	2/28/03
504.1	rev.07	Prep and Analysis of EDB and DCBP	9/21/11
8011	rev.01	Prep and Analysis of EDB and DCBP	5/27/09
505	rev.07	Prep and Analysis of Organohalide Pests and PCBs- 505	5/25/09
8141B	rev.01	Prep and Analysis of Organophosphorus Pesticides- 8141B	8/28/13
S-LI-O-001-rev.00	rev.00	Prep and Analysis of PCBs- 8082A	7/17/14

Document Number	Method or Rev	Document Name	Effective Date
508A	rev.04	Prep and Analysis of PCBs as Decachlorobiphenyl- 508A	5/27/09
OLM04.3S	rev.3	Preparation and Analysis of Semi-Volatile Organics by GC/MS - EPA CLP (Combined with 4.2)	4/26/06
8270D	rev.3	Sample Preparation and Analysis of Semivolatile Organics by GC/MS - Method 8270D	12/11/13
8270D_SIM	rev.2	Sample Preparation and Analysis of Semivolatile Organics by GC/MS - Method 8270D-SIM	10/13/13
ASP 95-2	rev.6	Sample Preparation and Analysis of Semivolatile Organics by GC/MS: Method 95-2	5/3/06
525.2	rev.06	Semivolatile Organics- 525.2	7/10/13
8015D	rev.02	TPH by GC/FID- 8015D	10/13/13
OLM04.3V	rev.2	Analysis of Volatile Organics by GC/MS - EPA CLP (Combined with 4.2)	6/12/06
S-LI-O-003-rev.00	524.2	Determination of Drinking Water Volatiles by GCMS Method 524.2	10/14/14
GCMS_GRO_DRO	rev.3	Gasoline Range Organics (GRO) by EPA 8260B and Diesel Range Organics (DRO) by EPA Method 8270C	1/28/14
624	rev.11	Method 624 Sample Preparation and Analysis of Purgeables in Wastewater by GC/MS	10/13/13
S-LI-O-002-rev.00	rev.3	Method RSK-175 Analysis of Dissolved Gases in Water by FID	10/1/14
1624	rev.1	Sample Preparation and Analysis of Volatile Organic Compounds by Isotopic Dilution GCMS	1/7/14
1666	rev.1	Sample Preparation and Analysis of Volatile Organic Compounds Specific to the Pharmaceutical Manufacturing Industry by Isotopic Dilution GCMS	1/7/14
8260C	rev.2	Sample Preparation and Analysis of Volatile Organics by GC/MS - Method 5030C/5035A/8260B	10/13/13
ASP 95-1	rev.4	Sample Preparation and Analysis of Volatile Organics by GC/MS: Method 95-1	4/17/02
S-LI-W-001-rev.01	rev.01	Waste Handling and Management	10/6/2014
MBAS SM5540C	rev.3	Analysis of MBAS: Standard Method 5540C	7/14/13
COD 410.4	rev.11	Chemical Oxygen Demand Analysis by Manual Colorimetric Technique: Method 410.4	10/1/13
COND 120.1	rev.8	Conductivity Analysis in Water by Electrometric Technique EPA Method - 120.1	10/1/13
COND 2510B	rev.3	Conductivity Analysis in Water by Electrometric Technique SM18.2510B	9/19/11
CorrSM2330B	rev.2	Corrosivity SM2330B Langlelier Saturation Index	8/12/13
314.0	rev.6	Determination and Analysis of Perchlorate by Ion Chromatography EPA Method 314.0	10/1/13
NH3 SM4500-B H	rev.5	Determination of Ammonia by Continuous Flow Phenate Analysis: SM4500-NH3 B H	7/14/13
NH3 350.1	rev.8	Determination of Ammonia by Lachat Continuous Flow Phenate Analysis : Method 350.1	10/1/13
Cl 9250	rev.0	Determination of Chloride by Continuous Flow Injection Analysis Low Flow Method 9250	3/6/07
4500-Cl E	rev.2	Determination of Chloride by Continuous Flow Injection Analysis SM4500-Cl E	7/14/13
353.2 Lachat	rev.7	Determination of Nitrate/Nitrite by Lachat Continuous Flow Cadmium Reduction Analysis EPA Method 353.2	7/10/13
300.0 Lachat	rev.5	EPA Method 300.0 The Determination of Inorganic Anions by Ion Chromatography Lachat QuickChem Method 19-510-00-1-A	10/11/13
S-LI-I-008-rev.00	SM 2540 E -97,-11	Fixed and Volatile Solids	5/20/14
S-LI-I-001-rev.00	SM 3500-Cr B	Hexavalent Chromium Analysis in Water by Colorimetric Technique SM 3500-Cr B	3/14/14
7196A/3060A	rev.6	Hexavalent Chromium Analysis with Alkaline Digestion by Colorimetric Technique: Method 7196A/3060A	10/10/13

Document Number	Method or Rev	Document Name	Effective Date
O&G1664	rev.8	Method 1664A Total Recoverable Oil and Grease and Petroleum Hydrocarbon Analysis in Waters N-Hexane Extractable Material(SGT_HEM) by Extraction and Gravimetry	10/1/13
FL EPA9095B	rev.1	Paint Filter Liquids Test	10/11/13
pH 9045D	rev.2	pH Analysis in Soils, Sediments and Sludges by Electrometric TechniqueEPA Method 9045C	10/10/13
S-LI-I-003-rev.00	SM 4500-P E	Sample Preparation and Analysis Phosphorous All Forms Colorimetric Ascorbic Acid	5/1/14
S-LI-I-002-rev.00	SM 4500-S2-F	Sample Preparation and Analysis of Sulfide Iodometric/Titrimetric	3/14/14
S-LI-I-005-rev.00	rev.00	Sample Preparation and Analysis of Acidity, Titration SM2310B	9/9/14
BOD/CBOD SM 5210	rev.11	Sample Preparation and Analysis of Biological Oxygen Demand (BOD) SM 5210B	10/13/13
2120B	rev.1	Sample Preparation and Analysis of Color Method SM 2120B	7/17/13
Odor SM2150B	rev.2	Sample Preparation and Analysis of Odor	12/14/13
pH 9040C	rev.1	Sample Preparation and Analysis of pH Electrometric Measurement - Method 9040B	8/12/13
SS 2540F	rev.3	Sample Preparation and Analysis of Settleable Solids: SM 2540 F	10/13/13
S 9034/9030B	rev.5	Sample Preparation and Analysis of Sulfide (Titrimetric, Iodine) - Method 9034/9030B	10/10/13
TDS 2540C	rev.7	Sample Preparation and Analysis of Total Dissolved Solids - Method 2540C	10/13/13
TS 2540B	rev.4	Sample Preparation and Analysis of Total Solids - Method 2540B	10/13/13
S-LI-I-004-rev.00	TSS	Sample Preparation and Analysis of Total Suspended Solids (Nonfilterable Residue - Gravimetric): SM2540D	8/5/14
180.1	rev.9	Sample Preparation and Analysis of Turbidity: Method 180.1 (Nephelometric)	10/1/13
UV254 5910B	rev.2	Sample Preparation and Analysis UV254	9/20/11
REACTIVITY	rev.4	Sample Preparation of Cyanide and Sulfide Reactivity	6/21/13
TEMP 2550B	rev.0	Temperature (Thermometric) SM2550B	9/20/07
Chlorate 300.1 Lachat	rev.2	The Determination of Chlorate in Water by Automated Ion Chromatography Lachat QuickChem Method 10-540-00-1 -C	2/14/13
9056A Lachat	rev.5	The Determination of Inorganic Anions in Water by Ion Chromatography EPA Method 9056A	10/11/13
TALK2320B	rev.8	Total Alkalinity Analysis in Water by Titrimetric technique (pH4.5) - Method 2320B	10/13/13
N_Calcs	rev.2	Total and Organic Nitrogen by Calculation	9/10/13
CN9014/9010C	rev.11	Total Cyanide Analysis in Water and Soils by Manual Spectrophotometric Technique with Midi-Distillation - Method 9014 with 9010 Distillation	10/10/13
CNA4500CEG	rev.4	Total Cyanide and Cyanide Amenable to Chlorination in Water and Soils by Manual Spectrophotometric Technique with Midi-Distillation - SM4500-C E,G	7/14/13
Hard 2340C	rev.3	Total Hardness Analysis in Waters by Manual Titrimetric (EDTA) Technique SM 18-20 2340C	7/14/13
TKN 351.2	rev.16	Total Kjeldahl Nitrogen (TKN) Analysis by Semi-Automated Colorimetric Technique: Method 351.2	10/1/13
TOC 9060A	rev.4	Total Organic Carbon Analysis in Water by Combustion Infrared Technique -Method 9060	10/13/13
TOC 5310B	rev.5	Total Organic Carbon Analysis in Water by Combustion Infrared Technique: SM5310B	10/13/13
420.1	rev.6	Total Recoverable Phenol Analysis by Manual Colorimetric Technique with Mini-Distillation: Method 420.1	9/13/06
Phenols 9065	rev.5	Total Recoverable Phenol Analysis by Manual Colorimetric Technique with Mini-Distillation: Method 9065	10/11/13

Document Number	Method or Rev	Document Name	Effective Date
70 Packages	rev.01	BO-70/C5-70/RT-70 Package Instructions	5/12/2009
AECOM	rev.02	AECOM Electronic Data Deliverable	6/5/2012
Attaching External Files to Omega	rev.02	Attaching External Files to Omega	5/3/13
BNLS EDD	rev.03	Brookhaven National Laboratory (BNLS) Electronic Data Deliverable	5/3/2013
Bookmarking	rev.02	Bookmarking Data Packages	9/7/2011
Con Edison Login Review	rev.03	Con Edison Login Review	3/1/2013
CRA	rev.02	Conestoga-Rovers and Associates (CRA) Electronic Data Deliverable	6/4/2012
DEC	rev.02	Department of Environmental Conservation (DEC) Electronic Data Deliverable	9/7/2011
DECO	rev.02	DECO Electronic Data Deliverable	5/3/2013
DECO Package	rev.01	DECO (BO5-10) Package Instructions	5/12/2009
Freshkills	rev.03	Freshkills Landfill Electronic Data Deliverable	6/20/2013
GEI	rev.06	National Grid (GEI) Electronic Data Deliverable	6/17/2013
GEI Routine	rev.04	National Grid (GEI) Routine Electronic Data Deliverable	6/17/2013
Generic Excel	rev.03	Generic Excel Electronic Data Deliverable	5/7/2013
Key Login Review	rev.01	Key Login Review	1/19/2011
KEY/CON	rev.02	Keyspan & Con Ed Routine EDD	10/4/2011
KEY-URS	rev.03	KEY-URS Corporation Electronic Data Deliverable	1/6/2013
Loading FK Field Data	rev.02	Freshkills Field Parameters	2/13/2012
NJ EDD	rev.03	New Jersey Electronic Data Deliverable	5/7/2013
NJ-60 Package	rev.03	NJ-60 & NJ-70 Package Instructions	6/20/2013
RT-20 Package	rev.02	RT-20 Data Package Instructions	5/9/2013
RT-25 Package	rev.02	RT-25 Data Package Instructions	5/9/2013
SDG Data Archiving	rev.00	SDG Data Archiving	5/14/2012
SDG Narratives	rev.02	Typing SDG Narratives	5/7/2013
SDG Summaries	rev.01	SDG Summary Breakdown Instructions	7/6/2010
SPCB	rev.01	Paginating/Inserting/Replacing Pages in Data Packages	3/9/2009
SUB Data	rev.01	Entering Sub-Contract Data into Omega	1/26/2013
TCR Results	rev.01	Sending Trans Canada Results	1/26/2011

Attachment B

Alpha Woods Hole Labs Quality Systems Manual (electronic only)

Quality Systems Manual

Alpha Analytical, Inc.

D/B/A

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1 Mission Statement

The mission of Alpha Analytical is quite simply to provide our customers with the greatest value in analytical service available. For the ‘greatest value’ is not only found in the data that is delivered, it is also found in the services provided.

- Data must be of the highest integrity, accuracy and precision.
- Consultation and educational services must be provided to support the customer in establishing data quality objectives and interpretation of the final data package.
- Support services such as sample containers, courier service and electronic data deliverables must be available to the customer.

Alpha’s mission continues with an established commitment to our community and environment. We must ensure that we do not produce any additional contamination to our environment or harm our neighbors and community in any way.

The value of Alpha’s product is in the honesty and integrity with which each chemist, courier, login staff member, or office staff member performs their tasks. The customer or employee must always feel satisfied that they received the greatest value in their lab experience at Alpha.

Alpha Analytical will vigorously pursue its mission into the next millennium.

Mark Woelfel

President

2 Table of Contents

3 Introduction

The Quality Systems Manual, referred to as Corporate Quality Systems Manual (CQSM) of Alpha Analytical describes the quality program in use at the laboratory for both Westboro and Mansfield facilities. This Quality Systems Manual provides employees, customers and accrediting agencies with the necessary information to become familiar with how the quality system operates within Alpha Analytical. The quality program includes quality assurance, quality control, and the laboratory systems including feedback mechanisms for the automated continuous improvement of the laboratory operations to meet customer needs.

Implementation of the laboratory operations is by documenting procedures, training personnel and reviewing operations for improvement. Written procedures are maintained as Standard Operating Procedures (SOPs). The SOPs are available to the staff as an uncontrolled, electronic, secure copy. The provisions of the QSM are binding on all temporary and permanent personnel assigned responsibilities. All laboratory personnel must adhere strictly to the QSM and SOPs.

All policies and procedures have been structured in accordance with the National Environmental Laboratory Accreditation Conference (NELAC) 2009 TNI standards, applicable EPA requirements, and applicable Department of Defense (DOD) Quality Systems Manual, standards.

Twenty-five (25) sections comprise the QSM. Related quality documentation including the listing of SOPs, forms, floor plan, equipment, personnel and laboratory qualifications are available. The QSM sections provide overview descriptions of objectives, policies, services and operations.

3.1 Scope

The QSM describes the requirements of the Laboratory to demonstrate competency in the operations for performing environmental tests for inorganic, organic, air and microbiological testing. The basis for the environmental tests is the methods found in documents published by the United States Environmental Protection Agency (EPA), ASTM, AOAC, APHA/AWWA/WEF, Standard Methods, DOD-QSM, and other procedures and techniques supplied by customers.

The QSM includes requirements and information for assessing competence and determining compliance by the laboratory to the quality system. When more stringent standards or requirements are included in a mandated test method, by regulation, or specified in a project plan the laboratory demonstrates achievement of the customer specified requirements through its documented processes.

The QSM is for use by Alpha Analytical for developing and implementing the quality system. Accrediting authorities and customers use the QSM for assessing the competence of Alpha Analytical. Alpha Analytical is committed to continually improving the quality system. Meeting customer needs, operating within regulatory requirements and adhering to Alpha’s Data Integrity and Ethics policy are several of the mechanism used to continually improve the quality system.

3.2 Policy Statement

This Quality Systems Manual summarizes the policies, responsibilities and operational procedures associated with Alpha Analytical. This manual applies to all associates of the laboratory and is intended for use in the on-going operations at Alpha Analytical. Specific protocols for sample handling and storage, chain-of-custody, laboratory analyses, data reduction, corrective action, and reporting are described. All policies and procedures have been structured in accordance with the National Environmental Laboratory Accreditation Conference (NELAC) TNI 2009 standards, applicable EPA requirements, regulations, guidance, and technical standards and current DOD QSM standards. This Quality Systems Manual, laboratory Standard

Operating Procedures (SOPs), and related documentation describe the quality systems, policies and procedures for Alpha Analytical.

Alpha Analytical performs chemical analyses for inorganic and organic constituents in water, seawater, soil, sediment, oil, tissue and air matrices. Alpha Analytical's goal is to produce data that is scientifically valid, technically defensible, and of known and documented quality in accordance with standards developed by NELAC and any applicable state or EPA regulations or requirements. It is the commitment of the President, Operations Director, Laboratory Technical Manager and Quality Assurance Officer to work towards continuous improvement of the operation, and towards meeting our customer's needs, requirements, and intended data usage. This continued commitment is built into every activity of the laboratory. It is the responsibility of Senior Management and the Department Managers to ensure that all associates familiarize themselves with, and comply at all times with, the quality systems, procedures and policies set forth in this manual, laboratory SOPs, and related documentation.

Alpha Analytical analyzes Proficiency Test (PT) samples, in accordance with NELAC and other regulatory programs, from a National Institute of Standards and Technology (NIST)-approved PT provider for the analytes established by EPA for water samples, and for other analytes and matrices. The specific analytes and matrices analyzed are based on the current scope of the laboratory services as documented in the laboratory SOPs and state certifications.

The technical and service requirements of all requests to provide analyses are thoroughly evaluated before commitments are made to accept the work. This includes a review of facilities and instrumentation, staffing, and any special QC or reporting requirements to ensure that analyses can be performed correctly and within the expected schedule. All measurements are made using published reference methods or methods developed by Alpha Analytical. Competence with all methods is demonstrated according to the procedure described in SOP/ 1739 prior to use.

Alpha Analytical has developed a proactive program for prevention and detection of improper, unethical or illegal actions. Components of this program include: internal proficiency testing, electronic data audits and post-analysis data review by the QA Officer; a program to improve employee vigilance and co-monitoring; and Ethics Training program identifying appropriate and inappropriate laboratory practices, instrument manipulation practices and consequences. Additionally, all associates are required to sign the Alpha Analytical *Ethics Agreement* form upon commencement of employment and each year following. This form clearly outlines the possible consequences of unethical or improper behavior, or data misrepresentation. All staff are required to report any suspected unethical conduct to management. Management will then investigate and determine if the situation was considered unethical and will take appropriate action as described in the Alpha Ethics policy.

It is the policy of the laboratory to discourage and reject all influence or inducements (whether commercial, financial or personal) offered either by customers or suppliers, which might adversely affect results or otherwise compromise the judgment or impartiality of the staff. It is the responsibility of the Operations Director and Laboratory Technical Manager to inform customers and suppliers of this policy when necessary.

In the event that any such influences or inducements are encountered, the staff is instructed to inform management immediately. It is the responsibility of the Operations Director and the Laboratory Technical Manager to take appropriate action to prevent recurrence.

3.3 References

External reference documents are available electronically in the Qualtrax system for staff to access the latest edition or version of the reference methods, regulations or national standards. The Quality Assurance Department maintains the electronic files in the Qualtrax system. Management purchases automated update services, where available, to provide the laboratory with the latest hardcopy edition, where electronic means is not available.

3.4 Definitions

Appendix A lists the definitions as adopted by the laboratory. The definitions are from the 2009 TNI and DoD QSM standards.

4 Organization and Management

4.1 Legal Definition of Laboratory

Alpha Analytical is a full service analytical laboratory. Testing services include Drinking Water, Waste Water, Ground Water, Waste material and Air. Alpha Analytical is a privately held corporation incorporated in the state of Massachusetts. Alpha Analytical, Inc. does business as (D/B/A) Alpha Analytical.

Alpha Analytical has been in business since 1985. The types of businesses served include:

Consulting firms,
Engineering firms,
Waste Management Companies,
Industrial sites,
Municipal agencies
Department of Defense projects.

4.2 Organization

The laboratory operates a quality system approach to management in order to produce data of known quality. The laboratory organization provides effective communication and lines of authority to produce analytical data meeting customer specifications. The organizational design provides open communication while ensuring that pressures and day to day operating circumstances do not compromise the integrity of the reporting of the final data.

The President is responsible for directing all areas of the company. The following job functions report to the President:

Operations Manager
Quality Assurance Officer
Customer Services Manager
Marketing / Business Development / Sales
Financial Services
Human Resources

The Operations Manager is responsible for directing all laboratory operational areas of the company. The following job functions report to the Operations Manager:

- Laboratory Technical Manager(s)
- Department Managers

The Laboratory Technical Manager(s) is(are) responsible for the laboratory data generated by the organics testing, inorganics testing and metals testing areas and the Air Technical Director is responsible for laboratory data generated by air analyses.

The Departmental Managers (Supervisors) have the following responsibilities:

The organics managers direct personnel in the organics extraction and instrumental laboratories.

The wet chemistry manager directs personnel and team leaders in the wet chemistry and/or microbiological testing areas.

The metals manager directs personnel and team leaders in the metals sample preparation and instrumental laboratories.

The Quality Assurance Officer is a member of the staff and reports directly to the President and has defined responsibility and authority for ensuring that the quality system is implemented and adhered to at all times. The Quality Assurance (QA) Officer is responsible for interacting and communicating certification requirements, implementing the Quality Systems Manual and reporting to the Laboratory Technical Manager and Senior Management the status of the quality program. The QAO oversees the Quality Systems Specialists and is responsible for oversight and/or review of quality control data and function independently from laboratory operations.

The Customer Services Manager is responsible for customer interactions, project coordination and laboratory personnel notification of project requirements.

The Marketing, Business Development and Sales personnel are responsible for increasing the volume of work from current customers and adding new customers to the base business of Alpha Analytical. The Marketing and Business Development personnel review all new work with the Laboratory Technical Manager, Operations Manager, President and/or Quality Assurance Officer before contractual commitment.

The Controller is responsible for maintaining and reporting on the financial status of the company. The Controller directs financial personnel on proper accounting procedures and maintaining the list of approved suppliers and subcontractors. The Controller reports directly to the President.

The Human Resource Director is responsible for personnel recruitment, hiring, performance reviews.

Personnel job descriptions define the operational function duties and responsibilities. Administration and Laboratory personnel assignments may include cross-functional training and work performance in multiple areas of the operations. Multiple function training ensures laboratory back up personnel during peak workloads.

During the absence of any staff member, assignment of alternative personnel occurs by memo or e-mail. The Manager or Supervisor authorizes the assignment. The naming of alternative personnel assures the continuing performance of critical tasks during the primary person’s absence and ensures that lines of communication remain open for continued decision making. The deputy for the Laboratory Technical Manager is the Quality Assurance (QA) Officer. The deputies for the Quality Assurance (QA) Officer are the Quality Systems Specialists.

For the purposes of NELAC and DoD QSM Accreditation, the Lead Laboratory Technical Manager is the Laboratory Technical Manager. The deputies for the Lead Technical Manager are the Quality Assurance (QA) Officer, and the Departmental Managers. The Laboratory Technical Manager meets the requirements specified in the Section 4.1.7.2 Volume 1, Module 2 of the 2009 TNI standards. If the Laboratory Technical Manager is absent for a period of time exceeding 15 consecutive calendar days, a full-time staff member meeting the qualifications of Laboratory Technical Manager will be designated to temporarily perform this function. The primary Accrediting Body shall be notified in writing if the Technical Manager’s absence exceeds 35 consecutive calendar days.

4.3 Business Practices

Alpha maintains certification for the programs and analytes required by regulatory programs. The listing of qualifications from the various certifications, registrations and accreditation programs are available upon request. Alpha Analytical operates Monday to Friday from 7:30 a.m. to 5:30 p.m. Management prepares and posts the holiday schedule for the year indicating closed operations. Sample delivery occurs during normal operating hours unless arranged in advance.

Alpha's reputation depends upon timely reporting and quality data. The standard turnaround time for engineering and consulting firms is five business days from time of sample receipt. Standard turnaround for all other customers is ten business days from time of sample receipt. The time of sample receipt is when the verification of the chain of custody and samples meets the laboratory sample acceptance policy. Laboratory management must approve any special arrangements for rush or expedited turnaround time. The basis for data quality depends on customer, regulation and method performance criteria. Accuracy, precision, sensitivity and comparability are expressions of method performance criteria.

All work is performed in the strictest confidence. New and contract employees must review corporate policy and practice requirements for protecting customer confidentiality and proprietary rights. The review occurs during orientation and ethics training. It is the policy of the laboratory to release data to the customer authorized contact. Personnel assigned the duties of interacting with customers review project files and discuss data related only to the project. Personnel whose duties do not include routine customer contact must check with the customer service manager before discussing data with regulators or third parties

5 Quality System

Establishment, Audits, Essential Quality Controls and Data Verification

5.1 Establishment

The Mission Statement presents the policy and objectives for Alpha Analytical. The Quality Systems Manual provides the framework for the processes and operations to implement the Mission. The Quality Systems Manual and documentation controlled by the laboratory system detail the management authorized operations for achieving the objectives of the company.

The laboratory operates a quality system approach to management in order to produce data of known quality. Alpha Analytical is a full service laboratory designed to provide its customers with accurate, precise and reliable data within the best turn-around time and at the most reasonable prices. Alpha employs chemists of the highest training, ethics and caliber in the field of analytical chemistry. This and state-of-the-art instrumentation and automation combine to insure data of known and documented quality.

5.2 Quality Systems Manual

The QA Officer is responsible for the publication and distribution of the Quality Systems Manual. Management reviews and authorizes the manual. Implementation of major changes in the quality system occurs after revision of the appropriate Quality Systems Manual section and authorization by management.

The authorization of the Quality Systems Manual is documented electronically in Qualtrax. Updates of this manual occur at any time throughout the year. Document control procedures (SOP1729) apply to the distribution of the Quality Systems Manual. Controlled copies of the manual are maintained electronically within Qualtrax. Persons or organizations outside of Alpha Analytical may receive uncontrolled copies. Copies are distinctly indicated “Uncontrolled Documents” within the footer of each page.

5.3 Audits

Laboratory audits, both internal and external, review and examine the operations performed in the laboratory. Internal audits are conducted by qualified QA Specialists and external audits are reviews by external organizations to evaluate the ability of the laboratory to meet regulatory or project requirements.

A QA designee schedules internal process audits to ensure the completion of the annual audit of each operational area. The process audits are a more detailed review of the operations. Personnel from areas other than the one audited perform process audits.

The internal system audit is a review of the implementation of the documented quality system. The system audit includes sample tracking from receipt to disposal, a data audit of a completed report, and all operations not audited during the process audit.

The purpose of the internal system audit is:

Verification that adequate written instructions are available for use;

Analytical practices performed in the laboratory are consistent with SOPs;

The quality control practices are applied during production;

Corrective actions are applied as necessary;

Deviations from approved protocols are occurring only with proper authorization and documentation;

Reported data is correct and acceptable for reporting;

SOPs, quality records, analytical records, electronic data files are maintained properly; and

Personnel training files and records are satisfactory and current.

Before a scheduled internal audit, the assigned auditor reviews checklists, if used, and/or the SOP specific to the area. The checklist may be from an external source or prepared by the auditor. . After the audit, the auditor submits a summary or notes from the audit to the Laboratory Technical Manager or QAO as part of the audit report. The summary identifies discrepancies found during the audit. Technical personnel are responsible for the inspection and monitoring of in-process and final data. Personnel independent of those having direct responsibility for the work performed audit the quality system and processes.

Representatives sent by customers and government or accrediting agencies often perform external audits. These audits are most often announced inspections, but sometimes are not announced. The Quality Assurance Officer, Laboratory Technical Manager or assigned deputy, and/or appropriate Department Manager accompany the external audit team through the laboratory. The auditors receive a brief overview of company objectives, activities, and facilities. Interviews with essential supervisory staff and technical staff are arranged, along with retrieval of any documentation pertinent to the audit. Auditors usually provide a report on their findings shortly after the audit. The QA Officer receives the audit report and copies are provided to laboratory personnel for review. Corrective actions are identified and distributed to responsible parties for implementation in response to any cited deficiencies.

5.4 Audit Review

Management reviews internal and external audit reports to evaluate system effectiveness at the annual management review meeting. Tracking of the audit findings occurs through the nonconformance action process. The management and staff work together to establish a time line for resolving the audit findings. The Quality Assurance team tracks the time line and reports to the Laboratory Technical Manager on any outstanding audit findings.

5.5 Performance Audits

Alpha Analytical participates in inter-laboratory comparisons and proficiency test programs required by customers and certifying agencies. The performance audits provide information on the data comparability of results generated by the laboratory. Test samples received by the laboratory are handled following routine laboratory procedures. Proficiency test samples are unpacked, checked against the packing slip and examined for damage. Reporting requirements and deviations to routine practices are noted as would be required for any project.

Analysts demonstrate proficiency by analyzing either an external proficiency test sample, an internally prepared blind test sample or Initial Demonstration of Capability (IDC) before independent operation of a test method. The results of performance audits serve several purposes. The QA Officer may use performance audits for evaluating analyst proficiency, laboratory performance in a specified area to facilitate laboratory improvement efforts, and/or to provide information to an accrediting agency on correction of past performance of an external performance audit.

5.6 Corrective Actions/Preventative Actions (CAPA)

The corrective action process at Alpha Analytical is detailed in SOP 1736. The corrective action program at Alpha Analytical uses the Nonconformance workflow in Qualtrax to document and follow through the corrective action/preventative action process for three main areas: nonconformance's within the laboratory, customer complaints and failed PT studies. The process ensures continuous improvement of company performance by preventing the recurrence of quality problems.

Nonconformance reports are tracked for closure date and the type. Reports to management include the listing of open nonconformance reports and the frequency of the type of nonconformance occurring. A QA designee monitors the completeness of the forms, as well as verifies the actions are complete and acceptable.

Customers will be notified within 5 days of any question(s) regarding validity of results.

5.7 Managerial Review

The management review occurs at least once per year as part of the strategic planning process. Documentation of the management review meeting is by recording the meeting minutes and listing the attendees. The focus of the quality management review is the frequency of the type of nonconformance, closure status, audit progress and other quality assurance actions. Meetings include discussion and progress on quality system initiatives since the last meeting.

Prior to the meeting, an agenda is distributed to all personnel expected to be in attendance. The meeting is chaired by the President. Minutes are taken and distributed at the conclusion of the meeting by a QA designee. If action is necessary on any issue, a Summary Report is generated and distributed to responsible parties for implementation. Actions are monitored by the QAO or designee until completion.

5.8 Essential Quality Control Procedures

The following general quality control principles apply to all tests. The manner implemented is dependent on the type of test performed. The laboratory SOP presents the specific quality control checks undertaken to ensure precision, accuracy and sensitivity of each test method. Deviations from the existing SOP are allowed only upon approval of the deviation by the department manager and Quality Assurance Officer. This documentation must be either in form of written notice or email.

Alpha Analytical uses quality control samples to evaluate the following:

1. Adequate positive and negative controls to monitor blanks, spikes, reference toxicants, zero blanks;
2. Adequate tests to define the variability and/or reproducibility of laboratory results;
3. Measures to ensure the accuracy of the test data including sufficient calibration and/or continuing calibrations, use of certified reference materials, proficiency test samples;
4. Measures to evaluate test performance, such as detection limits and quantitation limits or range of applicability such as linearity;
5. Selection of appropriate formulae to reduce raw data to final results such as linear regression, internal standards, or statistical packages;
6. Selection and use of reagents and standards of appropriate quality;

7. Measures to assure the selectivity of the test for its intended purpose;
8. Measures to assure constant and consistent test conditions for the method such as temperature, humidity, light, or specific instrument conditions.

   Note: All quality control samples are treated in the same manner as field samples.

All quality control measures are assessed and evaluated on an on-going basis, and quality control acceptance limits are used to determine the usability of the data. Control charts and/or calculated control limits monitor the long-term method performance by analyte, by instrument for water matrices. Routine evaluation and reporting of the control chart performance provides supervisors and management with additional performance measures to ensure data comparability. Control limits are recalculated when trends are observed.

Where no reference method or regulatory criteria exist, the laboratory specifies the acceptance/rejection criteria in the SOP. The test SOP specifies the QC samples performed per batch of samples. The quality control samples are categorized into the following, as appropriate to the method

- Method Blank
- Laboratory Duplicate
- Laboratory Control Sample (LCS)
- Laboratory Control Sample Duplicate (LCSD)
- Matrix Spike (MS)
- Matrix Spike Duplicate (MSD)

Selection of samples for Duplicate, Matrix Spike (MS) & Matrix Spike Duplicate (MSD)

2. Duplicate samples
   a. Samples will be selected if identified and requested by customer
   b. If no samples are identified by the customer then random samples will be analyzed within the batch as defined by the method, program or at a minimum batch of 20 samples.

3. Matrix Spike (MS) / Matrix Spike Duplicate (MSD) samples
   a. Samples will be selected if identified and requested by customer
   b. If no samples are identified by the customer then random samples will be selected and analyzed within the batch as defined by the method, program or at a minimum batch of 20 samples.
   c. If MS/MSD is not required, LCS/LCSD may be substituted for precision and accuracy evaluation.

The frequency is dependent on the reference method and test protocol. The following is the default requirement for quality control checks in lieu of any other guidance. The frequency for each quality control sample is generally one (1) per every 20 samples.

5.9 Data Reduction

After completion of the test procedure, the data reduction process begins.

Chromatography data may require the manual integration of peak areas or heights before reporting of results. The analyst must perform manual integration when software does not properly integrate or identify the peak. Manual integration must not occur for the purpose of achieving acceptable quality control or calibration. The analyst and reviewer sign and date the hardcopy of all manual integration. The analyst notes the rationale for performing the manual integration on the hardcopy printout and ensures the "TIC" marks from the software represent the integration area used for reporting the results. The analyst must minimize and avoid manual integration. The establishment of the proper integration parameters in the software reduces the number of manual integration occurrences.

The SOP for each test presents the formulas used for the specific test method. The formulas for the data calculations used throughout the laboratory are the following:

% Recovery (LCS)

$$\frac{MV}{TV} * 100 = \%R_{LCS}$$

where: MV = Measured Value
TV = True Value

% Recovery (MS or MSD)

$$\frac{MV - SV}{TV} * 100 = \%R_{MS}$$

where: MV = Measured Value
TV = True Value
SV = Amount found in sample

Average ($\overline{X}$)

$$\sum_{i-1}^{n} X_i \Big/ n = \overline{X}$$

where: $\overline{X}$ = Average of all values
X = Result of each measurement
n = Number of values

Relative Percent Difference (% RPD)

$$\frac{R_1 - R_2}{(R_1 + R_2)\big/ 2} * 100 = \%RPD$$

where: R_1 = Larger of two observed values
R_2 = Smaller of two observed values

% Difference (%D)

$$\frac{X - \overline{X}}{\overline{X}} * 100 = \%D$$

where: $\overline{X}$ = Average of all values
X = Result of measurement

Standard Deviation of the sample (S_x)

$$\sqrt{\frac{\sum\left(X - \overline{X}\right)^2}{n-1}} = S_x$$

where: $\overline{X}$ = Average of all values
X = Result of each measurement
n = Number of values

Relative Standard Deviation (%RSD)

$$\frac{S_x}{\overline{X}} * 100 = \%RSD$$

where: $\overline{X}$ = Average of all values
Sx = Standard Deviation (n - 1)

Range of Logs (for microbiological enumeration analysis)

10% of routine samples are analyzed in duplicate and the range of logs is determined.

MDL (See 40CFR Part 136 for details)

where: *MDL* = The method detection limit

$$\left[\sqrt{\frac{\sum_{i=1}^{n} x_i^2 - \left(\sum_{i=1}^{n} x_i\right)^2 \Big/ n}{n-1}}\right] * t_{0.99} = MDL$$

X = Result of each measurement
n = Number of values
t(n-1,1 = .99) = The students' T value appropriate for a 99% confidence level and a standard deviation estimate with n-1 degrees of freedom. (See Students t Test Table)

Reporting Limit (RL)

Lowest calibration standard or greater

Control Limits

Upper Control Limit: $\overline{X} + 3 * S_x = UCL$
Lower Control Limit: $\overline{X} - 3 * S_x = LCL$

Warning Limits

Upper Warning Limit: $\overline{X} + 2 * S_x = UWL$
Lower Warning Limit: $\overline{X} - 2 * S_x = UWL$

Method of Standard Additions (MSA): (See EPA 7000A for details)

The simplest version of this technique is the single-addition method, in which two identical aliquots of the sample solution, each of volume Vx, are taken. To the first (labeled A) is added a known volume Vs of a standard analyte solution of concentration Cs. To the second aliquot (labeled B) is added the same volume Vs of the solvent. The analytical signals of A and B are measured and corrected for non-analyte signals. The unknown sample concentration Cx is calculated:

$$C_x = \frac{SB\ V_S\, C_s}{(SA - SB)\ V_X}$$

where SA and SB are the analytical signals (corrected for the blank) of solutions A and B, respectively. V_S and C_s should be chosen so that SA is roughly twice SB on the average, avoiding excess dilution of the sample. If a separation or concentration step is used, the additions are best made first and carried through the entire procedure.

Improved results can be obtained by employing a series of standard additions. To equal volumes of the sample are added a series of standard solutions containing different known quantities of the analyte, and all solutions are diluted to the same final volume.

For example, addition 1 should be prepared so that the resulting concentration is approximately 50 percent of the expected absorbance from the endogenous analyte in the sample. Additions 2 and 3 should be prepared so that the concentrations are approximately 100 and 150 percent of the expected endogenous sample absorbance.

The absorbance of each solution is determined and then plotted on the vertical axis of a graph, with the concentrations of the known standards plotted on the horizontal axis. When the resulting line is extrapolated to zero absorbance, the point of interception of the abscissa is the endogenous concentration of the analyte in the sample. The abscissa on the left of the ordinate is scaled the same as on the right side, but in the opposite direction from the ordinate. A linear regression program may be used to obtain the intercept concentration.

5.10 Document Control

The Document Control Procedure (SOP/1729) describes the process for controlled and uncontrolled documents. The use of the revision number allows for the retention of a previous document for historical information purposes.

Every document is assigned a unique identification number, which is present on each page of the document. A master list of documents includes the unique identification. Each controlled copy includes the revision number, published date and page number.

Full document control includes the status of each document: active, inactive or superseded/archived. Inactive documents are procedures not currently requested, but may be in the future. Archived documents are procedures replaced with a later revision. Authorized personnel must review and approve each document and any subsequent revisions before use in the laboratory. Personnel authorized to review and approve a document have access to all necessary information on which to base their review and approval. The history section of the document in Qualtrax includes a description of the nature of the document change.

Standard Operating Procedures (SOPs) are instructions for repetitive or standard operations performed by the laboratory. The SOP author is the person familiar with the topic. The standard format for writing SOPs is set-up as a template for administration and technical SOPs. Each SOP is peer reviewed, authorized by management, and QA before final publication and implementation. Authorized signatories for controlled documentation include one or more of the following personnel: Company President, Quality Assurance Officer, Laboratory Technical Manager, Department Manager, Department Team Leader. Personnel acknowledge approved documents as read, understood and agreed to through electronic attestation forms associated with each document as SOP Attestation Tests which reside in Qualtrax.

SOPs must receive evaluation and input by laboratory supervisors and key technical personnel. The content of each SOP must conform to applicable requirements of analytical methods and certification agencies. Within these constraints, the content of a SOP meets the needs of a particular area of the laboratory. A new or revised SOP is needed when regulatory programs update or add methods, the scope of the existing method is extended, or when activities are being performed without adequate documentation.

Updating, modifying and changing SOPs, forms and the contents of this QSM are prompt and part of the routine practices. The prompt modification of these documents ensures the documents reflect the current practices and operations of the laboratory. During annual review of a document, (including but not limited to: SOPs, Ethics Policy, Quality Systems Manual), requested changes are reviewed and the document reissued using the information and a new revision number is assigned and published in Qualtrax.

The laboratory maintains control over the possession and distribution of all documents that directly affect the quality of data. This includes, but is not limited to, documents such as the Quality Systems Manual, Standard Operating Procedures, customer instructions, Laboratory Work Instructions, data sheets, check lists and forms.

5.11 Detection Limits

Detection Limits (DLs), previously referred to as Method Detection Limits (MDLs), are determined for all analytes as specified in the NELAC TNI 2009 standards and DoD QSM standards. DLs are determined for all new instrumentation, whenever there is a change in the test method or instrumentation that affects performance or sensitivity of the analysis. From these, detection limits, Reporting Limits (RLs), are established. The RL is the minimum concentration of an analyte that can be identified and quantified within specified limits of precision and bias during routine and analytical operating conditions.

Laboratory reporting limits lie within the calibration range, at or above the RL. For methods that require only one standard, the reporting limit is no lower than the low-level check standard, which is designed to verify the integrity of the curve at lower levels. If reporting limits are required below the lower level of the calibration curve, RL, or low-level check standard, method modifications are required. Refer to DL/LOD/LOQ SOP/1732. Note: ”J” Estimated value: Upon customer request, the Target analyte concentration can be reported below the quantitation limit (RL), but above the Detection Limit (DL) with a “J” qualifier as long as there is a LOD study on file.

5.12 LOD/LOQ Studies

A. LOD (Limit of Detection) Verification

1. LOD (Limit of Detection) verification is required annually for each target analyte in which test results are to be reported below the lowest calibration standard (“J” values) for each instrument, matrix and prep procedure.
    a. Quarterly LOD Verification is required for DOD projects unless option of analyzing an LOD with a DoD project batch is employed. In this case, quarterly verification is not necessary.

2. All sample-processing steps of the analytical method shall be included in the determination of the LOD.

3. The validity of the LOD shall be confirmed by ***qualitative*** identification of the analyte(s) in a QC sample in each quality system matrix containing the analyte at no more than 2-3X the LOD for single analyte tests, and >1 up to 4X the LOD for multiple analyte tests. This verification must be performed on every instrument that is to be used for analysis of samples and reporting of data.

4. An LOD study is not required for any component for which spiking solutions or quality control samples are not available such as temperature. Where an LOD study is not performed, the laboratory may not report a value below the limit of quantitation.

B. LOQ (Limit of Quantitation) Verification

1. LOQ (Limit of Quantitation) verification is required annually for each target analyte that is not reported below the lowest calibration standard for each matrix and prep

procedure. LOQ is not required if an annual LOD verification is performed. LOQ is required quarterly for all DoD projects unless option of analyzing an LOQ with a DoD project batch is employed. In this case quarterly verification is not necessary.

2. The validity of the LOQ shall be confirmed by successful analysis of a QC sample containing the analytes of concern in each quality system matrix 1-2 times the claimed LOQ. A successful analysis is one where the recovery of each analyte is within the established test method acceptance criteria for accuracy.

The LOQ study is not required for any component or property for which spiking solutions or quality control samples are not commercially available or otherwise inappropriate (e.g., pH).

The LOQ acceptance criteria are based on the established acceptance criteria for Laboratory Control Samples.

Refer to DL/LOD/LOQ SOP/1732

5.13 Range of Logs – Precision of Quantitative Methods - Microbiology

A. Precision of duplicate analyses is calculated for samples examined by enumerative microbiological methods according to the following procedure:

  a. Perform duplicate analyses on first 15 positive samples.

  b. Record duplicate analyses as D1 and D2 and calculate the logarithm of each result.

  c. If either of a set of duplicate results is <1, add 1 to both values before calculating the logarithms.

  d. Calculate the range (R) for each pair of transformed duplicates as the mean of these ranges.

6 Personnel

6.1 Laboratory Management Responsibilities

Management is responsible for communicating the requirements of the quality system, customer specifications and regulatory needs to all personnel. Management job descriptions detail the responsibilities of each position.

The H.R. Director has job descriptions for all positions in the laboratory defining the level of qualifications, training, and experience and laboratory skills. During initial training, management provides access to documented operations procedures, observes personnel performance, and evaluates personnel proficiency. Management documents technical laboratory staff's proficiency initially and on a continuing basis through use of laboratory control samples and purchased proficiency evaluation standards.

Management is responsible for verification of proper sample management and all aspects of data reporting. The communication of the operating practices of the laboratory is through the document control and attestation process.

Either the Quality Assurance Officer, Operations Director and/or Technical Managers have the authority to stop work due to non-conformances and have the authority to resume work after it has been stopped.

6.2 Laboratory Staff Requirements

Recruitment is the responsibility of the Operations Manager and HR Department, with input from other personnel as required. The Training Program procedure SOP/1565 details the process for completing requirements and training to ensure personnel have adequate skills and competence for the job function. Initial training includes ethics training, Qualtrax Training, QA Basics, IT/LIMs including computer security.

A job description details the necessary requirements for each job and includes position title, minimum educational requirements, skills, responsibilities and reporting relationships and any supervisory responsibility.

Initial training of new employees and contract staff includes laboratory ethics and quality policies, as well as execution of an Ethics Agreement. Any employee found to knowingly violate the Ethics Policy Agreement, report data values, that are not actual values obtained or improperly manipulated, or intentionally report dates and times of data analyses that are not the actual dates and times of analysis, will lead to disciplinary action, including termination, as outlined in Section K of the Employee Handbook. Each employee must report personally or anonymously to the Laboratory Technical Manager, QA Officer and/or Ethics Team Member any accidental or suspected intentional reporting of non-authentic data by others for follow up action. The review of the laboratory ethics and ethics training occurs annually with all personnel.

The Ethics program consists of the following key components:

- Ethics Policy /Agreement (Appendix F)
- Initial and annual ethics training
- Internal audits conducted annually
- Adherence to Manual Integration SOP/1731

- Ethical or Data Integrity issues reported to Lab Managers, QAO or HR Director

- Anonymous reporting to HR Director - This is accomplished by writing a detailed description of the suspected ethics breach and submitting the information, anonymously, to the Human Resource Director.

- "No-fault" policy encouraging reporting of incidences without fear of retribution

- Electronic tracking and audit trails through LIMs and instruments enable where available.

6.3 Training

The Quality Systems Manual and related documentation is available to all employees. Cross training, supervisory training and other related training takes place on a scheduled and as-needed basis. Training ensures the communication and understanding of all personnel in the laboratory-documented procedures and practices.

All personnel undertake orientation-training sessions upon initial employment. Orientation training includes laboratory business practices, employment specifications, Ethics Policy, Quality Systems Manual, Chemical Hygiene Plan, and all SOPs required for the job function.

Managers ensure the training for new employees and review the continuing training for current employees. Training includes on-site and off-site programs presented by staff members, contractors, equipment manufacturers, and institutions of higher learning.

Training of new personnel to any job assignment takes place on-site according to the Training Program procedure. Laboratory personnel may perform their assigned methods/protocols without supervision only after documentation of acceptable proficiency. Training records lists the current training status.

On-the-job training includes demonstration of skills during job performance, initial demonstration of proficiency, and review of SOPs. Health and Safety training takes place on an annual basis with careful introduction to new principles. Personnel have access to the Chemical Hygiene Plan and Material Safety Data Sheets. On-site training includes side-by-side hands-on training, formal classroom type instruction on the SOP or a meeting to discuss procedural changes or to address questions related to the laboratory operation. All training is documented via the Training Attestation Form, which is signed by all in attendance that they understood and will implement what was presented to them.

Training is an on-going opportunity to evaluate the laboratory operations. The updating of SOPs, Quality Systems Manual and other related information documents all changes to the quality system. Training is documented via the Training Attestation Form or in Qualtrax with training test records.

Off-site training takes place on an as-needed basis. Recommendations and suggestions regarding educational programs come from all levels of staff. It is the employee's responsibility to present a copy of any certificates or attendance information to the HR Director. The information is added to the individual's training record.

6.4 Records

The QA Department is responsible for maintaining training records. Certificates, demonstration of capability forms and other records of training are placed in the individual's training file.

Appropriate personnel are notified through email and/or Qualtrax or by the QA department when a revision is complete for the controlled version of a document. The manager of the area determines when a change is significant to require training.

Job descriptions are included in the training record files. The Human Resources Department reviews the job descriptions, Resumes and/or biosketches are kept on file with the Human Resources Department and the QA Department.

7 Physical Facilities – Accommodation and Environment

This laboratory facility has a total area of 25,000 square feet for each of the Westboro and Mansfield Facilities

The laboratory functional areas include:

Administration and offices
Sample receiving
Sample management
Air analysis (Mansfield Facility only)
Microbiological (Westboro Facility only)
General analytical chemistry
Metals sample preparation
Organic sample preparation
Metals analysis
Volatiles gas chromatography (GC)
Volatiles gas chromatography/mass spectrometry (GC/MS)
Volatiles air analysis (Mansfield Facility only)
Semivolatiles gas chromatography/mass spectrometry (GC/MS)
Semivolatiles gas chromatography (GC)
Miscellaneous facility mechanical and storage areas.

All chemicals are stored in appropriate cabinets and properly disposed of as required. All flammable solvents are stored in OSHA and NFPA approved cabinets. Acids are stored in OSHA acid cabinets. Separate waste areas houses the sample and chemical waste before pickup by a licensed waste hauler.

7.1 Environment

Lighting, noise, humidity, heating, ventilation and air conditioning satisfy the needs of the testing performed on the premises. The laboratory building design ensures regulated temperature control for analytical equipment. Air-handling systems minimize airborne contaminants that may jeopardize sample integrity or analytical performance.

The analytical instrumentation is in separate rooms from laboratory activities that involve the use of large quantities of organic solvents or inorganic acids. A separate room, in the Westboro facility, provides the facilities for the microbiological testing.

Standards and other materials requiring below 0°C storage temperatures are placed in freezers and separated from samples or potential contaminating materials. Refrigerators provide cooling needs for samples and materials with temperature requirements of below room temperature and greater than freezing. Sample and standard storage areas are monitored and controlled for temperature and recorded in the data logger system. Sample storage areas for volatiles are separated from other samples and monitored for any effects due to cross contamination.

Bulk hazardous waste containers are located away from the testing activities. Waste disposal uses lab pack procedures and those designated by the regulatory authorities. The Chemical Hygiene Plan and the Waste Management and Disposal SOPs (Westboro: SOP/1728 and Mansfield SOP/1797)) include the procedures for handling and disposing of chemicals used in the laboratory.

The working and storage environments are maintained in a safe and appropriate manner. A Chemical Hygiene Plan details the requirements for safety and chemical handling. Safety measures that protect property and personnel from injury or illness include: fume hoods, fire extinguishers, fire blankets, alarm systems, safety training, protective clothing, emergency showers, eyewashes, and spill control kits.

7.2 Work Areas

Good housekeeping is the responsibility of all personnel. Each person is responsible for assuring clean and uncluttered work areas. The job descriptions list specific housekeeping duties. Records, samples and waste materials are the common cause for clutter in the laboratory.

. Removal of administration and laboratory records to the record storage area occurs to reduce clutter and ensure traceability. The individual filling the laboratory record box, labels the box with a number, the contents, date and laboratory area. Authorized personnel assign and record into a permanent record the box number, discard date and box contents. Authorized personnel review the box label for number, discard date and contents. Boxes are stored onsite and off-site for the record retention period identified in the NELAC and EPA regulations, whichever is more stringent.

Sample management personnel remove samples to the sample storage area after all data is correct and complete. Sample coolers are removed to a designated storage area for recycling. Samples are stored in the designated process storage areas until testing is complete. Sample removal from the process storage occurs after mailing of the final report. The sample management staff places the samples in the archive storage area for thirty days after report release. The archive sample storage area is not controlled or monitored. Based on customer specifications, samples are properly disposed or returned to the customer.

Waste materials, expired reagents, expired standards and materials are disposed of and not stored in the laboratory. Hazardous waste labeled accumulation containers in the laboratory collect designated waste streams for later bulk disposal. Laboratory personnel remove the less than five-gallon accumulation containers when full from the laboratory and place the containers in the bulk hazardous waste area. Refer to the Waste Management and Disposal SOPS for Westboro: SOP/1728 and Mansfield SOP/1797. Personnel identifying out of date reagents and standards remove the materials to the proper disposal area.

7.3 Security

Alpha Analytical provides a secure environment for our employees, guests, customers, samples and analytical data. Security procedures require that all exterior doors remain locked unless manned. Access to the laboratory is limited to employees and contractors. Visitors not under signed contract are required to sign the Visitors Log and must be accompanied by a laboratory employee at all times within the testing areas.

The defined high security area is the sample management area. Identification card locks on the internal doors control entry into the laboratory area.

All doors are locked after hours and require a key for entry. The security alarm continuously monitors for smoke and fire related heat. When the alarm is activated, the appropriate emergency response officers are notified. The local emergency offices have the emergency contact list for the laboratory.

8 Equipment and Reference Materials

8.1 Maintenance

The laboratory has a proactive equipment maintenance program. The laboratory maintains service contracts for most major equipment, which include routine preventative maintenance visits by the service provider. Technical personnel perform manufacturer's specified maintenance on a routine basis to ensure equipment operates at peak performance.

A brief summary of some common preventive maintenance procedures is provided in Appendix E. All instrument preventative and corrective maintenance is recorded in the maintenance logbook assigned to the equipment. After maintenance or repair, the instrument must successfully calibrate following the method SOP. Laboratory personnel must demonstrate quality control performance before sample analysis.

The laboratory maintains a stock of spare parts and consumables for analytical equipment. Backup instrumentation for some analytical equipment is available on site for use in case of major equipment failure. The person discovering or suspecting an equipment maintenance problem or failure tags the equipment with 'out of service' tag. If routine maintenance measures do not eliminate the problem, the Laboratory Technical Manager or Operations Director is notified and the appropriate equipment service provider is contacted.

All major laboratory equipment has individual and traceable maintenance logbooks in which to document manufacturer's recommended maintenance procedures, specific cleaning procedures, comments on calibration, replacement of small worn or damaged parts, and any work by outside contractors. The person performing routine or non-routine maintenance signs and dates the maintenance logbook. If an instrument is down for maintenance, a complete record of all steps taken to put it back into service is recorded including reference to the new calibration and quality control checks. Any equipment service providers working on the equipment are recorded in the logbook.

Record repetitive or on-going equipment problems other than normal maintenance requirements on nonconformance action forms. The nonconformance action form notifies management and the Quality Assurance Officer of a problem affecting the performance and data quality.

The laboratory groups some equipment into a single laboratory equipment maintenance logbook. Examples include: autopipets, thermometer calibration. The identity of each item is by serial number or a laboratory-designated item number. The same data recorded for major equipment applies to this documentation.

The maintenance records shall include:

Equipment name;
Manufacturer's name, type identification, serial number or other unique identification;
Date received, date put into service, condition when received;
Current location;
Details of past maintenance and future schedule;
A history of any damage, malfunction, modification or repair;
Dates and results of calibration or verification.

The maintenance logbook may include the reference to the location of the equipment operational and maintenance manuals. The logbook may include the reference to laboratory run logbook or data files for the calibration and quality checks of daily or frequent calibrations.

The Courier Supervisor ensures that maintenance and records for transportation vehicles are complete. The purchasing process is used for ordering garage maintenance, the garage work order is reviewed, and the vehicle checked for condition. The Controller receives all paperwork for completion of the maintenance process.

8.1.1 Microbiology General Equipment Maintenance

Optics of the Quebec colony counter and microscope are cleaned prior to each use. The stage of the microscope is also cleaned and the microscope is kept covered when not in use.

Glassware is checked for residual alkaline or acid residue utilizing bromthymol blue (BTB) on each day of media preparation.

8.2 Equipment Listing

A listing of the major equipment used for testing is available upon request. The equipment list details the unique identification number, equipment location, serial number, model number, and purchase date. The unique identification number is attached to the piece of equipment.

The laboratory performs analyses using state of the art equipment. In addition to the major equipment, the most common equipment used in the laboratory are: thermometers, balances, autopipets, water baths, hot plates, autoclaves, pH meters, conductivity meters and a variety of labware. The SOPs list the calibration and verification requirements for all laboratory equipment used in measurements.

8.3 Laboratory Water

Laboratory water is purified from central DI water systems and piped to all laboratory areas. In Westboro, the QA Department samples the laboratory grade water and submits the samples for analysis by the lab to document the water meets the drinking water certification criteria. The Laboratory Water Logbook lists the daily conductivity checks and acceptance criteria for the laboratory water. The laboratory documents the daily, monthly and annual water quality checks. Please refer to Table 8-1 for tested parameters, monitoring frequency and control limits for each parameter (SOP/1738). Additional parameters may be tested for at the laboratory's discretion.

When additional treatment occurs in the test area, that test area records the water quality checks from the most frequently used tap. At a minimum the quality of the laboratory grade water is monitored daily by conductivity measurements. Records of the daily checks are found in the Laboratory Water Logbook. If out of specification results occur, a nonconformance action form is submitted.

TABLE 8-1

Parameter	Monitoring Frequency	Control Limits
Conductivity	Daily	<2 µmhos/cm @ 25°C
pH	Daily	5.5 - 7.5
Total Organic Carbon (Westboro only)	Monthly	< 1.0 mg/L
Total Residual Chlorine	Monthly	< detection limit
Ammonia Nitrogen (Westboro only)	Monthly	< 0.1 mg/L
Metals: Cd, Cr, Cu, Pb, Ni and Zn (Westboro only)	Monthly (Required Annually)	< 0.05 mg/L
Total Metals (Westboro only)	Monthly (Required Annually)	< 0.1 mg/L

Heterotrophic Plate Count (Westboro only)	Monthly	< 500 CFU/mL
Water Quality Test (Biosuitability) (Westboro only)	Annually	0.8 – 3.0 ratio

8.4 Reference Materials

Reference materials include: Class 1 weights, NIST thermometers and reference standards. Logbooks record the reference materials used for calibration and verification. The Department Manager or QA Department maintains any certificates received with the reference materials. Laboratory personnel record in the standards logbook the reference standards date received, unique identification number, expiration date and number of containers. Each laboratory area records the unique identifier on the reference standard certificate and the Department Manager maintains the certificate. The identifier allows traceability from the certificate to the analytical data.

9 Measurement Traceability and Calibration

9.1 General Requirements

All measuring operations and testing equipment having an effect on the accuracy or validity of tests are calibrated and/or verified before put into service and on a continuing basis. The results are recorded in the instrument specific logbook. The laboratory has a program for the calibration and verification of its measuring and test equipment. The program includes all major equipment and minor equipment such as balances, thermometers and control standards. The Quality Systems Manual and method SOP describe the calibration records, frequency and personnel responsibilities.

9.2 Traceability of Calibration

The program of calibration and/or verification and validation of equipment is such that measurements are traceable to national standards, where available. Calibration certificates indicate the traceability to national standards, provide the results, and associated uncertainty of measurement and/or a statement of compliance with identified metrological specifications. A body that provides traceability to a national standard calibrates reference standards. The laboratory maintains a permanent file of all such certifications.

9.3 Reference Standards and Materials

Alpha Analytical has a program for calibration and verification of reference standards. The results and program are recorded in the appropriate instrument logbook. Required in-service checks between calibrations and verifications are described in method SOPs and are recorded in the appropriate instrument logbook.

Calibration standards are maintained within the area of consumption. A logbook of use is maintained and use is limited strictly to method required calibrations. Each calibration standard is identified as to test method used, date received, date opened, and expiration date. Calibrations are verified by using a second source or lot number of the calibration standard. Calibration check procedures are stated in applicable test method SOPs.

Preparation of standards must be performed using Class A glassware. Class A glassware must be used for all processes involving quantitative analyses.

Reference standards of measurement in the laboratory’s possession (such as calibration weights or traceable thermometers) are used for calibration only and for no other purpose.

Standards and reagents are uniquely identified as outlined in Westboro SOP 1745 and Mansfield SOP 1816.

9.4 Calibration General Requirements

Each calibration record is dated and labeled with method, instrument, analysis date, analyst(s) and each analyte name, concentration and response. For electronic processing systems that compute the calibration curve, the equation for the curve and the correlation coefficient are recorded in the appropriate instrument logbook. This is also true for manually prepared curves. Calibrations are tagged to the specific instrument through use of the instrument logbook and or sequence file documentation.

Initial calibration requires a standard curve that brackets the expected sample concentration. Initial calibration generally uses three to five standards depending on the equipment and reference method specifications. Before the start of each analytical sequence, initial calibration is verified by using a continuing calibration standard. Calibration verification or continuing calibration uses a standard from a second source or lot number than that used for initial calibration. The acceptance criteria for the continuing calibration standard must meet acceptance criteria before analysis of any samples. When the acceptance criteria is not within limits, review maintenance protocols and perform any necessary maintenance before starting the initial calibration sequence.

9.5 Equipment Calibration

The SOP used for the analysis defines the instrument and equipment calibration required. The following defines the general practices for equipment calibration of selected equipment.

9.5.1 Gas Chromatography/Mass Spectrometry (GC/MS)

The GC/MS is hardware tuned before performing the initial and continuing calibrations. Results must meet the peak ratio specifications of the analytical methods. For volatiles analyses, bromofluorobenzene (BFB) is used, and for semivolatiles analyses, decafluorotriphenylphosphine (DFTPP) is used for instrument tuning.

The mass spectrometer response is calibrated by analyzing a set of five or more initial calibration solutions, as appropriate, for each GC/MS method. Each solution is analyzed once, unless the method or the customer requires multiple analyses. The relative response factor for each analyte is calculated for internal standard calibration. The calibration factor for external standard calibration is calculated using the expressions found in the laboratory method SOP. Calibration is acceptable when all acceptance criteria are within control limits.

The initial calibration is verified through the analysis of a continuing calibration standard every 12 hours. The concentration of the continuing calibration standard is dependent on the requirements of the specific method. The relative response factors for all analytes of interest are calculated and verified against the initial calibration mean relative response factors. The percent difference (%D) for each analyte is calculated and must be less than the acceptance criteria stated in the method.

An acceptable continuing calibration run must have measured percent differences for the analytes within method specified ranges. If any criteria for an acceptable calibration are not met, either instrument maintenance must be performed until the continuing calibration analysis meets all criteria or a new initial calibration is established before any samples are analyzed. No samples may be analyzed unless the acceptance criteria are met for the initial and continuing calibration.

Additional quality control samples are part of the GC/MS analysis. These include internal standards, surrogates, method blanks, instrument blanks, laboratory control samples, matrix spikes and matrix spike duplicates. The frequency and control criteria are defined in the laboratory SOP.

9.5.2 Gas Chromatography (GC)

Internal standard calibration or external standard calibration is utilized for analysis by GC. The method-specified number of calibration standards is used. Each solution is analyzed once and the analyte relative response factors or calibration factors are calculated. The mean relative response factor for each analyte is then obtained by using the expression in the formula listed in the SOP. Integrated areas are utilized for these expressions.

For multiple response pesticides, PCBs or hydrocarbons the quantitation consists of the average of selected peaks or the integration of the area defined by a reference standard. The SOP details the integration criteria for each compound.

The initial calibration is verified through the analysis of a continuing calibration standard every 12 hours or 20 samples. The concentration of the continuing calibration standard is dependent on the requirements of the specific method. The relative response factors for all analytes of interest are calculated and verified against the initial calibration mean relative response factors. The percent difference (%D) for each analyte is calculated. The percent drift (%d) may be calculated when calibration factors are used for quantitation.

An acceptable continuing calibration must have measured percent differences or percent drift for the analytes within method specified ranges. Should any criteria for an acceptable calibration not be met, either instrument maintenance is performed until the continuing calibration analysis meets all criteria, or a new calibration is established before any samples are analyzed. No samples may be analyzed unless the acceptance criteria are met for the initial and continuing calibration.

Other standard checks may be required for a specified reference method. Instrument performance checks specified in the reference method must be performed and be within the acceptance limits stated in the reference method. Additional quality control samples are part of the GC analysis. These include internal standards, surrogates, method blanks, instrument blanks, laboratory control samples, matrix spikes and matrix spike duplicates. The frequency and control criteria are defined in the laboratory SOP.

9.5.3 Cold Vapor Atomic Absorption Spectrophotometry (CVAA)

An initial calibration is performed daily with freshly prepared working standards that bracket the expected concentration range of the sample. A minimum of a three-point calibration curve is acquired which must have a correlation coefficient of 0.995 or better. The initial calibration is verified every 10 samples. The continuing calibration is required to be within method-defined criteria, depending on the analytical method employed. Continuing calibration blanks are run at the same frequency. Analysis of samples cannot begin until an initial calibration verification has been performed and is found to be within ± 10% of the true value.

9.5.4 Inductively Coupled Plasma Emission Spectrophotometry-Mass Spectrometry (ICP-MS)

Initial calibration and instrument tune is performed daily, not to exceed 24 hours, and continuing calibrations are performed every 10 samples. Initial calibration consists of a minimum of three standards and a Blank that bracket the expected concentration range of the samples. Analysis of samples cannot begin until an initial calibration verification has been performed and is found to be within method-defined criteria. The continuing calibration is required to be within method-defined criteria. Interference check standards are performed at the beginning of the sequence. Acceptance criteria are stated in the SOP.

9.5.5 Inductively Coupled Plasma Emission Spectrophotometry (ICP)

Initial calibration is performed daily, not to exceed 24 hours, and continuing calibrations are performed every 10 samples. Initial calibration consists of one standard and a Blank that bracket the expected concentration range of the samples. Analysis of samples cannot begin until an initial calibration verification has been performed and is found to be within 5% of the true value for EPA Method 200.7 and 10% for SW846 6010 methods. The continuing calibration is required to be within 10% of the true value. Interference check standards are performed at the beginning and end of the sequence. Acceptance criteria are stated in the SOP.

9.5.6 Thermometers

Laboratory thermometers are checked annually for accuracy against certified, NIST traceable thermometers. Correction factors derived from the annual calibrations are applied to temperature readings where applicable. The analyst records the corrected temperature for all observations.

NIST traceable thermometers are calibrated professionally and re-certified every year. Records of thermometer calibrations are retained by the QA Department. All thermometers are tagged with the ID number, correction factor to be applied and the expiration of the calibration check.

NOTE: Electronic-based thermometers are calibrated on an annual basis and quarterly if associated with DoD projects. Thermometers are tagged with calibration information by the vendor, including the ID number, correction factor to be applied and the expiration of the calibration check. Certificates are kept on file in the QA Department.

Thermometers are not used past the calibration expiration date or if the thermometer is not reading properly. Replacement thermometers are calibrated and the maintenance logbook is updated when a change in the thermometer is required due to breakage, damage or expired calibration.

9.5.7 Balances

Calibration checks are performed for each day of use, for each balance. The calibration consists of a minimum of two weights, which bracket the weight to be measured. Additional calibration check procedures are performed on balances utilized in Microbiology laboratory. This additional procedure consists of a deflection test, which is performed to ensure that 100mg is detectable at a weight of 150 grams.

The balance logbook lists the acceptance criteria and performance criteria for the various balances used in the laboratory. Calibration weight measurements must meet the acceptance criteria listed on the record form.

Each balance is serviced and calibrated by a professional semi-annually. Balances are labeled with the balance number, date of service and the expiration date for the annual service check. The balance number used for any measurements requiring traceability is recorded with measurement data. Balances are not used past the expiration date or when the weight check is not within acceptable criteria. The accuracy of the calibration weights used by Alpha Analytical is verified annually by an accredited calibration service.

9.5.8 Mechanical volumetric pipettes

Delivery volumes for the mechanical volumetric pipettes (i.e. Eppendorf) are checked and recorded gravimetrically before use and on a quarterly basis. The verification is performed at the volume of use or bracketing the volume range of use. The check must be within the criteria stated in the laboratory logbook. If used for DoD projects, then these pipettes are checked by comparing 10 measurements. For future DoD projects using QSM 5.0, these pipettes will be checked daily using 3 measurements.

Pipettes failing acceptance criteria are tagged and removed from service until repaired and the criteria are met, or discarded and replaced. Automatic pipettes are labeled with a unique ID number, volumes verified and expiration date.

9.5.9 Ion Chromatography

The ion chromatograph calibration is by analyzing a set of five or more initial calibration solutions, with concentrations of analytes appropriate to the analytical methods. The concentrations must bracket the expected concentration range of the samples analyzed. Procedures for verifying the calibration curve are method specific. The initial calibration is performed at the start of each day. The calibration curve is verified at least after every 20 samples.

9.5.10 pH Meters

pH meters are calibrated prior to use for each day of use. The meter is calibrated following the procedure for pH analysis. The records of the calibration are recorded in an instrument logbook or in the raw data for the analysis being performed. At least two buffer solutions that bracket the measurement range for the analysis are used for calibration. A second source check standard is used at the end of a run to verify meter stability. Buffer solutions used for calibration are NIST certified. Standard buffer solutions are not retained or re-used. The lot number of the buffer solutions is recorded in the data record to ensure traceability of the measurement to NIST.

9.5.11 Conductivity Meters

Three calibration standards of potassium chloride (KCL) solutions are analyzed annually on each instrument range. The calibration standards are used to verify instrument performance. The acceptance criteria are defined in the test SOP. If unacceptable performance is found, the cell is cleaned and rechecked. The cell is not used until satisfactory performance is achieved.

A single KCL standard solution is used to calibrate each range of the instrument. A second standard is used to check the calibration each day the meter is used. The check standard is near the measurement range for the samples to be analyzed. The acceptance criterion is ± 20% of the true value. The meter is labeled with expiration date for the annual calibration. A check standard that is NIST traceable is used to allow traceability. The check standard is performed at the end of the analysis run or at least after every 20 samples.

9.5.12 Autoclave

The date, contents, sterilization time and temperature, total cycle time and analyst’s initials are recorded each time the autoclave is used. Autoclave cycles must be completed within 45 minutes when a 15 minute sterilization time is used. Autoclave timing mechanisms are checked quarterly with a stopwatch to verify timing controls. A maximum temperature thermometer is used with each cycle to ensure the sterilization temperature is reached.

Spore strips or ampoules are used weekly to confirm sterilization. BTSure ampoules are utilized as follows: An indicator ampoule is placed in most challenging area of sterilizer. Load is processed according to standard operating instructions. Remove from sterilizer and allow to cool for a minimum of 10 minutes. (Chemical indicator on label changes from green to black when processed.) Place the autoclaved indicator and un-autoclaved control indicator in an upright position in the plastic crusher provided. Gently squeeze crusher to break glass ampoules. Incubate both indicators at 55-60^{o}C for 24 hours. Examine appearance for color change. Yellow color indicates bacterial growth. No color change indicates adequate sterilization.

Calibration is conducted and certified annually by an outside service provider and recorded. Certificates are kept on file. Routine maintenance includes cleaning the autoclave seal to ensure freedom of caramelized media and cleaning drain screens to remove any debris buildup. For the efficient operation of the unit, overcrowding is avoided.

10 Test Methods and Standard Operating Procedures

10.1 Methods Documentation

Analysis consists of setting up proper instrument operating conditions, executing acceptable calibrations, monitoring instrument performance tests, analyzing prepared samples, and collecting data from the analyses. The test method SOP describes the instrumental analysis procedures, quality control frequencies and acceptance criteria. EPA accepted methods, national recognized methods or customer-specified methods are the basis for performance criteria, instrument conditions and the steps of the procedure. The method performance requirements of the published methods are followed unless otherwise specified by the customer.

The reference methods define the instrument operating conditions. In many of the reference methods, a range or general guidance on the operating conditions is defined. Documented modifications to the operating conditions clarify the reference methods or improve the quality of the results. In all cases where the method modifications are adopted, the performance criteria from the reference method must be met. Modifications to the operating conditions are stated in the SOP. Changes in the operating conditions made at the time of the analysis are documented in the appropriate laboratory or sequence log. A revision to the SOP takes place, when a day to day change in the operating condition improves performance for all matrices.

The laboratory SOPs include the operation of measurement equipment. The SOPs contain the - following information, as applicable:

The equipment used in the procedure, including equipment type

Equipment calibration and process for obtaining the measurement from the calibration

The step by step instructions to perform the measurement

Acceptance criteria for the calibrations

Corrective action for failed acceptance criteria, including assessment of previous calibration results

The basis used for the calibration standards such as traceability to NIST or EPA or demonstration of comparability

Frequency at which the equipment will be calibrated, adjusted and checked

The records maintained to document the calibration and use of measurement equipment

The calibration status for the equipment

The environmental conditions necessary before measurement equipment may be calibrated or used for measurement

Allowed adjustments to measurement equipment, including software, which will not invalidate the laboratory analysis

Maintenance of the equipment and record keeping to track performance before and after maintenance is completed

Define the standards, reagents and sample handling, interferences, preservation, and storage in order to assure measurement performance

10.2 Standard Operating Procedures (SOPs)

Alpha Analytical maintains SOPs that accurately reflect all phases of current laboratory activities such as assessing data integrity, nonconformance actions, handling customer complaints, sample receipt and storage, purchasing of all materials, and all test methods. These documents include equipment manuals provided by the manufacturer, internally written documents, and published methods with documented changes or modifications.

Copies of all SOPs are accessible to all personnel in electronic form through Qualtrax. Each SOP clearly indicates the published date of the document and the revision number.

10.3 Laboratory Method Manual (s)

All SOPs are posted as secure documents in the Alpha Qualtrax system. Directories are available for each laboratory area and administrative area in appropriate subfolders. Each SOP includes or references where applicable:

1) identification of the test method and where applicable;
2) applicable matrix or matrices;
3) method detection limit;
4) scope and application;
5) summary of method;
6) definitions;
7) interferences;
8) safety;
9) equipment and supplies
10) reagents and standards
11) sample collection, preservation, shipment and storage;
12) quality control;
13) calibration and standardization;
14) procedure;
15) calculations;
16) method performance;
17) pollution prevention;
18) data assessment and acceptance criteria for quality control measurements;
19) corrective actions for out-of-control data;
20) contingencies for handling out-of-control or unacceptable data;
21) waste management;
22) references; and
23) any tables, diagrams, flowcharts and validation data.

In cases where modifications to the published method have been made by the laboratory or where the referenced method is ambiguous or provides insufficient detail, these changes or clarifications are clearly described in the SOP.

10.4 Test Methods

The laboratory uses appropriate methods and procedures for all tests and related activities within its responsibility (including sampling, handling, transport and storage, preparation of items, estimation of uncertainty of measurement and analysis of test data). The method and procedures are consistent with the accuracy required, and with any standard specification relevant to the calibrations or tests concerned. When the use of mandated methods for a sample matrix is required, only those methods are used. Where methods are employed that are not required, the methods are fully documented and validated and are available to the customer and other recipients of the relevant reports.

The customer requests the reference method for sample analysis usually based on the regulatory program. The customer services staff may assist the customer with method selection when the customer specifies the regulatory program, but is unsure of the correct method required. The Laboratory Technical Manager or Quality Assurance Officer recommends methods for non-regulatory programs. In all cases, recommendation of methods is based on customer-defined method performance criteria. Customer services may recommend a procedure that meets the customer method performance criteria.

10.5 Method Validation/Initial Demonstration of Method Performance

Before acceptance and use of any method, satisfactory initial demonstration of method performance is required. In all cases, appropriate forms are completed and retained by the laboratory and made available upon request. All associated supporting data necessary to reproduce the analytical results is retained. Initial demonstration of method performance is completed each time there is a significant change in instrument type, personnel or method.

10.6 Sample Aliquots

The aliquot sampling process from a submitted sample is part of a test method. The laboratory uses documented and appropriate procedures and techniques to obtain representative sub-samples. Sample aliquots removed for analysis are homogenized and representative portions removed from the sample container. Personnel record observations made during aliquot sampling in the test method logbooks.

10.7 Data Verification

Calculations and data transfers are subject to appropriate checks. A second person recalculates all manual calculations. An independent qualified analyst also reviews the data. A Customer Services representative reviews data for project and method performance requirements where applicable. A QA representative reviews data for project and method performance requirements when requested by a Customer. Final report review is performed by an authorized company signatory.

For drinking water suppliers, every effort is made to notify the Customer within 24-hours of obtaining valid data of any results that exceed any established maximum contaminant level or reportable concentration. Analyst or Department Supervisor notifies the Customer Services Department of the sample number(s), Customer name, analysis and sample results (preliminary or confirmed). The Customer Services Department notifies the customer.

The laboratory Report Generation and Approval SOP describes the practices to ensure that the reported data is free of transcription errors and calculation errors. Manually entered data into the LIMS is dual entered and checked by the LIMS to minimize transcription errors. The laboratory test method SOP describes the quality control measures used to assure method performance before reporting data.

10.8 Labeling of Standards and Reagents

The purchase, receipt and storage of consumable materials used for the technical operations of the laboratory include the following:

a) The laboratory retains records of manufacturer’s statement of purity, of the origin, purity and traceability of all chemical and physical standards.
b) Original reagent containers are labeled with the date opened and the expiration date.
c) Detailed records are maintained on reagent and standards preparation. These records indicate traceability to purchased stocks or neat compounds and include the date of preparation and preparer's initials.

d) Where calibrations do not include the generation of a calibration curve, records show the calibration date and type of calibration standard used.

e) All prepared reagents and standards are uniquely identified and the contents are clearly identified with preparation date, concentration and preparer's initials. These procedures are outlined in Westboro SOP/1745 and Mansfield SOP/1816.

10.9 Computers and Electronic Data Related Requirements

Computers or automated equipment are used for the capture, processing, manipulation, recording, reporting, storage or retrieval of test data. The laboratory ensures that computer software is documented and adequate. The goals of the software development methodology, existing system validations and the change control system are to ensure that:

the software systems perform the required functions accurately,

the users understand how to use the system, and

auditors can assure themselves of the validity of the analytical data.

The computer systems used at Alpha Analytical are purchased. A coordinated effort is made with the supplier to assure the computer operations meet the laboratory requirements for data integrity. Alpha Analytical has a formal validation program of its computer systems. The validation program is a comprehensive program to ensure data transmitted, reported or manipulated by electronic means is correct and free of errors. The validation and verification approach is separated into three areas.

1. New software is developed and validated using test data. Records of validation include the test data report, date and initials. Where formulas are part of the program, documentation includes manual verification of the final calculated values. New software includes the development of macros for spreadsheets and other tools using commercial software packages.
2. Reasons for changes to software are identified through flaws in existing documentation or the need to improve system processes and are documented on the Nonconformance Report. Final implementation of the change is documented on the nonconformance action form. The tracking and timelines of making the change is readily available. This process also provides the complete documentation of all software and electronic data reporting problems.

Verification of system integrity is through routine maintenance, protection from unauthorized access and electronic verification programs. Routine maintenance including system backups are performed on a scheduled basis. The backup process and password and access protections are defined in the Computer System Backup Control SOP/1562 and Computer Security SOP/1563. Electronic verification may be used to assure the commercially purchased software is performing at its original specifications. This includes virus checking of all network operation at least once per week. Documentation of all verification and maintenance operations is retained.

11 Sample Handling, Sample Acceptance Policy and Sample Receipt

The Sample Login and Custody procedures define the process for sample management from sample receipt through analysis and to disposal. These procedures detail the process for sample receipt, records and storage pending analysis.

Customers or Alpha's Couriers deliver samples to the laboratory during normal business hours. Sample receiving occurs in the sample management area.

Customer service personnel place bottle orders. The orders are filled following the bottle order instruction form. Blanks are prepared as needed with minimal storage. All glass containers are packed to minimize or prevent breakage. The containers are placed in plastic coolers or shipping packages and Chain-of Custody forms, seals (if requested) and labels enclosed. The bottle order is shipped by third party, picked up by the customer or customer representative or delivered by Alpha courier to the customer.

11.1 Sampling Supplies

11.1.1 Sample Containers

Sample containers provided by Alpha Analytical include labels, preservatives and a blank chain of custody form. Preservatives and containers are lot controlled and verified as appropriate for the indicated type of analysis.

Each lot of containers used for the collection of samples for microbiological analysis is checked for sterility prior to distribution. Sterility checks are performed by Microbiology staff and results recorded in Microbiology Sample Container Sterility Log.

11.1.2 Chain of Custody

Chain of custody forms must accompany all samples received by Alpha personnel. The chain of custody form indicates the sample origin and arrival at the laboratory and identifies the analyses requested.

11.1.3 Reagent Water

Alpha Analytical supplies laboratory pure water for field QC blanks. Water used for volatile organics must be free of volatile compounds below the method detection limit. The quality of the laboratory water is monitored for conductivity once per day. Additional water quality criteria may be monitored based on customer specific requests. The water quality in the laboratory is monitored for chemical parameters as required by the EPA certification manual for drinking water (Water Quality Monitoring SOP/1738).

11.2 Sample Tracking

Alpha Analytical uses an internal chain-of-custody in LIMs for sample tracking control purposes. When requested or required by regulation a legal custody program is used in addition to the routine laboratory practices. Legal custody practices must be arranged at the time of contractual commitment.

For legal custody the process must include complete and continuous records of the physical possession, storage, and disposal of sample containers, collected samples, sample aliquots, and sample extracts or digestates. For legal custody a sample is in someone's custody if:

1. It is in one's actual physical possession;
2. It is in one's view, after being in one's physical possession;

3. It is in one’s physical possession and then locked up so that no one can tamper with it;
4. It is kept in a secured area, restricted to authorized personnel only.

The routine sample handling and tracking process includes unique identification of all sample containers, initials of the person removing the sample from the sample management area and documentation of the date of sample removal for disposal.

Samples are assigned a unique identification number from the LIMS program. Each sample container label includes a unique identifier for the container. The person handling the sample is recorded along with the unique identifier in the container tracking records in LIMS.

ALPHA ANALYTICAL utilizes a custom designed Laboratory Information Management System (LIMS) to uniquely identify and track samples and analytical data throughout the facility. The LIMS log-in, is initiated by the Sample Custodian when the following information is entered into the computer:

- Quote number (unique to the project if requested)
- Project name or description
- Analyses requested (per matrices received)
- Sample number (unique to this sample)
- Sample descriptions (customer ID, including number of received containers)
- Date received
- Date(s) and time(s) collected
- Date analytical results are due

11.2.1 Chain of Custody

Chain of custody forms must accompany all samples received by Alpha personnel. The chain of custody form indicates the sample origin and arrival at the laboratory and identifies the analyses requested.

- Customer's name and address
- Notation of special handling instructions
- Additional comments or instruction for the laboratory
- Purchase order number(s), if applicable

Alpha Job Numbers (Process for assigning numbers)

Alpha Job Numbers are unique #’s automatically designated by our LIMS computer system for every individual customer project.

There are 3 parts to this number:

- All numbers start with the letter “L”
- The next two numbers are the last two numbers of the current year.
- The last five numbers are pulled sequentially by the LIMS as each Login personnel requests a new number for a job.

  For example…. L0904165 ---- Year 2009 and 4,165th job to be logged in this year.

  The Alpha Job Number then may contain as many extensions as there are individual samples in a job. L0904165-01 is the first sample, L0904165-02 is the second and so on. Each sample may contain as many as 26 containers as the containers are designated with the letters of the Alphabet, and each container receives its own bar-coded label. For example, L0904165-09A is the first container of the 9th sample listed on a customer's Chain of Custody.

Each container is labeled with a unique identifier, a label with a unique identifier number is placed on each sample container. Once labeled, the sample containers are placed in the appropriate storage area.

11.3 Sample Acceptance Policy

The sample management personnel check for proper sample labeling, preservation and handling at the time of arrival at the laboratory. The customer and customer services manager specifies the proper sample preservation, containers, cooling and other criteria on the project review form and in the LIMS. Sample management staff record all observations and immediate notify customer services of any discrepancies or questions arising during sample receipt.

It is possible for samples or sample containers to be lost, damaged, or determined to be unsuitable, for whatever reason, after initial receipt at Alpha Analytical. The problem is brought to the attention of a customer services manager who reports it to the customer. Plans for disposition of the affected samples or container are agreed upon with the customer, carried out, and recorded in the project records.

11.4 Sample Receipt Protocols

The sample management staff receives all samples. A unique job number is assigned to each shipment of samples received from a customer. The in-house records for the incoming job, including the internal Chain-of -Custody, are initiated with a Sample Delivery Group (SDG) form. The customer, and Alpha courier and/or the sample management personnel sign the sample custody form at the time of receipt at the laboratory. Samples received via overnight courier are signed on the bill of lading. The bill of lading, SDG form and the sample custody form are completed for external courier delivered samples.

The sample management staff examines the shipping containers, their contents, and accompanying customer documentation. Information about the sample identification, the location, date and time of collection, collector's name, preservation type, sample type, presence and condition of custody seals, the state of preservation of the samples and other required information is noted on the SDG form. Any discrepancies in documentation or problems with sample condition such as appropriate sample containers, thermal preservation variation, holding times and adequate sample volumes are noted and brought to the attention of the customer via the nonconformance action form, The login staff or project manager contacts the client via email or or by phone. The Customer Services Manager provides clarification or further instruction to the sample management staff on the processing of the samples that are incomplete or missing required information.

The sample management staff logs the samples in the LIMs and a durable label for each container is printed. The custodian attaches each label to the appropriate sample container. The following information is recorded for tracking internal custody: laboratory sample ID, customer sample ID, sample matrix and storage location. Sample receipt and log-in specifically requires: date and time of laboratory receipt of sample(s); sample collection date; unique laboratory ID code; field ID code supplied by sample submitter; requested analyses; signature or initials of data logger; comments from inspection for sample acceptance or rejection and in some cases, sample bottle codes.

11.5 Storage Conditions

Alpha Analytical stores samples under proper environmental conditions to ensure their integrity and security. Samples are stored at temperatures that meet specifications of the methodology, regulatory agencies and customer directives. Refrigerators are monitored and controlled to be within 4 ± 2°C. Chemical, temperature, holding times and container storage requirements are listed in the LIMS project database.

Customer Quality Assurance Project Plans may list preservation requirements differing from the laboratory. The sample management staff reviews project information for projects specific handling. Addition of chemical preservative to sample containers normally is done in the field at the time of sampling. Chemical preservation and temperature preservation checks at the time of receipt are recorded except for volatile organic compounds, bacteria, sulfite, and dissolved oxygen preservation. Any differences from laboratory or customer specific requirements are recorded on nonconformance action forms and contact made with the customer by the Customer Services Manager or designee.

Sample storage facilities are located within the sample management area or in designated sample storage areas within the analytical departments. Internal chain-of-custody procedures and documentation pertaining to sample possession, removal from storage, and transfer are outlined in the sample custody procedure. Samples are returned to the sample storage area after the sample portion is removed for analysis. Extracts and digestates are tracked and follow the same internal custody operation. Extracts and digestates are removed to the waste disposal area after analysis for proper disposal.

Sample storage precautions are used to ensure that cross contamination does not occur during sample storage. Refrigerator storage blanks are monitored bi-weekly for volatile compounds.. The storage blank information allows the assessment of potential cross contamination in the sample storage refrigerator.

Temperatures of cold storage areas are recorded continuously in the data logger system. Corrective action is done as necessary when temperatures are not within the control criteria. In both the Westboro and Mansfield facilities, Automated Data loggers are linked to thermocouples in custody refrigerators and freezers in the Sample Storage areas as well as department standards/storage refrigerators and freezers. The Data logger is calibrated and certified by an outside vendor on a quarterly basis. Refrigerators and/or freezers not connected to the Data Logger system have temperatures measured with NIST traceable thermometers. Temperature records indicate the thermometer or sensor (Data logger) used for obtaining the measurement.

11.6 Sample Disposal

Samples are held for 21 calendar days after the report is released to the customer. Upon written customer request samples may be held longer in an uncontrolled area. Requests for controlled sample storage must be arranged at the time of contractual commitment. Air canister samples are held for 3 days after the report is released to the customer.

An authorized waste carrier is contracted to pick up waste as needed and dispose of it, in accordance with all regulatory requirements. Post-analysis disposition of samples is dependent upon project specific requests. Remaining sample material may be returned to the customer, safely discarded, or archived for a specific time prior to disposal. The waste disposal SOP defines the specific requirements for sample disposal and other waste disposal operations.

The sample management staff are responsible for the archival and disposal of raw samples, extracts and digestates. Raw and prepared samples may not be archived or disposed until all of the designated analyses are complete and resultant analytical data is sent to customers. Samples in storage are retained a minimum of 21 calendar days after reporting the results to the customer.

Any samples requiring more than 21 calendar days are archived. Air canister samples requiring storage more than 3 business days require prior approval.

When a customer has requested the return of samples, the sample management staff prepares and ships the samples according to the same custody procedures in which the samples were received and following any customer specified requirements. Protection of the samples during delivery is ensured by the implementation of special packaging procedures. Packages are delivered by a commercial carrier whose procedures for protecting the samples are not within the control of this laboratory. Customers are informed that a commercial carrier will deliver their samples if required.

12 Records

Alpha Analytical has a record system that produces accurate records, which document all laboratory activities. The laboratory retains records of all original observations, calculations and derived data, calibration records and a copy of the test for ten years minimum. The system retains records longer than the minimum upon the request of authorized customers, agencies or another regulator.

12.1 Record Keeping System and Design

The record keeping system allows reconstruction of laboratory processes that produced the analytical data of the sample.

a) The records include the names of personnel involved in sampling, preparation, calibration or testing.

b) Information relating to laboratory facilities equipment, analytical methods, and activities such as sample receipt, preparation, or data verification are documented.

c) The record keeping system provides retrieval of working files and archived records for inspection and verification purposes.

d) Documentation entries are signed or initialed by responsible staff.

e) Generated data requiring operator logging on appropriate logsheets or logbooks are recorded directly and legibly in permanent ink

f) Entries in records are not obliterated by any method. Corrections to errors are made by one line marked through the error. The person making the correction signs and dates the correction.

g) Data entry is minimized by electronic data transfer and ensuring the number of manual data transcriptions is reduced.

12.2 Records Management and Storage

1. Records including calibration and test equipment, certificates and reports are safely stored, held secure and in confidence to the customer.
2. The laboratory maintains hardware and software necessary for reconstruction of data.
3. Records that are stored or generated by computers have hard copy or write-protected backup copies.
4. Alpha Analytical has established a record management system, for control of hard copy laboratory notebooks.
5. Access to archived information is carefully controlled and is limited to authorized personnel. These records are protected against fire, theft, loss, environmental deterioration, vermin, and in the case of electronic records, electronic or magnetic sources.
6. In the event that Alpha Analytical transfers ownership or goes out of business, there is a plan to ensure that the records are maintained or transferred according to the customer's instructions. A plan will be

developed to maintain continuity of our record keeping systems as requested and/or required by both state and federal laws.

Alpha Analytical retains all original hard copy or electronic raw data for calibrations, samples, and quality control measures for ten years, including:

1. Analysts work sheets and data output records,
2. Reference to the specific method,
3. Calculation steps including definition of symbols to reduce observations to a reportable value,
4. Copies of all final reports
5. Archived SOPs,
6. Correspondence relating to laboratory activities for a specific project,
7. All nonconformance action reports, audits and audit responses,
8. Proficiency test results and raw data,
9. Data review and cross checking.

The basic information to tie together analysis and peripherals such as strip charts, printouts, computer files, analytical notebooks and run logs for Alpha Analytical includes:

1. Unique ID code for each Laboratory sample or QC sample;
2. Date of analysis;
3. Instrument identification and operating conditions;
4. SOP reference and version;
5. Calculations;
6. Analyst or operator’s initials/signature.

In addition, Alpha Analytical maintains records of:

1. Personnel qualifications, experience and training
2. Initial and continuing demonstration of proficiency for each analyst
3. A log of names, initials and signatures for all individuals who are responsible for signing or initialing any laboratory records. Use of electronic signatures has been approved by regulatory agencies.

12.3 Laboratory Sample Tracking

A record of all procedures to which a sample is subjected while in the possession of the laboratory is maintained. These include but are not limited to records pertaining to:

a) Sample preservation including appropriate sample container and compliance with holding time requirement; If the time of the sample collection is not provided, the laboratory must assume the most conservative time of day (i.e., earliest).

b) Sample identification, receipt, acceptance or rejection and log-in;

c) Sample storage and tracking including shipping receipts, transmittal forms, and internal routing and assignment records; this includes inter-laboratory transfers of samples, extracts and digestates.

d) Sample preparation including cleanup and separation protocols, ID codes, volumes, weights, instrument printouts, meter readings, calculations, reagents;

e) Sample analysis;

f) Standard and reagent origin, receipt, preparation, and use;

g) Equipment receipt, use, specification, operating conditions and preventative maintenance;

h) Calibration criteria, frequency and acceptance criteria;

i) Data and statistical calculations, review, confirmation, interpretation, assessment and reporting conventions;

j) Method performance criteria including expected quality control requirements;

k) Quality control protocols and assessment;

l) Electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries;

m) Automated sample handling systems;

n) Records storage and retention; and

o) Disposal of hazardous samples including the date of sample or sub-sample disposal and the name of the responsible person.

p) The COC records account for all time periods associated with the samples.

q) The COC records include signatures of all individuals who had access to individual samples. Signatures (written or electronic) of all personnel who physically handle the samples. Time of day and calendar date of each transfer or handling procedure.

r) Common carrier documents.

13 Laboratory Report Format and Contents

The Process Planning and Control Procedure details the recording and reporting of data as required by the customer and in accordance with relevant environmental regulations.

Customers specify the report delivery and deliverables required for the work submitted. Report delivery includes standard turnaround and rush turnaround. Customers specify the delivery address or multiple addresses and method of delivery such as U.S. Mail, facsimile or electronic at the start of the project. Alpha Analytical provides data deliverables in hardcopy or electronic format. At the start of any project, the electronic deliverable formats required must be received before sample arrival.

Reporting packages are available for routine regulatory reporting requirements. Regulatory reporting packages include only the information requested by the regulatory agency. In addition to regulatory report packages, Alpha Analytical prepares a standard report format. The standard report format includes:

1. Title: “Certification of Analysis”
2. Name and address of the laboratory
3. Laboratory Job Number, page number and total number of pages included in the report.
4. Name and address of the customer
5. Alpha sample number, Customer identification, Sample location
6. Samples identified that do not meet the sample acceptance requirements for project.
7. Date of sample receipt, sample collection, analysis date and time, report date and analyst
8. Identification of data reported by subcontractors
9. Test name and EPA reference method number
10. Delivery method and sampling procedures when collected by lab personnel
11. Deviations or modifications that affect data quality and/or data integrity. These deviations or modifications are included in narrative statements and/or data merger files.
12. Statement that results relate only to the sample tested
13. Statement that report must be copied in full unless the laboratory provides written permission for partial copies
14. Glossary, References and limits of liability
15. Units of measure and reporting detection limit
16. Quality control data for: % Recovery surrogates, % Recovery of LCS, % RPD of LCSD, Blank analysis, % Recovery Matrix Spike, %RPD of Laboratory Duplicates, as applicable
17. Signature, title and date of report
18. A “Certificate/Approval Program Summary” page is included at the end of the report that identifies analytes for which Alpha Analytical

holds certification and for those analytes reported that it does not. This summary also includes the certification numbers for either NELAP certified states, State certifications (e.g. Massachusetts laboratory certification identification number) and DoD certification identifications.

19. Alpha Analytical does not accept samples from private residents for drinking water analysis and therefore maximum contaminant levels are not necessary. If Alpha were to change its policy and report drinking water samples, MCLs would be included with the report.

Results transmitted by facsimile or other electronic means include a statement of confidentiality and return of the materials at the laboratory's expense.

The laboratory notifies the customer in writing of any circumstance that causes doubt on the validity of the results. The amended or modified report lists the change, reason for the change, affected page numbers, date of the amendment and authorized signature. The customer will be notified prior to changes in LIMs software or hardware configurations that will adversely affect customer electronic data.

13.1 Data Qualifiers

The following data qualifiers are used in conjunction with analytical results depending on the definition, state or regulatory program and report type.

Note: ”J” Estimated value: Upon customer request, the Target analyte concentration can be reported below the quantitation limit (RL), but above the Method Detection Limit (DL) with a “J” qualifier as long as there is a LOD study on file. (See section 5.11)

Data Qualifier	**Qualifier Information**	**Regulatory Requirement**
A	Spectra identified as "Aldol Condensation Product".	CT RCP, NC
B	The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at <5x the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than 10x the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at <10x the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone)	EPA Functional Guidelines 'MassDEP MCP, CT RCP, DoD, NJ-TO15/LL-TO15; NJ Tech Guidance 2014
C	Co-elution: target analyte co-elutes with a known lab standard (i.e. surrogates, internal standards, etc.) for co-extracted analyses.	

D		Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.	NJ-TO15/LL-TO15 - Air only EPA Functional Guidelines; EPA Region 2,5
DL		Same was re-analyzed at a dilution. Qualifier applied to sample number.	
E		Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.	EPA Region 2,5 CT RCP, NJ-TO15/LL-TO15
G		The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.	In-house/Forensics.
H		The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.	NELAC
I		The lower value for the two columns has been reported due to obvious interference.	In-house.
J		Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).	CT RCP (for TICs), DoD
JN (NJ)		Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.	EPA Functional Guidelines 'NJ-TO15-LL
ND	DU-J	Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for same-related analysis	In-house
P	All DU	The RPD between the results for the two columns exceeds the method-specified criteria.	MassDEP MCP, CT RCP
Q	All DU	The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the	DoD

		sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)	
R	All DU	Analytical results are from sample re-analysis	DoD, Customer-specific
RE	All DU	Analytical results are from sample re-extraction.	DoD, Customer-specific
S		Analytical results are from modified screening analysis	

13.2 Compound Summation for Organic Analyses

In order to be compliant with regulations from certain states, Alpha Analytical has created the following Summation Rules to cover reporting "Total Analytes". The following are an example of several compounds that can be reported as "Totals":

Volatiles:	
1,3-Dichloropropene, Total	cis + trans isomers
Xylenes, Total	m/p + o isomers
1,2-Dichloroethene, Total	cis + trans isomers
Trihalomethanes, Total	Chloroform + Bromoform +
	Dibromochloromethane +
	Dichlorobromomethane
PCBs:	
PCBs, Total	Sum of reportable Aroclors
	(all Aroclors reported for the project)

The following are the summation rules that the LIMs uses to calculate the Total values:

Summation Rules:		
H + H = H		Key:
H + J = J		H = Hit (above RL)
J + J = J		J = J-flagged value
H + ND = H		ND = U-flagged value
J + ND = J		
ND + ND = ND		

The ND values are considered "0" during the calculations.
The "E" flagged values (over the calibration) are ignored and not utilized during the calculations.
Any "N" flagged values (do not report) are ignored and not utilized during the calculations.
For dual-column analysis, the Total is reported as part of column "A" data, unless all individuals are reported from "B" column.

For analytical group summations, the Total is reported based on the associated “Reporting List”. For example, if only 7 Aroclors are requested, then the Total is based on 7 Aroclors, not 9.

The RL and MDL for Totals will always be the lowest of the individual compounds used in the summation.

For each Total summation, two values are calculated: TOTALH (calculated from all associated hits above the R L– used in DU reporting formats) and TOTALJ (calculated from all associated hits and J flagged values – used in DJQL reporting formats). Total concentrations are calculated for all samples and QC samples (however, recoveries are not calculated since they are only calculated for the compounds spiked)

If a Total summation is requested, the individual compounds must also be reported.

14 Outside Support Services and Supplies

When Alpha Analytical purchases outside services and supplies in support of tests, the laboratory uses only those outside services and supplies that are of adequate quality to maintain confidence in the tests. Differences between Request/Tender and Contracts must be resolved before work commences.

The Purchasing SOP/1726 describes approval and monitoring of all suppliers and subcontractors used by the laboratory. Where no independent assurance of the quality of outside support services or supplies is available, the laboratory ensures that purchased equipment, materials, and services comply with specifications by evaluating method performance before routine use.

The laboratory checks shipments upon receipt as complying with purchase specifications. The use of purchased equipment and consumables is only after the evaluation and compliance to the specifications is complete. The Purchasing SOP/1726 describes the details for receipt and inspection of purchased product.

The Purchasing SOP describes the process for raising, review and placement of purchase orders. It is company policy to purchase from third party certified suppliers and subcontractors wherever possible. Purchases must be from suppliers approved by the Laboratory. Laboratory or sampling subcontractors specified by the customer are noted as “Trial” on the purchase order. This identifies the subcontractor as a non-approved subcontractor.

The laboratory maintains list of approved vendors (Form 13-01) and subcontractors from whom it obtains support services or supplies required for tests.

14.1 Subcontracting Analytical Samples

Customers are advised, verbally and/or in writing, if any analyses will be subcontracted to another laboratory. Any testing covered under NELAC that requires subcontracting, will be subcontracted to another NELAC accredited laboratory for the tests to be performed. Any testing covered under the DOD QSM that requires subcontracting, will be subcontracted to another accredited DOD laboratory and must be project-specific approved from the DOD customer before analysis begins. These requirements for DOD projects pertain to both Westboro and Mansfield facilities. The laboratory approves testing and sampling subcontractors by review of current state, national or other external parties’ certifications or approvals. This document must indicate current approval for the subcontracted work. Any sample(s) needing special reports (*i.e.*, MCL exceedance) will be identified on the chain of custody when the laboratory subcontracts with another laboratory. Subcontractor Laboratory Certifications are located in Qualtrax under Customer Services folder

The Sample Receipt and Login Procedure describes the process for sample handling when subcontracting samples. The quotation form lists the subcontractor in order to notify the customer of any subcontracted work. Customer notification of subcontracted work is in writing before releasing samples to the subcontractor.

The review of subcontractor documents for completeness and meeting the specifications defined for the project follows the laboratory process for reporting and verification of process data. The person responsible for receiving the order reviews the information supplied by the subcontractor instead of the Department Supervisor.

15 Customer Relations

15.1 Customer Service

The majority of the customer services occur from personnel in the administration, sample receiving and sampling areas. Customer service involves inquiries into services offered, technical consulting, placing orders, and receiving orders, providing updates on the status of orders and completing orders. Personnel interacting with customers must document and review customer specific project requirements. Call Tracker is used to document communications with customers (SOP/1723). Personnel must document customer interactions following the appropriate laboratory procedures. Each person must communicate deviations, modifications and customer requests following the laboratory defined procedures.

15.2 Project Management

During staff meetings the laboratory management reviews requests for new work. The Operations Director and/or Laboratory Technical Manager address all capacity and capability issues. Where conflicts in workload arise, customer notification is immediate. The Project Communication Form (PCF) contains the documentation of all project information. Cooperation between laboratory and customer services staff allows direct communication and scheduling. Management arranges complex scheduling and coordination between departmental areas.

15.3 Complaint Processing

The laboratory staff documents all customers or other parties’ complaints or concerns regarding the data quality or laboratory operations. The Nonconformance Report records complaints, correcting the concern, and resolving the concern with the customer or other party. The process uses the same form and process as the nonconformance action process. Where repetitive corrective actions indicate a problem, an audit of the area, Customer Inquiry and Complaint SOP/1722 is immediate to ensure the corrective action has effectively solved the concern.

16 Appendix A – Definitions/References

The following definitions are from Section 3.0 of the 2009 TNI Standard. The laboratory adopts these definitions for all work performed in the laboratory. In addition, there are clarifications to certain definitions according to the DoD QSM.

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. (TNI)

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. (TNI)

Aliquot: A discrete, measured, representative portion of a sample taken for analysis. (DoD; EPA QAD glossary)

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. (TNI)

Analyte: The specific chemicals or components for which a sample is analyzed; it may be a group of chemicals that belong to the same chemical family, and which are analyzed together. (EPA Risk Assessment Guide for Superfund; OSHA Glossary)

Analytical Uncertainty: A subset of Measurement Uncertainty that includes all laboratory activities performed as part of the analysis. (TNI)

Assessment: The evaluation process used to measure or establish the performance, effectiveness, and conformance of an organization and/or its systems to defined criteria (to the standards and requirements of laboratory accreditation. (TNI)

Assessment (Clarification): The evaluation process used to measure the performance or effectiveness of a system and its elements against specific criteria. (DoD)

Assessment Criteria: the measures established by NELAC and applied in establishing the extent to which an applicant is in conformance with NELAC requirements. (NELAC)

Audit: A systematic and independent examination of facilities, equipment, personnel, training, procedures, record-keeping, data validation, data management, and reporting aspects of a system to determine whether QA/QC and technical activities are being conducted as planned and whether these activities will effectively achieve quality objectives. (TNI).

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 (1) to twenty (20) environmental samples of the same quality systems 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), which are analyzed together as a group. An analytical batch can include prepared samples originating from various quality system matrices and can exceed 20 samples. (TNI)

Bias: The systematic or persistent distortion of a measurement process, which causes errors in one direction (i.e., the expected sample measurement is different from the sample's true value). (TNI)

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. (TNI)

Blanks include:

Equipment Blank: a sample of analyte-free media, which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures.

Field Blank: blank prepared in the field by filling a clean container with pure de-ionized water and appropriate preservative, if any, for the specific sampling activity being undertaken. (EPA OSWER)

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)

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, (TNI)

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)

Blind Sample: a sub-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 or laboratory's proficiency in the execution of the measurement process.

Calibration: set of operations which establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by standards. (TNI)

1) In calibration of support equipment the values realized by standards are established through the use of Reference Standards that are traceable to the International System of Units (SI).

2) In calibration according to test methods, the values realized by standards are typically established through the use of Reference Materials that are either purchased by the Laboratory with a certificate of analysis or purity, or prepared by the Laboratory using support equipment that has been calibrated verified to meet specifications.

Calibration Range: The range of values (concentrations) between the lowest and highest calibration standards of a multi-level calibration curve. For metals analysis with a single-point calibration, the low-level calibration check standard and the high standard establish the linear calibration range, which lies within the linear dynamic range.

Calibration Curve: the graphical relationship between the known values, such as concentrations, of a series of calibration standards and their instrument response. (TNI)

Calibration Method: A defined technical procedure for performing a calibration.

Calibration Standard: A substance or reference material used to calibrate an instrument. (TNI)

Certified Reference Material (CRM): Reference material, accompanied by a certificate, having a value, measurement uncertainty, and stated metrological traceability chain to a national metrology institute. (TNI)

Chain of Custody Form: Record that documents the possession of the samples from the time of collection to receipt in the laboratory. This record generally includes: the number and types of containers; the mode of collection; collector; time of collection; preservation; and requested analyses. See also Legal Chain of Custody Protocols (TNI)

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 to enforce them.

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 (TNI)

Customer: Any individual or organization for which items or services are furnished or work performed in response to defined requirements and expectations. (ANSI/ASQ E4-2004)

Congener: A member of a class of related chemical compounds (e.g., PCBs, PCDDs)

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.

Conformance: an affirmative indication or judgment 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)

Consensus Standard: A standard established by a group representing a cross-section of a particular industry or trade, or a part thereof. (ANSI/ASQ ANSI/ASQ E4-2004)

Continuing calibration verification: The verification of the initial calibration that is required during the course of analysis at periodic intervals. Continuing calibration verification applies to both external standard and internal standard calibration techniques, as well as to linear and non-linear calibration models. (IDQTF)

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 Quality Objectives (DQO):

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. (TNI)

Definitive Data: Analytical data of known quality, concentration, and level of uncertainty. The levels of quality and uncertainty of the analytical data are consistent with the requirements for the decision to be made. Suitable for final decision-making. (UFP-QAPP)

Demonstration of Capability: a procedure to establish the ability of the analyst to generate analytical results of acceptable accuracy and precision. (TNI)

Detection Limit: (previously referred to as Method Detection Limit –MDL) 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.

Detection Limit (DL) (Clarification): The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence. At the DL, the false positive rate (Type I error) is 1%. (DoD)

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 is performed. (ASQC)

Environmental Data: Any measurements or information that describe environmental processes, locations, or conditions; ecological or health effects and consequences; or the performance of environmental technology. (ANSI/ASQ E4-2004)

False Negative: An analyte incorrectly reported as absent from the sample, resulting in potential risks from their presence.

False Positive: An item incorrectly identified as present in the sample, resulting in a high reporting value for the analyte of concern.

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA): the enabling legislation under 7 U.S.C. 135 *et seq*., as amended, that empowers the EPA to register insecticides, fungicides, and rodenticides.

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. 8.16, that empowers EPA to set discharge limitations, write discharge permits, monitor, and bring enforcement action for non-compliance.

Field Measurement: The determination of physical, biological, or radiological properties, or chemical constituents; that are measured on-site, close in time and space to the matrices being sampled/measured, following accepted test methods. This testing is performed in the field outside of a fixed-laboratory or outside of an enclosed structure that meets the requirements of a mobile laboratory.

Field of Accreditation: Those matrix, technology/method, and analyte combinations for which the accreditation body offers accreditation. (TNI)

Finding: an assessment conclusion, referenced to a laboratory accreditation standard and supported by objective evidence that identifies a deviation from a laboratory accreditation standard requirement. (TNI)

Finding (Clarification): An assessment conclusion that identifies a condition having a significant effect on an item or activity. An assessment finding may be positive or negative and is normally accompanied by specific examples of the observed condition (ANSI/ASQ E4-2004).

Holding Times: The maximum time that can elapse between two (2) specified activities. (TNI)

The maximum times that samples may be held prior to analysis and still be considered valid or not compromised. (40 CFR part 136)

Holding Times (DoD Clarification): The time elapsed from the time of sampling to the time of extraction or analysis, or from extraction to analysis, as appropriate.

Inspection: An activity such as measuring, examining, testing, or gauging one or more characteristics of an entity and comparing the results with specified requirements in order to establish whether conformance is achieved for each characteristic. (ANSI/ASQC E4-1994)

Internal Standard: A known amount of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method. (TNI)

Isomer: One of two or more compounds, radicals, or ions that contain the same number of atoms of the same elements but differ in structural arrangement and properties. For example, hexane (C_6H_{14}) could be n-hexane, 2-methylpentane, 3-methylpentane, 2,3-dimethylbutane, 2,2-dimethylbutane.

Laboratory: Body that calibrates and/or tests. (ISO 25)

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. 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. (TNI).

Laboratory Duplicate: aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently.

Legal Chain of Custody Protocols: procedures employed to record the possession of samples from the time of sampling until analysis and are performed at the special request of the customer. These protocols include the use of a Chain of Custody Form that documents the collection, transport, and receipt of compliance samples by the laboratory. In addition, these protocols document all handling of the samples within the laboratory. (TNI)

Limit of Detection (LOD): A laboratory's estimate of the minimum amount of an analyte in a given matrix that an analytical process can reliably detect in their facility. (TNI)

Limit of Detection (Clarification): The smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%. (DoD)

Limits of Quantitation (LOQ): The minimum levels, concentrations, or quantities of a target variable (e.g. target analyte) that can be reported with a specified degree of confidence. (TNI)

Limit of Quantitation (Clarification): The lowest concentration that produces a quantitative result within specified limits of precision and bias. For DoD projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard. (DoD)

Management: Those individuals directly responsible and accountable for planning, implementing, and assessing work. (ANSI/ASQ E4-2004)

Management System: System to establish policy and objectives and to achieve those objectives (ISO 9000).

Matrix: The substrate of a test sample. (TNI)

Matrix Spike (spiked sample, fortified sample): A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of Target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency. (TNI).

Matrix Spike Duplicate (spiked sample or fortified sample duplicate): a second replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte. (TNI).

Measurement System: A test method, as implemented at a particular laboratory, and which includes the equipment used to perform the test and the operator(s). (TNI)

Method: A body of procedures and techniques for performing an activity (e.g., sampling, chemical analysis, quantification), systematically presented in the order in which they are to be executed. (TNI)

Method Detection Limit: (now referred to as Detection Limit) one way to establish a Detection Limit, defined as 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.

Method Detection Limit (MDL) (Clarification): The MDL is one way to establish a Detection Limit, not a Limit of Detection. (DoD)

Method of Standard Additions: A set of procedures adding one or more increments of a standard solution to sample aliquots of the same size in order to overcome inherent matrix effects. The procedures encompass the extrapolation back to obtain the sample concentration. (This process is often called spiking the sample.) (Modified Skoog, Holler, and Nieman. Principles of Instrumental Analysis. 1998)

Mobile Laboratory: A portable enclosed structure with necessary and appropriate accommodation and environmental conditions for a laboratory, within which testing is performed by analysts. Examples include but are not limited to trailers, vans and skid-mounted structures configured to house testing equipment and personnel. (TNI)

National Institute of Standards and Technology (NIST): A federal agency of the US Department of Commerce’s Technology Administration that is designed as the United States national metrology institute. (NMI). (TNI)

National Environmental Laboratory Accreditation Program (NELAP): The overall National Environmental Laboratory Accreditation Program of which TNI is a part.

Negative Control: Measures taken to ensure that a test, its components, or the environment do not cause undesired effects, or produce incorrect test results.

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.

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. (TNI).

Preservation: Any conditions under which a sample must be kept in order to maintain chemical and/or biological integrity prior to analysis. (TNI)

Procedure: A specified way to carry out an activity or a process. Procedures can be documented or not. (TNI)

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. (TNI)

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. (TNI)

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. (TNI).

Protocol: A detailed written procedure for field and/or laboratory operation (e.g., sampling, analysis) which must be strictly followed. (TNI)

Quality Assurance: An integrated system of management activities involving planning, implementation, assessment, reporting and quality improvement to ensure that a process, item, or service is the type and quality needed and expected by the customer. (TNI)

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. (EPA-QAD)

Quality Control: The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements or quality; also the system of activities and checks used to ensure that measurement systems are maintained within prescribed limits, providing protection against “out of control” conditions and ensuring that the results are of acceptable quality. (TNI)

Quality Control Sample: A sample used to assess the performance of all or a portion of the measurement system. One of any number of samples, such as Certified Reference Materials, a quality system matrix fortified by spiking, or actual samples fortified by spiking intended to demonstrate that a measurement system or activity is in control. (TNI)

Quality Manual: A document stating the management policies, objectives, principles, organizational structure and authority, responsibilities, accountability, and implementation of an agency, organization, or laboratory, the ensure the quality of its product and the utility of its product to the users. (TNI)

Quality Manual Clarification: Alpha Analytical refers to Quality Manual as Corporate Quality Systems Manual (CQSM). (Alpha)

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 quality assurance (QA) and quality control (QC) activities. (TNI)

Quality System Matrix: These matrix definitions are to be used for purposes of batch and quality control requirements: (TNI)

Air and Emissions: 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 sorbent tube, impinger solution, filter, or other device.

Aqueous: Any aqueous sample excluded from the definition of Drinking Water or Saline/Estuarine. Includes surface water, ground water effluents, and TCLP or other extracts.

Biological Tissue: Any sample of a biological origin such as fish tissue, shellfish, or plant material. Such samples shall be grouped according to origin.

Chemical Waste: A product or by-product of an industrial process that results in a matrix not previously defined.

Drinking Water: Any aqueous sample that has been designated a potable or potential potable water source.

Non-Aqueous Liquid: Any organic liquid with <15% settleable solids.

Saline/Estuarine: Any aqueous sample from an ocean or estuary, or other salt water source such as the Great Salt Lake.

Solids: Includes soils, sediments, sludges and other matrices with >15% settleable solids.

Raw Data: The documentation generated during sampling and analysis. This documentation includes, but is not limited to, field notes, electronic data, magnetic tapes, untabulated sample results, QC sample results, print outs of chromatograms, instrument outputs, and handwritten records. (TNI)

Reference Material: 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. (TNI)

Reference Standard: Standard used for the calibration of working measurement standards in a given organization or at a given location. (TNI)

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.

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.

Sample Tracking: procedures employed to record the possession of the samples from the time of sampling until analysis, reporting and archiving. These procedures include the use of a Chain of Custody Form that documents the collection, transport, and receipt of compliance samples to the laboratory. In addition, access to the laboratory is limited and controlled to protect the integrity of the samples.

Sampling: Activity related to obtaining a representative sample of the object of conformity assessment, according to a procedure. (TNI)**Second source calibration verification (ICV):** A standard obtained or prepared from a source independent of the source of standards for the initial calibration. Its concentration should be at or near the middle of the calibration range. It is done after the initial calibration.

Selectivity: The ability to analyze, distinguish, and determine a specific analyte or parameter from another component that may be a potential interferent. (TNI)

Sensitivity: The capability of a test method or instrument to discriminate between measurement responses representing different levels (e.g., concentrations) of a variable of interest. (TNI)

Signal to Noise Ratio: The signal carries information about the analyte, while noise is made up of extraneous information that is unwanted because it degrades the accuracy and precision of an analysis and also places a lower limit on the amount of analyte that can be detected. In most measurements, the average strength of the noise is constant and independent of the magnitude of the signal. Thus, the effect of noise on the relative error of a measurement becomes greater and greater as the quantity being measured (producing the signal) decreases in magnitude. (Skoog, Holler, and Nieman. Principles of Instrumental Analysis. 1998)

Standard: The document describing the elements of laboratory accreditation that has been developed and established within the consensus principles of standard setting and meets the approval requirements of standard adoption organizations procedures and policies. (TNI)

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. (TNI)

Standard Method: a test method issued by an organization generally recognized as competent to do so.

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.

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.

Technology: a specific arrangement of analytical instruments, detection systems, and/or preparation techniques. (TNI)

Test: A technical operation that consists of the determination of one or more characteristics or performance of a given product, material, equipment, organism, physical phenomenon, process or service according to a specified procedure. The result of a test is normally recorded in a document sometimes called a test report or a test certificate. (ISO/IEC Guide 2 - 12.1, amended)

Test Method: An adoption of a scientific technique for performing a specific measurement, as documented in a laboratory SOP or as published by a recognized authority.

Toxic Substances Control Act (TSCA): the enabling legislation in 15 USC 2601 et seq. (1976), the provides for testing, regulating, and screening all chemicals produced or imported into the United States for possible toxic effects prior to commercial manufacture.

Traceability: The ability to trace the history, application, or location of an entity by means of recorded identifications. In a calibration sense, traceability relates measuring equipment to national or international standards, primary standards, basic physical constants or properties, or reference materials. In a data collection sense, it relates calculations and data generated throughout the project back to the requirements for the quality of the project. (TNI)

Tuning: A check and/or adjustment of instrument performance for mass spectrometry as required by the method.

United States Environmental Protection Agency (EPA): the federal governmental agency with responsibility for protecting public health and safeguarding and improving the natural environment (i.e. the air, water and land) upon which human life depends. (US-EPA)

Validation: the confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled.

Verification: confirmation by examination and provision of evidence that specified requirements have been met. (TNI)

NOTE - In connection with the management of measuring equipment, verification provides a means for checking that the deviations between values indicated by a measuring instrument and corresponding known values of a measured quantity are consistently smaller than the maximum allowable error defined in a standard, regulation or specification peculiar to the management of the measuring equipment.

The result of verification leads to a decision either to restore in service, to perform adjustments, or to repair, or to downgrade, or to declare obsolete. In all cases, it is required that a written trace of the verification performed shall be kept on the measuring

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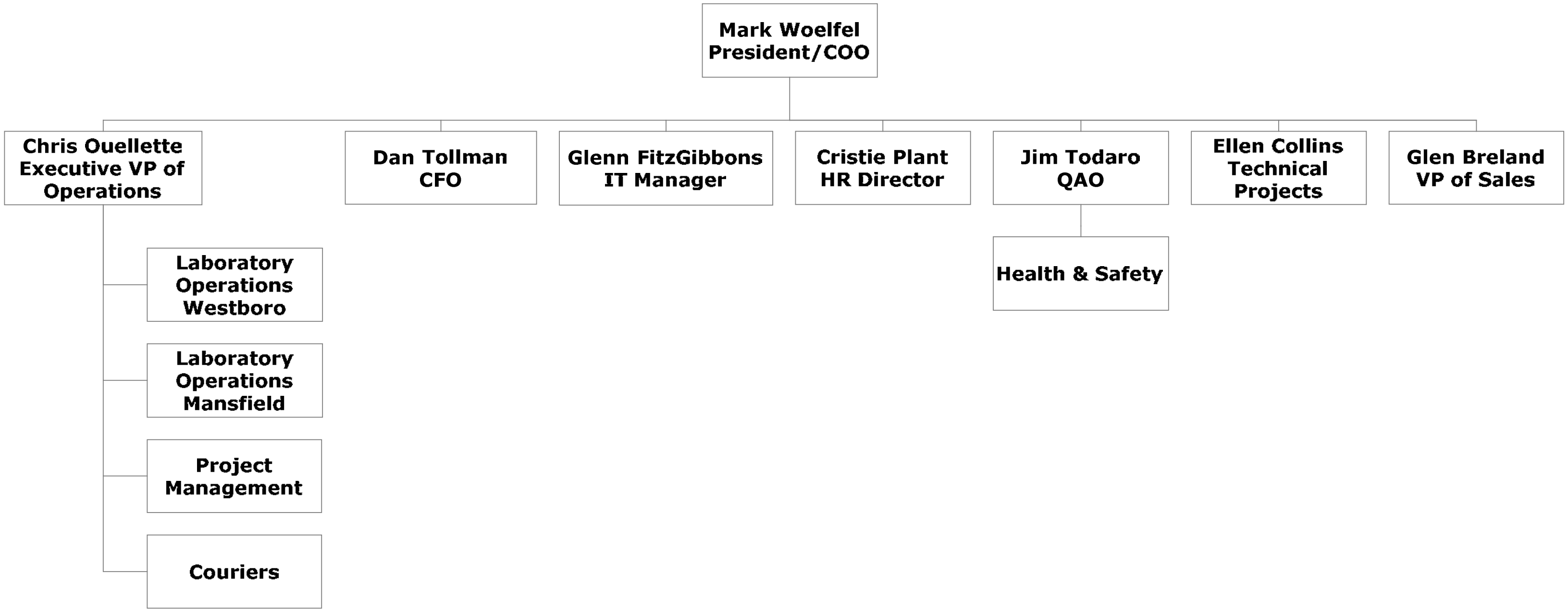
17 Appendix B – Organization Charts

The following charts provide an overview of the organizational structure of Alpha Analytical. The chart also identifies the key personnel responsible for the listed positions. For the various laboratory areas, the individual departmental supervisors are noted. For a listing of all current key personnel, please refer to Section 18, Appendix C.

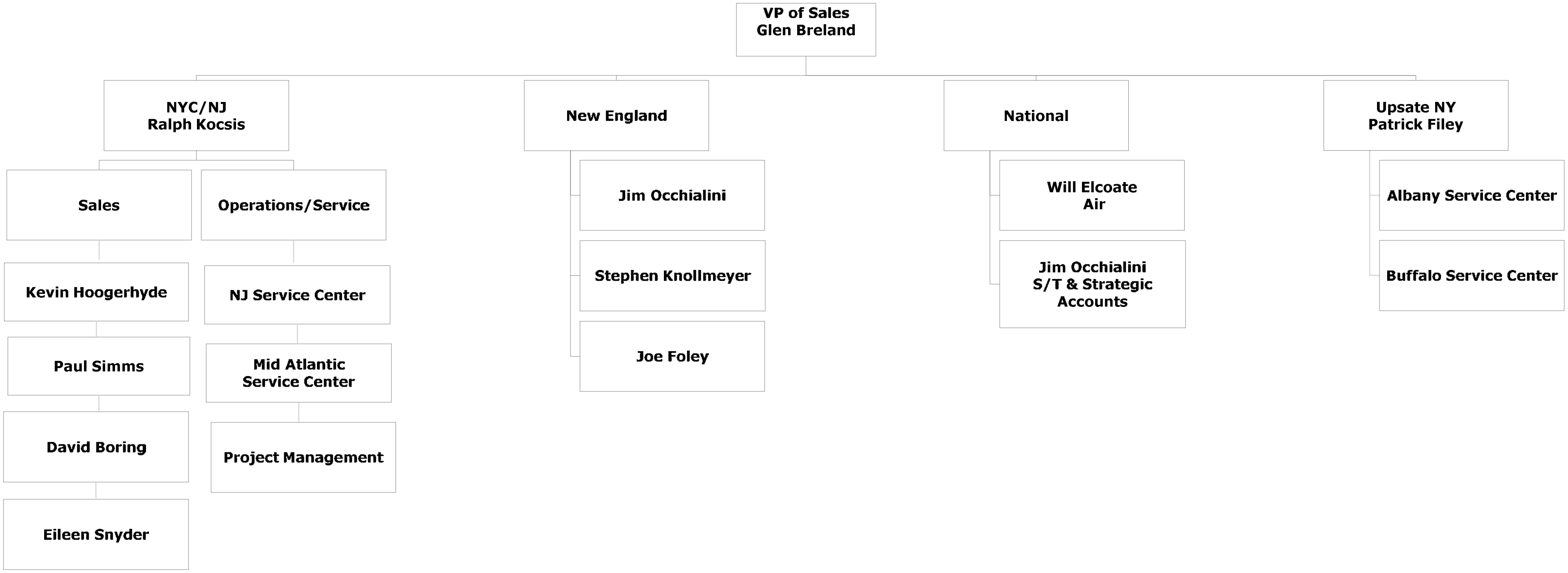
Updated 10/4/2014

2014
Alpha Analytical
Company Organizational Chart



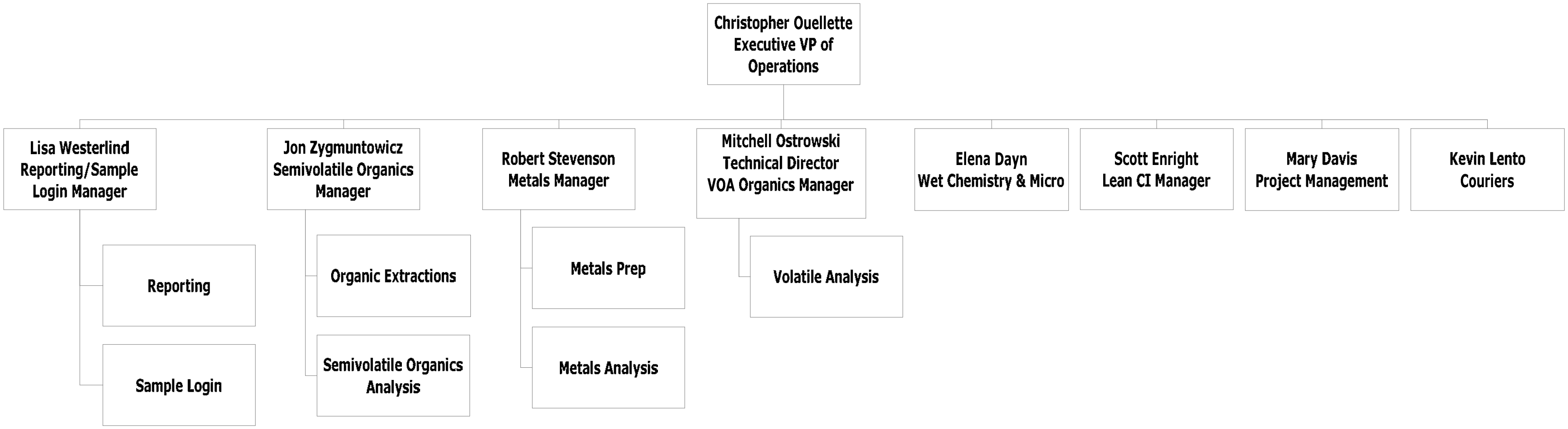
Updated 10/07/2014

2014 Sales Organization



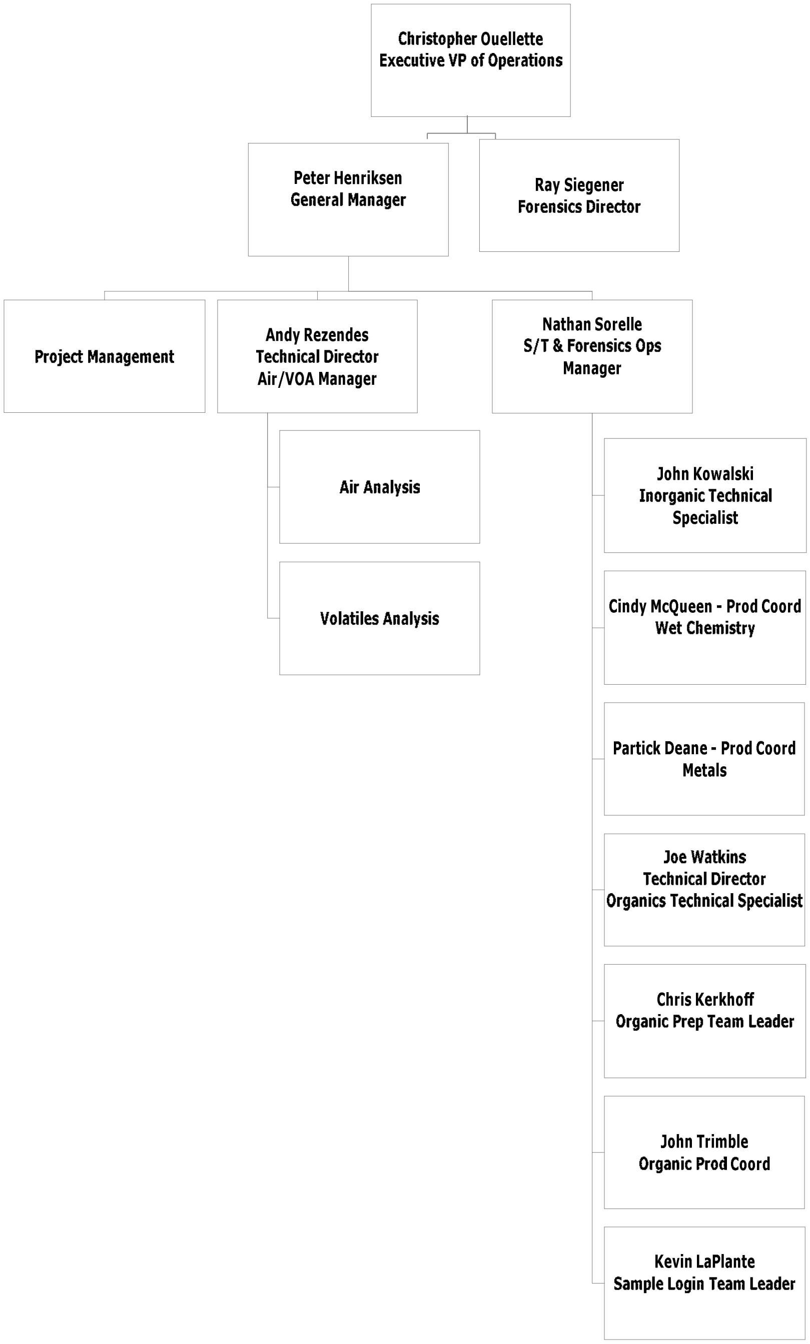
Updated 10/4/2014

Alpha Analytical
Laboratory Organizational Chart
WESTBOROUGH



Updated 10/4/2014

Alpha Analytical
Laboratory Organizational Chart
MANSFIELD



18 Appendix C – List of Key Personnel

The following is a listing of all current key personnel. If role is specific to a facility it is denoted by either Westboro or Mansfield following the position title. **Updated 10/7/2014.**

President / COO: Mark Woelfel
Executive VP of Operations: Christopher Ouellette
CFO: Dan Tollman
Laboratory Technical Manager - Westboro: Mitchell Ostrowski
Laboratory Technical Manager - Mansfield: Joseph Watkins
Laboratory Technical Manager- Air, Volatiles Manager - Mansfield: Andy Rezendes
Quality Assurance Officer/Health & Safety Manager: James C. Todaro
VP, Technical Projects: Ellen Collins
VP Technical Sales/Sales Manager: Glen Breland
VP, Technical Sales: James Occhialini, Ralph Kocsis, Pat Filey, Kevin Hoogerhyde, Steven Knollmeyer
Technical Sales Reps: Paul Simms; Joe Foley, David Boring
General Manager, Mansfield: Peter Henriksen
Director of Project Management: Mary Davis
National Air Account Manager: Will Elcoate
Information Technology Manager: Glenn Fitzgibbons
Human Resources Director: Cristie Plant
Health & Safety Officer: Jeanette Soucy
Forensic & S/T Operations Manager, Mansfield: Nathan Sorelle
Forensics Technical Manager, Mansfield: Ray Siegener
SVOA/Extractions Manager, Westboro: John Zygmuntowicz
VOA Department Manager, Westboro: Mitch Ostrowski
Wet Chemistry Department Manager, Westboro: Elena Dayn
Metals Department Manager, Westboro: Robert Stevenson
Login Manager/ Reporting Manager, Westboro Lisa Westerlind
Quality Systems Specialists: Amy Rice, Rene Bennett, Jason Hebert
Purchasing: Rosemarie Pederson
Environmental Health & Safety/Hazardous Waste Coordinator: Jeanette Soucy
Logistics Manager: Kevin Lento
Equipment Specialists: Pat Sullivan, Greg Yogis

19 Appendix D – Preventive Maintenance Procedures

Optimized Service-Calibration Intervals

Equipment	Frequency	Type of Calibration or Maintenance
Balances	semiannually daily	cleaning & operations check by service technician (external) calibration verification using Class S-1 certified weights
COD Reactor	annually annually	complete operations check by service technician (external) reaction temperature verification
Conductivity Bridge	annually each use	verification of cell constant complete operations check by service technician (external) calibration verification
DI Water System	as needed monthly annually daily	complete operations check by service technician (external) Residual Chlorine check Biosuitability testing (external) pH and Conductivity check
DO Meter	annually each use	complete operations check by service technician (external) calibration against air as specified by manufacturer
Emergency/Safety Equipment	annually monthly	fire extinguishers and emergency exit lighting check eye washes, showers, fire blanket and first aid kits checked
Freezers	daily	temperature verification
Gas Chromatographs	as needed as needed beginning and end of batch and 10 to 20 samples as per method	injection port preparation; cleaning of detectors initial multi-point calibration continuing calibration verification (CCV) against initial calibration
ICP	Every other day Daily Annually Annually As needed	Change pump tubing Calibration, profile Complete operations check by service technician (external), Linear Dynamic Range determination Clean torch, clean nebulizer, clean spray chamber
Lachat analyzer	Daily As needed	Calibration, clean lines Change tubing, change O-rings
Mass Spectrometers (GC & ICP)	bi-annually as needed 12 hour or daily	change of mechanical pump oil by service technician (external) cleaning of source BFB, DFTPP or ICP-MS tune analysis followed by ICAL or CCV
Mercury Analyzer	monthly each use	clean cell and change pump windings calibration using multi-point curve
Auto-pipettes	Monthly Annually	verification of accuracy verification of precision
Microwave	Quarterly Annually	power and temperature verification RPM verification
Ovens	annually daily	complete operations check by service technician (external) temperature verification
pH Meters	annually each use	complete operations check by service technician (external) calibration using certified buffers
Refrigerators (General Use)	daily	temperature verification
Refrigerators (Sample Management)	daily	temperature verification
Spectrophotometer	Semi-annually Semi-annually daily	cleaning & operations check by service technician (external) wavelength verification (external) continuing calibration verification (CCV) against initial calibration
TCLP Rotator	annually	RPM verification
Thermometers (Mercury/Alcohol)	annually	calibration against NIST traceable thermometer (internal)
Thermometers (digital)	Quarterly	calibration against NIST traceable thermometer (external)
Thermometer (NIST Traceable)	annually	calibration and certification of conformance (external)
Turbidity meter	annually each use	cleaning & operations check by service technician (external) calibration using formazin
Weights (Class S-1)	annually	service/calibration and certification of conformance (external)

20 Appendix E – Alpha Code of Ethics Agreement

Alpha Analytical, Inc.
Ethical Conduct and Data Integrity Agreement

A. ***Personal Pledge:*** I understand that I am charged with meeting the highest degree of ethical standards in performing all of my duties and responsibilities and pledge to only report data, test results and conclusions that are accurate, precise and of the highest quality.

B. ***Protocol Pledges:*** I agree to adhere to the following protocols and principles of ethical conduct in fulfilling my work assignments at Alpha:

1. All work assigned to me will be performed using Standard Operating Procedures (SOPs) that are based on EPA approved methods or Alpha methods.

2. I will only report results or data that match the actual results observed or measured.

3. I will not intentionally nor improperly manipulate or falsify data in any manner, including both sample and QC data. Furthermore, I will not modify data values unless the modification can be technically justified through a measurable analytical process or method acceptable to Alpha. All such modifications will be clearly and thoroughly documented in the appropriate laboratory notebooks and raw data and include my initials or signature and date.

4. I will not intentionally report dates and times of analyses that are not the actual dates and times the analyses were conducted.

5. I will not intentionally represent another individual’s work as my own or represent my work as someone else’s.

6. I will not make false statements to, or seek to otherwise deceive Alpha staff, leaders or customers. I will not, through acts of commission, omission, erasure or destruction, improperly report measurements, standards results, data, test results or conclusions.

C. ***Guardian Pledge:***

1. I will not condone any accidental or intentional reporting of unauthentic data by other Alpha staff and will immediately report such occurrences to my supervisor, the QA Officer, the Laboratory Technical Manager or corporate leadership. I understand that failure to report such occurrences may subject me to immediate discipline, including termination.

2. If a supervisor or other member of the Alpha leadership group requests me to engage in, or perform an activity that I feel is compromising data validity or quality, I have the right to not comply with the request and appeal this action through Alpha’s QA Officer, senior leadership or corporate officers, including the President of the company.

3. I understand that, if my job includes supervisory responsibilities, then I will not instruct, request or direct any subordinate to perform any laboratory practice that is unethical or improper. Also, I will not discourage, intimidate or inhibit a staff member who may

choose to appropriately appeal my supervisory instruction, request or directive that may be perceived to be improper, nor retaliate against those who do so.

D. ***Agreement Signature:*** I have read and fully understand all provisions of the *Alpha Analytical Ethical Conduct and Data Integrity Agreement*. I further realize and acknowledge my responsibility as an Alpha staff member to follow these standards. I clearly understand that adherence to these standards is a requirement of continued employment at Alpha.

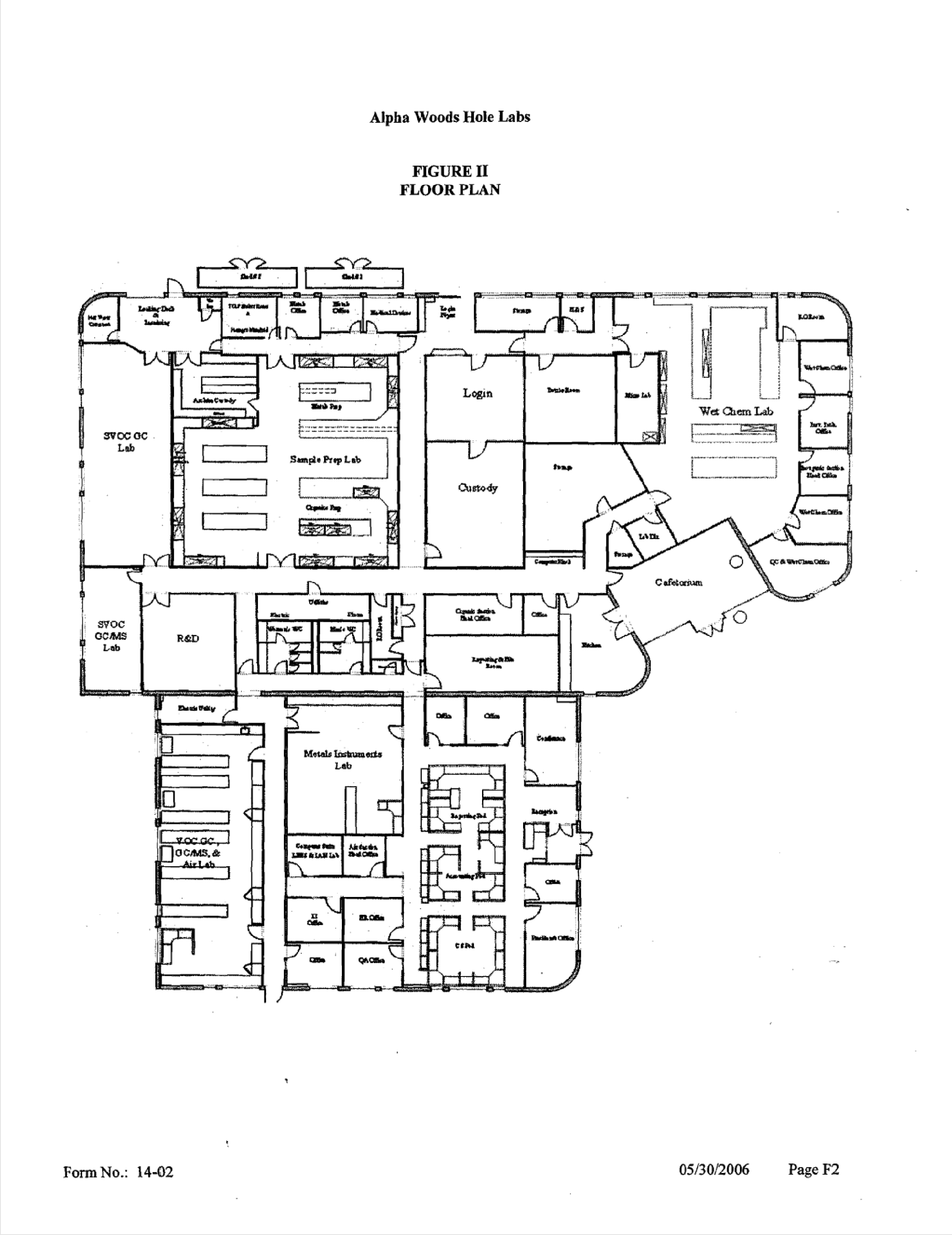
____
Employee Signature

____
Printed Name

____
Date

Review Requirements
The *Ethical Conduct and Data Integrity Agreement* must be signed at the time of hire (or within 2 weeks of a staff member's receipt of this policy). Furthermore, each staff member will be required to review and sign this agreement every year. Such signature is a condition of continued employment at Alpha. Failure to comply with these requirements will result in immediate discharge from Alpha employment. This agreement is not an employment contract and does not modify in any manner the company's *Employment-at-Will* Agreement.

21 Appendix F – Floor Plan Westboro Facility

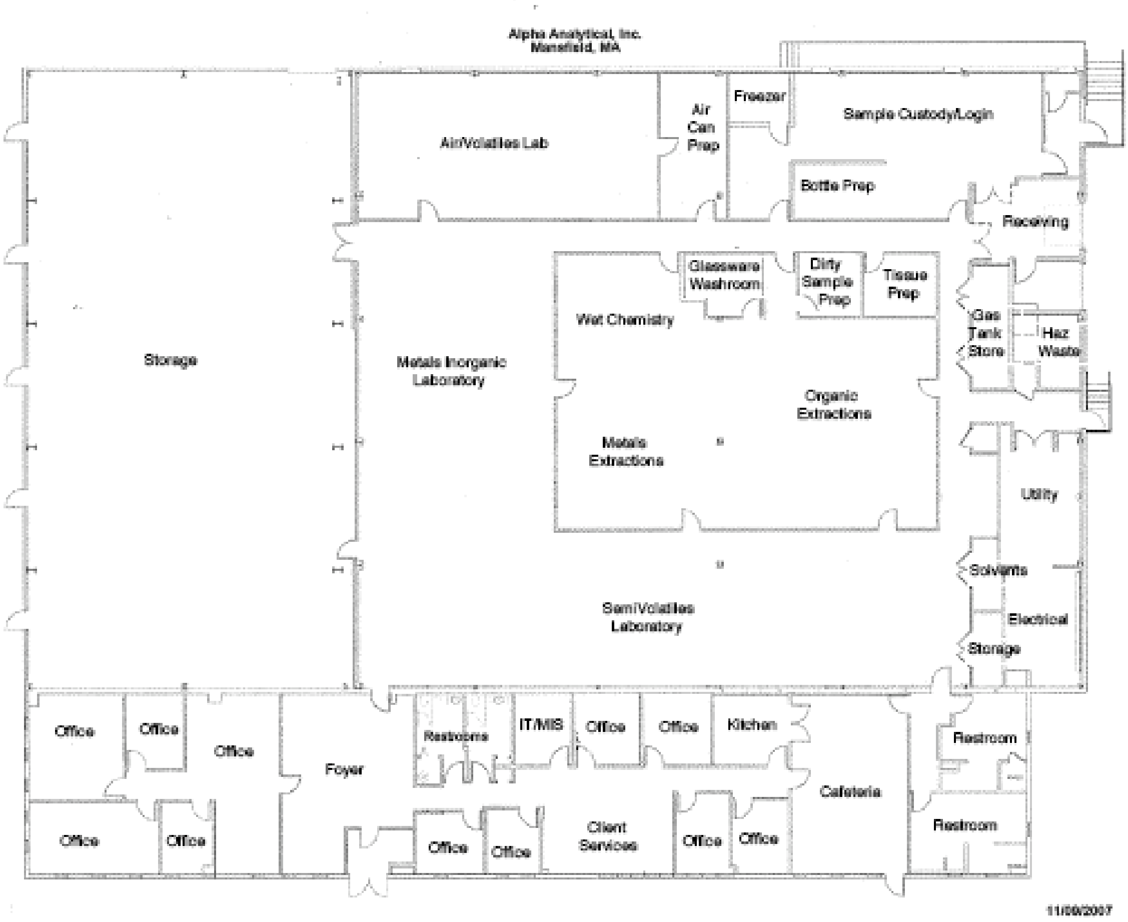


Alpha Woods Hole Labs

FIGURE II
FLOOR PLAN

Form No.: 14-02 05/30/2006 Page F2

22 Appendix G– Floor Plan Mansfield Facility



23 Appendix H – Job Titles and Requirements

TITLE*	REQUIRED EDUCATION**	MINIMUM REQUIRED ENVIRONMENTAL LAB EXPERIENCE	MINIMUM REQUIRED SKILLS***
Technical Manager (Director) Organic Laboratory	BS or BA in Chemical, Environmental, or Biological Science; including minimum 24 credit hours in Chemistry. Masters or Doctoral degree in one of above disciplines may be substituted for 1 year of experience.	Two (2) years with the analysis of organic analytes in an environmental laboratory	1. Advanced technical knowledge of all analytical methods performed by the lab 2. Advanced technical instrumentation/lab systems knowledge 3. Knowledge of safe laboratory practices, OSHA regs and emergency protocols 4. Experience with and understanding of LIMS 5. Experience with method development and implementation 6. Experience monitoring standards of performance in Quality Control and Quality Assurance
Technical Manager (Director) Inorganic Laboratory	BS or BA in Chemical, Environmental, or Biological Science; including minimum 16 credit hours in Chemistry. Masters or Doctoral degree in one of above disciplines may be substituted for 1 year of experience.	Two (2) years with the analysis of inorganic analytes in an environmental laboratory	1. Advanced technical knowledge of all analytical methods performed by the lab 2. Advanced technical instrumentation/lab systems knowledge 3. Knowledge of safe laboratory practices, OSHA regs and emergency protocols 4. Experience with and understanding of LIMS 5. Experience with method development and implementation 6. Experience monitoring standards of performance in Quality Control and Quality Assurance
Technical Manager (Director) Microbiology Laboratory	BS or BA in Chemical, Environmental, or Biological Science; including minimum 16 credit hours in the Biological Sciences, including at least one course having microbiology as a major component. Masters or Doctoral degree in one of above disciplines may be substituted for 1 year of experience.	Two (2) years with the analysis of microbiological analytes in an environmental laboratory	1. Advanced technical knowledge of all analytical methods performed by the lab 2. Advanced technical instrumentation/lab systems knowledge 3. Knowledge of safe laboratory practices, OSHA regs and emergency protocols 4. Experience with and understanding of LIMS 5. Experience with method development and implementation 6. Experience monitoring standards of performance in Quality Control and Quality Assurance
Quality Assurance Officer	BS/BA in Chemistry, Biology, Environmental or related Science	Two (2) years Environmental Laboratory Experience	1. Advanced technical knowledge of all analytical methods performed by the lab 2. Knowledgeable in Federal, State and DOD Programs (NELAC, etc.) 3. Able to develop QA/QC policies and certification requirements 4. Able to develop training programs for quality procedures 5. Documented training and/or experience in QA and QA procedures 6. Knowledge of safe laboratory practices and emergency protocols

TITLE*	REQUIRED EDUCATION**	MINIMUM REQUIRED ENVIRONMENTAL LAB EXPERIENCE	MINIMUM REQUIRED SKILLS***
Laboratory Coordinator	High School Diploma; Associates or BS/BA in Chemistry, Biology or Environmental or related Science preferred	1 year +	1. Knowledge of safe laboratory practices and emergency protocols 2. Proficient in all methods and SOP's within their department 3. Experience with and understanding of LIMS 4. Proven ability to meet TAT (turnaround times)
Quality Systems Specialist	BS/BA Chemistry	2 years +	1. General knowledge of laboratory methods 2. Experience with and understanding of LIMS 3. Strong attention to detail 4. Strong oral/written communication and organizational skills 5. Knowledge of QA/QC policies and certification requirements
EH&S Coordinator	High School or Equivalent	2 years +	1. General knowledge of lab operations 2. Detailed knowledge of safe lab practices and emergency protocols 3. Hazardous Waste Management and RCRA Regulation Training 4. DOT Hazardous Materials Regulations Training 5. OSHA Compliance Training 6. Able to develop and deliver new hire and ongoing safety training programs
Lab Technician I	HS or Equivalent	0-1 years. 1+ years preferred.	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures (SOP's) 3. Familiarity with standard and reagent preparation 4. Knowledgeable in using volumetric pipettes and glassware 5. Strong oral/written communication and organizational skills
Lab Technician II	HS or Equivalent	2-4 years	1. All skills of Lab Technician I 2. Trained in majority of technician skills relative to department
Lab Technician III	HS or Equivalent	5 years +	1. All skills of Lab Technician II 2. Experienced in training staff
Lab Technician/Chemist I	BS/BA in Chemistry, Biology, Environmental or related Science	0-1 years	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures (SOP's) 3. Familiarity with standard and reagent preparation 4. Knowledgeable in using volumetric pipettes and glassware 5. Strong oral/written communication and organizational skills
Lab Technician/Chemist II	BS/BA in Chemistry, Biology, Environmental or related Science	2-4 years	1. All skills of Chemist I 2. Trained in majority of department methods

TITLE*	REQUIRED EDUCATION**	MINIMUM REQUIRED ENVIRONMENTAL LAB EXPERIENCE	MINIMUM REQUIRED SKILLS***
Lab Technician/Chemist III	BS/BA in Chemistry, Biology, Environmental or related Science	5 years +	1. All skills of Chemist II 2. Experienced in training staff
Analyst I	HS or Equivalent	0-1 years	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures (SOP's) 3. Experienced with sample handling, preparation and/or extraction
Analyst II	HS or Equivalent	2-4 years	1. All skills of Analyst I 2. Experienced in machine operation, maintenance and troubleshooting
Analyst III	HS or Equivalent	5 years +	1. All skills of Analyst II 2. Experienced in data review and reporting 3. Experienced in training staff
Analytical Chemist I	BS/BA in Chemistry, Biology, Environmental or related Science	6 mos-1 year	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures (SOP's) 3. Experienced with sample handling, preparation and/or extraction
Analytical Chemist II	BS/BA in Chemistry, Biology, Environmental or related Science	2-4 years	1. All skills of Analytical Chemist I 2. Experienced in machine operation, maintenance and troubleshooting
Analytical Chemist III	BS/BA in Chemistry, Biology, or Environmental or related Science	5 years +	1. All skills of Analytical Chemist II 2. Experienced in data review and reporting 3. Experienced in training staff
Data Deliverable Specialist I	HS Diploma, BS/BA or Associates preferred	0-1 years	1. Introductory knowledge of laboratory methods 2.Able to follow direction and Standard Operating Procedures (SOP's) 3. Working knowledge of Adobe Acrobat, Microsoft Word, Excel 4. Good writing and typing skills
Data Deliverable Specialist II	HS Diploma, BS/BA or Associates preferred	2-4 years	1. All skills of Data Deliverable Specialist I 2. General knowledge of laboratory methods 3. Understanding of data review/ data reporting process 4. Experience with and understanding of LIMS and electronic data deliverables

TITLE*	REQUIRED EDUCATION**	MINIMUM REQUIRED ENVIRONMENTAL LAB EXPERIENCE	MINIMUM REQUIRED SKILLS***
Data Deliverable Specialist III	HS Diploma, BS/BA or Associates preferred	5 years +	1. All skills of Data Deliverable Specialist II 2. Intermediate/advanced knowledge of laboratory methods 3. Able to perform report review 4. Experience with and understanding of LIMS and electronic data deliverables 5. Able to initiate re-work where necessary
Laboratory Intern	2 Semesters of Chemistry, Biology or Environmental Science	None; Lab work study experience preferred	1. Knowledge of safe laboratory practices 2. Able to follow direction and Standard Operating Procedures

KEY

* Internal terms only. Full title would have "Environmental Laboratory" and specific department preceding it.

** Substitutions: Equivalent knowledge may be substituted for a degree in some instances.

*** Not meant to be an exhaustive list of skill requirements. For full list of skills consult the "Laboratory Skills" list. Actual Job Duties and Responsibilities can be found within job descriptions for each position.

24 Appendix I – Standard Operating Procedures

WESTBORO SOP #	Title
1728	Waste Management and Disposal
1730	Balance Calibration Check
1733	Thermometer Calibration
1735	Analytical Guidelines for Method Validation
1737	Inorganics Glassware Cleaning and Handling
1738	Water Quality Monitoring
1745	Reagent, Solvent and Standard Control
1747	Datalogger Operation
1948	Separatory Funnel Liquid-Liquid Extraction – EPA 3510C
1953	Organic Extraction Glassware Cleaning & Handling
1954	Soxhlet Extraction – EPA 3540C
1955	Sulfur Cleanup – EPA 3660A
1956	Oil and Waste Dilution – EPA 3580A
1959	Microwave Extraction – EPA 3546
1960	Sulfuric Acid Cleanup – EPA 3665A
1962	Florisil Cleanup
1963	Fractionation Cleanup
1964	Preparation of Samples for Chlorinated Herbicides
2022	Volatile Organic Compounds – EPA 624
2107	Volatile Organic Compounds – EPA 524.2
2108	Volatile Organic Compounds – EPA 8260C
2109	Polynuclear Aromatic Hydrocarbons (PAHs) by SIM – EPA 8270D (modified)
2110	Semivolatile Organics by GC/MS – EPA 625
2111	Semivolatile Organics by GC/MS – EPA 8270D
2112	TCLP/SPLP Extraction - Volatile Organics SW-846 Method 1311/1312
2113	EDB & DBCP in Water by Microextraction & Gas Chromatography – EPA 504.1, 8011
2116	Organochlorine Pesticides by Capillary Column GC – EPA 8081B
2119	Extractable Petroleum Hydrocarbons – MADEP
2120	Volatile Petroleum Hydrocarbons – MADEP
2122	Organochlorine Pesticides & PCBs by Capillary Column GC – EPA 608
2123	Polychlorinated Biphenyls in Oil – EPA 600/4-81-045
2125	TPH-Diesel Range Organics, Maine 4.1.25, EPA 8015C (Modified)
2126	TPH- Gasoline Range Organics, Maine 4.2.17, EPA 8015C (Modified)
2127	CT-ETPH

2128	Herbicides by 8151A
2129	PCBs by Capillary Column Gas Chromatography - EPA 8082A
2131	New Jersey EPH Method
2132	Microwave Assisted Acid Digestion of Aqueous Samples & Extracts – EPA 3015
2133	TCLP Extraction Metals and Semi-Volatile Organics – SW-846 Method 1311
2134	Hot Block Digestion for Aqueous Samples EPA 3005A
2135	SPLP Extraction Inorganics and Semivolatile Organics, EPA 1312
2136	Hot Plate Digestion of Sediments, Sludges and Soils, EPA 3050B
2144	Metals by Inductively Coupled Plasma – EPA 6010C
2145	Mercury in Liquid Waste by Cold-Vapor Atomic Absorption – EPA 7470A
2146	Mercury in Soil or Solid Waste by Cold-Vapor AA – EPA 7471B
2149	Metals by Inductively Coupled Plasma – EPA 200.7
2153	Mercury in Water by Automated Cold-Vapor Atomic Absorption – EPA 245.1
2156	Metals by Inductively Coupled Plasma-Mass Spectrometry – EPA 6020A
2159	Metals by Inductively Coupled Plasma-Mass Spectrometry – EPA 200.8
2161	Fecal Coliform by Membrane Filtration – SM 9222D
2163	Fecal Coliform by Multiple Tube Fermentation – SM 9221E
2191	Heterotrophic Plate Count – SM 9215B
2192	Total Coliform/E.Coli – Presence/Absence (Colilert) – SM 9223B
2193	Total Coliform by Membrane Filtration – SM 9222B
2194	Total Coliform by Multiple Tube Fermentation – SM 9221B
2195	Chlorophyll A – SM 10200H
2196	E. Coli – Membrane Filtration
2197	Chlorophyll A – EPA 446
2198	Air Density Monitoring
2199	Inhibitory Residue Test
2200	Enterococcus – MF
2201	Total Coliform, E.Coli & Enterococcus by Quantification Methods (Quanti Tray)
2202	pH, Liquid Samples
2203	pH, Soil & Waste Samples
2204	Hexavalent Chromium
2205	Biological Oxygen Demand
2206	Ammonia Nitrogen
2207	Total Kjeldahl Nitrogen
2208	Chemical Oxygen Demand
2209	Oil & Grease by n-Hexane Extraction Method & Gravimetry
2210	Cyanide, Total

2211	Phenol, Total
2212	Sulfate, Turbidimetric Method
2213	Alkalinity, Titration Method –SM 2320B
2214	Determination of Inorganic Anions by Ion Chromatography – EPA 300.0
2215	Total Organic Carbon/Dissolved Organic Carbon
2216	Chloride – SM 4500Cl-E, EPA 9251
2217	Nitrate, Nitrite and Nitrate/Nitrite Nitrogen – EPA 353.2, SM 4500NO_3-F
2218	Total Solids (Dried @ 103-105^o) and TVS – SM 2540B, SM 2540E
2219	Total Dissolved Solids – SM 2540C
2220	Total Suspended Solids – SM 2540D
2221	Total Sulfide – SM 4500S2-AD, EPA 9030B
2222	MBAS, Anionic Surfactants – SM 5540C
2223	Fluoride, Electrode Method – SM 4500F-BC
2224	Turbidity, Nephelometric Method – EPA 180.1, SM 2130B
2225	Orthophosphate, Colorimetric Single Reagent Method – SM 4500P-E
2226	Total Phosphorous, Colorimetric Combined Reagent Method – SM 4500P-E
2227	Flashpoint – EPA 1010
2228	Reactivity – EPA Chapter 7.3
2229	Total Solids (Dried @ 103-105^o) – SM 2540G
2230	Specific Conductance and Salinity
2231	True and Apparent Color, Visual Comparison Method
2232	Acidity, Titration Method
2233	Determination of Formaldehyde by HPLC, EPA 8315A
2234	Sulfite, Iodometric
2235	Ferrous Iron
2236	Residual Chlorine
2237	ORP
2238	Ignitability of Solids EPA 1030
2239	Physiologically Available Cyanide (PAC)
2240	Total Settleable Solids SM 2540 F
2241	Fixed and Volatile Solids in Solid and Semisolid Samples – SM 2540G
2242	Tannin & Lignin
2243	Nitrite - Manual Colorimetric Method
2244	Paint Filter Liquids Test
2245	Odor, Threshold Odor Test
2249	Dissolved Oxygen
2251	Perchlorate by IC/MS/MS
2274	Data Validation Package Generation
3743	Free Cyanide
9177	Total Phenol - SEAL Method

9733	Oil & Grease and TPH in Soil
10807	Percent Organic Matter in Soil

MANSFIELD SOP #	Title
1753	Glassware Cleaning
1754	Balance Calibration
1755	Pipette Checks
1796	Sample Management - Forensics
1797	Haz Waste
1816	Reagent Solvent Standard Control
2137	ICP-MS EPA 6020A
2138	Mercury Aqueous 7470A
2139	Mercury Soil 7471B
2140	AVS SEM
2141	Hydride Generation
2142	Mercury Aqueous 1631E
2143	Mercury Soil 7474
2148	Metals Soil Digestion 3050
2150	Metals Microwave 3015
2151	Metals Acid Digestion 3020
2152	Seawater Extraction of Metals
2154	TCLP 1311
2155	EPA 8270D
2157	PAH by SIM
2158	EPA 8081B
2160	EPA 8082A Aroclors/Congeners by GC
2162	Pesticides/PCB Aroclors/Congeners by GC/MS SIM
2164	1,4-Dioxane GC/MS SIM
2165	Separatory Funnel Extraction EPA 3510C
2166	Tissue Prep
2167	GPC
2168	Sulfur Cleanup 3660
2169	Sulfuric Acid Cleanup 3665
2170	Silica Gel Cleanup
2171	% Lipids
2172	Microscale Solvent Extraction EPA 3570
2173	Soxhlet Extraction EPA 3540C
2174	Soxhlet Extraction of PUFs

2175	% Total Solids
2182	TOC soot-soil
2183	Particle Size Determination
2184	Particulates in Air PM-10
2185	Volatile Solids
2186	TO-15
2187	APH
2188	Air PIANO
2189	Dissolved Gases
2190	Can Cleaning
2246	TPH and SHC
2247	Alkylated PAH
2248	Organic Lead
2252	Fixed Gases
2253	TO-11A
2255	PIANO Volatiles
2256	Ethanol in Oil
2257	Whole Oil Analysis
2259	Density Determination of Oils
2260	Alumina Cleanup
2261	Shaker Table
2263	Gravimetric Determination
2264	Tissue Extraction
2265	Organic Waste Dilution
2267	Client SOP: SGC - Manual Method
2268	Client SOP: DCM Extractable Method
4246	PAHs by SPME
6398	TO-17
6438	Mercury in Sorbent Tubes by CVAA
7900	Mercury 1631E Using Cetac-M-8000 Analyzer
9077	Porewater Generation
9480	EPA-TO-12
9745	Formaldehyde - HPLC
12863	EPA 8270D GC/MS Full Scan TO-13A
13091	HPAH
13392	EPA TO-10A
13406	Particulate Organic Carbon

CORPORATE SOP #	**Title**
1559	Sample Receipt and Login
1560	Sample Custody and Tracking
1561	Bottle Order Preparation
1562	Computer System Backup/Control
1563	Computer and Network Security
1564	Software Validation and Control
1565	Training Program
1566	Report Generation and Approval
1567	Organics Data Deliverable Package Review
1722	Customer Inquiry and Complaint Procedures
1723	Customer Service
1724	Quote/Contract Procedure
1725	Project Communication Form Generation
1726	Purchasing Procedure
1727	Accounts Payable Invoice Processing
1729	Document Control
1731	Manual Integration and Compound Rejection
1732	DL LOD LOQ Generation
1734	Control Limit Generation
1736	Corrective and Preventative Actions
1739	Demonstration of Capability (DOC) Generation
1740	Internal Audit Procedure
1741	Data Review – Organics
1742	Calculating Measurement Uncertainty
1743	Annual Management Review
1744	Sample Compositing Procedure
1746	Nonconformance Planning/Procedures