FINAL
REMEDIAL INVESTIGATION REPORT
FOR
34 WOODRIDGE LANE (BLOCK L, LOTS 38, 81, 148, 149, and 150)
SEA CLIFF, NEW YORK
BCP Site # C130203



Prepared for:

Saeid Jalayer
Shoreham, New York

December 2013

Project
130451

CORNERSTONE
Environmental Group, LLC

90 Crystal Run Road, Suite 201, Middletown, NY 10941

Building lifetime relationships with our clients and employees.

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The material and data in this report were prepared under the supervision and direction of the undersigned.

Cornerstone Environmental Group, LLC

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I, Leslie Sparrow, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and *that this Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.*

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1 INTRODUCTION

1.1 Background

The subject property is located at 34 Woodridge Lane in the Village of Sea Cliff, Long Island, New York. Specifically, the Site is designated as Section 21, Block L, Lots 38, 81, 148, 149 and 150 in the Village of Sea Cliff, Town of Oyster Bay, Nassua County, New York. The location of the site is shown on Figure 1-1. The five lots are shown on Figure 1-2. A Phase I Environmental Site Assessment (ESA) was completed for the Site in April 2004, which disclosed indications of filling and the presence of surface debris. Subsequent sampling of waste material, visually identified as coal ash, demonstrated the presence of heavy metal contaminination, primarily arsenic, on the Site, which exceeded the Part 375 unrestricted use standards.

An application to include Lot 150, as well as the four adjacent lots, under the Brownfield Cleanup Program (BCP) was submitted to NYSDEC in January 2010. The BCP application was subsequently approved on August 31, 2010 for Lot 150 only. Adjacent Lots 38, 81, 148 and 149 were not approved by NYSDEC due to insufficient data at the time of the application. Subsequently, soil sampling was conducted in December 2010 on the four adjacent lots, and an application to reconsider these lots for inclusion into the BCP was submitted to NYSDEC on December 22, 2010. An amendment to add Lots 38, 81, 148 and 149 to the BCP Site was approved by NYSDEC on February 9, 2011.

Saeid E. Jalayer, who is an owner of the Site, is a Volunteer as defined in ECL 27-1405(1)(b). The Brownfield Site Cleanup Agreement (BCA) requires that a Remedial Investigation be conducted, and a work plan detailing the scope of work to be conducted be submitted to NYSDEC for approval.

A draft Remedial Investigation Work Plan (RIWP) for the five lots was submitted to NYSDEC in March 2011. Following comments from NYSDEC and a 30-day public comment period, the Remedial Investigation Work Plan dated July 2011 was approved by NYSDEC on July 14, 2011.

1.2 Purpose

The principal objective of the remedial investigation (RI) is to meet the requirements of the BCA, and following NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (DER-10), investigate the nature and extent of the contamination that has been found on the Site, as well as evaluate the actual or potential adverse impact to fish and wildlife resources and actual or potential threats to public health and the environment. The results of the work conducted according to the approved RIWP and presented in

Section 3 detail the results of a program to delineate the horizontal and vertical limits of the waste material found on the Site, determine the direction of groundwater flow across the property, investigate potential groundwater contamination, and evaluate exposure pathways with respect to public health and biota. The end result is to acquire sufficient data so that a site-wide Remedial Action Work Plan (RAWP) can be prepared for all media of concern.

2 SITE DESCRIPTION AND HISTORY

2.1 Site Description

As stated in Section 1.1, the Site is designated as Section 21, Block L, Lots 38, 81, 148, 149 and 150 in the Village of Sea Cliff, Town of Oyster Bay, Nassau County, New York. The Site is located on the corner of Bryant Avenue and Prospect Avenue, with access on Woodridge Lane via a driveway for a vacant house on Lot 38 and on Bryant Avenue via a concrete entranceway to Lot 150. It is located on part of a peninsula surrounded on the west by Hemstead Harbor, which is part of Long Island Sound.

The Site is located in a suburban residential setting, with single-family homes to the north and east. A single-family home is located on Lot 38, while the remaining lots are currently vacant. The Site rises from approximately 10 feet to 60 feet above sea level, and slopes westward towards Hemstead Harbor, which is approximately 50 feet away.

The topography of the Site is uneven, due to the history of fill placement. The western half of the property drops down approximately 30 feet from the top of a cliff located about 15 feet east of Prospect Avenue. At the northern boundary of the Site, the property drops off sharply to the north toward the adjacent property's fenceline. Several soil and debris piles are present at the top of the cliff. A previously excavated area is situated along the eastern boundary of the concrete entranceway on Lot 150. The previously excavated area is approximately 40 feet wide, 60 feet long, and 8 feet deep.

Land use within a half mile radius of the Site is shown on Figure 2-1. Shown are the Site's proximity to residences, parks, wetlands and surface water bodies, as well as the location of an emergency water supply well operated by Aqua New York of Sea Cliff (NYSDEC Well No. N-0091). Aqua New York is the water purveyor for the Village of Sea Cliff. A more detailed discussion of the Site's human exposure and ecological assessments are presented in Sections 3.4 and 3.5, respectively.

2.2 Site Historical Information

Lots 148, 149 and 150 were originally part of Lot 72, which was subsequently divided into the 3 present lots. A single-family residential home is located on Lot 38. Lots 148, 149 and 150, as well as adjacent Lot 81, were undeveloped parcels that sloped steeply towards Prospect Avenue. Interviews with neighbors indicated that filling of these parcels had occurred throughout the 1970's. In addition, records from the Village Building Inspector show numerous letters to the property owner demanding that illegal dumping cease on the property (Lot 38, (former lot) 72 and Lot 81 inclusive).

An in-ground swimming pool was constructed on the Site (current Lot 150) by the former property owner, after the filling had occurred. A driveway accessing the pool from Bryant Avenue was also constructed. Only the driveway currently remains.

2.3 Regional and Site Geology and Hydrology

A description of the regional and site geology and hydrology was presented in the BCP application for the Site. As stated in the application, the Site is located in northwestern Nassau County, and occurs on the northern side of the Harbor Hill terminal moraine. The Harbor Hill terminal moraine, consisting of a series of coalescing irregular hills, forms a pronounced ridge, trending to the northeast, rising 80 to 150 feet above the headlands.

In the subsurface, unconsolidated sediments of Pleistocene and Cretaceous age, 200 to 800 feet thick, constitute the groundwater reservoir of the area. The reservoir includes three discrete aquifers. The shallow unconfined aquifer consists of permeable Pleistocene and Cretaceous deposits, which lie within the upper part of the zone of saturation. The aquifer extends from slightly below sea level to a depth of more than 110 feet in much of the area of Nassau County. The intermediate or principal aquifer of Long Island is the Magothy formation that occurs from about 50 feet below sea level downward to the top of the clay layer of the Raritan formation. The principal aquifer has limited extent to the north, but is the chief source of water in Nassau County, except the peninsulas. The lower or deepest aquifer found beneath Long Island consists of the Lloyd sand member of the Raritan formation and the hydraulically contiguous Jameco gravel. The lower limit of this aquifer is the bedrock surface, and the upper limit is defined by the overlying clay member of the Raritan formation and the Gardiners clay.

As part of the remedial investigation, test pits were advanced and groundwater monitoring wells were installed across the Site. Based on the results of the test pits, fill material varies in thickness across the site from zero feet (ie not present) to greater than 14.5 feet (the extent of the reach of the backhoe). Detailed test pit lithology is presented in Section 3. Based on groundwater levels measured in the four Site monitoring wells, the direction of groundwater flow is towards the southwest, towards Hempstead Harbor.

2.4 Results of Phase I and Prior Records Search

A Phase I ESA was conducted in April 2004 by Dru Associates, Inc. of Glen Cove, New York for Lots 72 (former lot) and 81. The Phase I ESA was submitted as Exhibit D to the BCP application. As stated in Section 1.1, the Phase I ESA found evidence of filling and the presence of surface debris. A Records Search found no records of waste disposal or hazardous material releases on or adjacent to the site.

The Phase I ESA stated in its conclusions that, as no conclusion can be drawn about the environmental condition of the fill on the site, further testing is recommended.

2.5 Results of Prior Soil Sampling

A composite soil sample was collected on April 12, 2006, from dark stained soils along the north wall of a foundation excavation associated with a proposed residential structure on Lot 150. The composite soil sample was analyzed for the full NYSDEC TAGM 4046 list. The composite sample contained non-detectable concentrations of VOCs, SVOCs, herbacides and pesticides. Arsenic, iron and zinc were detected above the TAGM 4046 Recommended Soil Cleanup Objectives (RSCOs). A comparison with the Unrestricted Use Soil Cleanup Objectives (Tables 375-6.8(a) and 375-6.8(b)) listed in 6NYCRR Subpart 375-6.8, show that arsenic and manganese exceed the unrestricted use criteria.

Applemon Corporation was contracted in April 2006 to conduct a site inspection and collect soil/waste samples from test pits advanced on the Site. Five soil/waste samples were collected on April 24, 2006. As stated in their report, samples TP-1 and TP-2 were collected from adjacent soil layers not impacted by waste and represent background conditions. Sample TP-3 was collected from a stockpile of what was visually described as coal ash excavated from the site. Sample TP-4 was collected from the soils mixed with apparent coal ash. Sample TP-5 was collected from an exposed in-ground deposit of waste/coal ash. The collected samples were analyzed for priority pollutant metals. The results found elevated levels of arsenic above RSCOs in samples TP-3 and TP-5. These results were also compared with the Subpart 375-6.8 Unrestricted Use Soil Cleanup Objectives. Arsenic was the only metal detected above the unrestricted use criteria.

The analytical results for both the April 12 and April 24, 2006 soil/waste samples were included as exhibits in the BCP application and as an appendix to the RIWP.

2.5.1 Results of December 2010 Soil Sampling

A preliminary site survey was conducted on December 9, 2010 on Lots 38, 81, 148 and 149 to locate and sample coal ash on these properties to ascertain whether a request for inclusion of these lots into the BCP should be considered. Eight test pits were advanced, with coal ash samples TP-1A, TP-2A, TP-4A, TP-5A, TP-6A, TP-7 and TP-8 collected for analysis of TAL metals, volatile organics, and semi-volatile organics. Results of the analyses of the coal ash samples found that all seven samples exceed the Subpart 375.6 Unrestricted Use criteria for arsenic, and 6 of the 7 samples exceed the Restriced Residential critera. In addition, a sample identified as asphalt exceeds both the Unrestriced and Restricted Residential criteria for various semivolatile organic chemicals. Analytical results for these samples were included as an appendix to the RIWP. As stated in Section 1.1, the amendment to include all five of the property lots within the BCP Site was approved by the Department on February 9, 2011. The results of this sampling were used to develop the RIWP soil sampling plan.

3 REMEDIAL INVESTIGATION

3.1 Soil Investigation

The approved RIWP called for the advancement and sampling of test pits to characterize the nature and extent of the coal ash and other waste materials throughout the Site. This task also included conducting a geophysical survey prior to advancing the test pits. The purpose of the geophysical survey was to provide information regarding the presence of buried drums or other conductive anomalies which could provide information on prior dumping activities as well as to determine the presence of subsurface utilities or anomalies that could hinder the investigation.

Soil investigation activities were conducted by CDM Federal Programs Corporation (CDM Smith) on behalf of EPA Region 2. CDM Smith was contracted to conduct a Phase II Environmental Site Assessment (ESA) Report for the Targeted Brownfields Assessment (TBA) of the Site. As part of the TBA, CDM Smith was tasked with performing the test pit soil investigation and conducting the geophysical survey.

The following activities were performed by CDM Smith as part of the Phase II ESA:

- Preparation of a Site-Specific Quality Assurance Project Plan (QAPP).
- Preparation of a Site-Specific Health and Safety Plan (HASP).
- Site reconnaissance conducted on September 10, 2012.
- Held field planning meeting among the CDM Smith TBA team via conference call on November 27, 2012.
- Cleared Site of vegetation/debris by owner, from November 26 through December 14, 2012, prior to the geophysical survey and test pit investigation.
- Conducted geophysical survey on December 3 and December 13, 2012 to determine the presence of subsurface utilities and anomalies that may hinder the investigation and potential future remedial activities.
- Excavation of 19 test pits, from December 10 through December 20, 2012 to delineate the extent of fill and buried waste material onsite and to collect soil samples.
- Collection of surface and subsurface soil samples from the test pits to characterize the fill and waste materials.
- Global Positioning System (GPS) survey of test pit locations conducted on December 19, 2012.

The results of CDM Smith's ESA are presented in the Final Phase II Environmental Site Assessment Report, dated May 14, 2013 (Phase II Report), which is presented in Appendix

A. This report should be referred to for details of the geophysical survey, test pit excavation and sampling, lithology evaluation, soil analytical results, and quality assurance/quality control and data usability. As the work was conducted on behalf of the EPA, the applicable soils criteria and subsequent conclusions do not necessarily reflect those of the NYSDEC BCP. Thus, the results of the investigation pertinent to defining the nature and extent of the soils contamination on the Site per DER-10 are presented in this section.

3.1.1 Soil Cleanup Objectives

NYSDEC CP-51 Soil Cleanup Guidance (CP-51)was utilized to determine the applicable Soil Cleanup Objectives (SCOs) for the Site. Under the BCP, soil cleanup levels corresponding to the cleanup track under which the site is being rememdiated are required to be met. The current and intended future use of the Site is single-family Residential, and a Track 2 cleanup is appropriate for this site. Track 2 cleanups may consider the current, intended, or reasonably anticipated future use in determining the appropriate cleanup levels for soil, and follows Approach 2 presesented in CP-51. Under this approach, soil cleanup levels will be established consistent with the SCOs set forth in 6 NYCRR Table 375-6.8(b), selecting the lowest SCO in the categories described below:

- Select the applicable land use category for the protection of public health (residential, restricted residential, commercial or industrial);
- Determine if the SCOs for the protection of groundwater are applicable; and
- Determine if the SCOs for the protection of ecological resources are applicable.

The land use category for the protection of public health is residential, as long term (greater than 5 years) institutional and engineering controls or site management plans are not considered. Track 2 cleanups do allow institutional and engineering controls which limit site use and the use of onsite groundwater without regard to duration. The applicable SCOs for this track are NYSDEC Table 375-6.8(b) Restricted Use Soil Cleanup Objectives - Protection of Public Health Residential (Residential).

Per CP-51, a determination was also conducted on the applicability of SCOs for the protection of ecological resources and groundwater. As detailed in Section 5 Fish and Wildlife Resources Impact Analyis (FWRIA), no significant terrestrial ecological resources were found to exist on the Site. Since no significant habitat exists for food, cover, bedding, breeding, etc, exposure with Site soils would be extremely limited by transient wildlife potentially passing through the Site. Further, the SCO for the protection of ecological resources do not apply to the protection of the aquatic environment. Therefore the SCOs for the protection of ecological resources is not applicable.

In dermining whether the SCOs for the protection of groundwater are applicable, CP-51 states:

1. Except as provided for in (2) below, the protection of groundwater SCOs will be applicable where:
   (i) contamination has been identified in on-site soil by the remedial investigation; and
   (ii) groundwater standards are, or are threatened to be, contravened by the presence of soil contamination at concentrations above the protection of groundwater SCOs.

2. DEC may provide an exception to the applicability of the protection of groundwater SCOs, as set forth in 6 NYCRR 375-6.5(a)(1), when (i), (ii), and (iii) exist and either (iv) or (v) also apply, as described below.
   (i) The groundwater standard contravention is the result of an on-site source which is addressed by the remedial program.
   (ii) An environmental easement or other institutional control will be put in place which provides for a groundwater use restriction.
   (iii) DEC determines that contaminated groundwater at the site:
      (a) is not migrating, nor is likely to migrate, off-site; or
      (b) is migrating, or is likely to migrate, off-site; however, the remedy includes active groundwater management to address off-site migration.
   (iv) DEC determines the groundwater quality will improve over time.
   (v) The groundwater contamination migrating from the site is the result of an off-site source of contamination, and site contaminants are not contributing consequential amounts to the groundwater contamination.

In addressing the conditions outlined in paragraphs 1(i) and (ii) above, one group of contaminants has been identified in both site soils and groundwater above remediation standards. Pesticides have been identified in Site soils, as will be discussed in the following sections. Further, NYS Groundwater Quality Standards are exceded for a number of pesticides in one or more monitoring wells or well points, as discussed in Section 3.2. But, Protection of Groundwater SCOs are not considered applicable due to exceptions that DEC may apply, per conditions outlined in paragraph 2. above as well as other considerations. As discussed in Section 3.2, while the use of the unconfined groundwater beneath the Site as a potable source is unlikely due to high sodium concentrations likely due to saltwater intrusion, DEC may require an institutional control restricting the use of groundwater be applied to the Site.

Based on the above analysis, the applicable SCOs for the Site are the Residential SCOs. Per DER-10 Seciton 3.14(c), the RI should determine the extent to which the unrestricted use (Standards, Criteria and Guidance) SCGs have been exceeded or contravened. In addition, the remedial party may evaluate the extent to which the use-based SCGs under consideration for the site have been exceeded or contravened. Thus, the soil data tables presented in the following sections are compared with the Unrestricted Use SCOs, The Residential SCOs, and the Protection of Groundwater SCOs.

3.1.2 Test Pits and Shallow Soil Samples

Shallow and subsurface soil samples were collected at nineteen test pit locations advanced throughout the Site. The test pits werer designated TP-100 through TP-118. Test pit locations are presented on Figure 2-1 of the Phase II Report (Appendix A). Two to five soil samples were collected from each test pit, with a total of 64 soil samples being collected. Per the approved RIWP, samples were analyzed for TCL VOCs, SVOCs, pesticides, PCBs, soil moisture, TAL metals including mercury and cyanide, and hexavalent chromium. The following sections summarize the analytical results of the soil samples. Laboratory analytical data will be submitted in electronic data deliverable format per DER-10 Section 1.15.

3.1.3 Volatile Organics

The soils data presented in the Phase II Report was validated by EPA. Due mostly to continuing calibration, internal standards and response factor quality control (QC) issues, many VOC results were rejected. Many of these were non-detect VOCs, and included all 1,4-dioxane results. Of the usable VOC data, eight VOCs were detected, however, none were detected above Unrestricted Use SCOs.

3.1.4 Semi-Volatile Organics

A summary of the semi-volatile organic compounds (SVOCs) detected above Unrestricted Use SCOs (yellow shading), Residential SCOs (gray shading), and the Protection of Groundwater SCOs (red numbers) are presented in Table 3-1. For the detected SVOCs, the Unrestricted Use and Residential SCOs have the same limit. SVOCs above Unrestricted Use/Residential SCOs were detected in three of the nineteen test pits. Benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene were detected above Unrestricted Use/Residential SCOs at TP-105. Benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene were detected above Unrestricted Use/Residential SCOs at TP-102, and benzo(b)fluoranthene was detected above Unrestricted Use/Residential SCOs at TP-106. The exceedences were not restricted to any one soil type, but were found in similar concentrations in the top soil fill, construction debris fill, and coal ash. SVOC compounds detected above Residential SCOs are shown on Figure 3-1.

3.1.5 Pesticides and PCBs

A summary of the pesticides and PCBs detected above the soil SCGs are presented in Table 3-1. PCBs Arochlor-1254 and Arochlor-1260 were detected above Unrestricted Use SCO at one location, TP-114, in the surface top soil fill sample. The concentration of Arochlor-1254 at this location also exceeded the Residential SCO.

One or more pesticides were detected above Unrestricted Use SCOs in fifteen of the nineteen test pits, in 34 of the 64 soil samples. The exceedences were not restricted to any one soil type, but were found in the top soil fill, construction debris fill, coal ash and native sand samples. Only one pesticide, dieldrin, was detected above Residential SCO. Dieldrin

was detected above its Residential SCO in the top soil fill sample from TP-106. The PCB sample and the dieldrin sample detected above Residential SCOs are also shown on Figure 3-1.

3.1.6 Metals

A summary of the metals detected above the soil SCGs are presented in Table 3-1. Arsenic, barium, chromium, hexavalent chromium, copper, lead, manganese, mercury, nickel and zinc were detected in one or more soil samples above Unrestricted Use SCOs. Eighteen of the nineteen test pits, and forty-seven of the sixty-four soil samples detected one or more metal above Unrestriced Use SCOs. Arsenic, barium, chromium and hexavalent chromium were also detected above Residential SCOs. Arsenic was detected as high as 178 mg/kg, in coal ash at a depth of 14-14.5 feet in TP-108. The Residential SCO for arsenic is 16 mg/kg.

Twelve of the eighteen arsenic samples above Residential SCOs were detected in coal ash samples. Eight of the nine barium samples detected above Residential SCOs were from coal ash samples. Three of the four chromium samples and the one hexavalent chromium sample detected above Residential SCOs were from the top 2 inches of top soil fill. Metals samples detected above Residential SCOs are shown on Figure 3-2.

3.1.7 Summary of Test Pit and Shallow Soil Sampling Data by Soil Type

The following summarizes the soil analytical data presented above by soil type:

Based on Unrestricted Use SCO -

In the shallow top soil fill (0 to 2 inches bgs), two (2) SVOCs, five (5) pesticides, two (2) PCBs, and seven (7) metals were detected above Unrestricted Use SCO;

In the construction debris fill, four (4) SVOCs, five (5) pesticides, and seven (7) metals were detected above Unrestricted Use SCOs;

In the coal ash, one (1) SVOC and seven (7) metals were detected above Unrestricted Use SCOs;

In the natural sand, three (3) pesticides and one (1) metal were detected above Unrestricted Use SCOs.

Based on Residential SCO -

In the shallow top soil fill (0 to 2 inches bgs), two (2) SVOCs, one (1) pesticide, one (1) PCB, and three (3) metals were detected above Residential SCO;

In the construction debris fill, four (4) SVOCs and three (3) metals were detected above Residential SCOs;

In the coal ash, one (1) SVOC and two (2) metals were detected above Residential SCOs;

In the natural sand, one (1) metal was detected above Residential SCO.

The extent of the coal ash, and estimated thickness of other fill material found on the Site, are presented on Figure 2-2 of the Phase II Report (Appendix A). Construction debris fill was present at all locations except at the bottom of the cliff (test pits TP-100, TP-101, and TP102), and near the driveway from Woodridge Lane (TP-112), and ranged in thickness from 3.5 ft to over 14.5 ft (the reach of the backhoe). Coal ash was observed in 10 test pits, and the horizontal extent of the coal ash across the Site is estimated at approximately 0.4 acres. In some test pits the depth of the coal ash exceeded 14.5 ft (the reach of the backhoe).

It is anticipated that further refinement in the horizontal and vertical extent of the coal ash (the grey shaded area shown on Figure 2-2 of the Phase II Report) would be conducted as part of a pre-design phase of the selected remedy for the coal ash. Areas to the west of TP-106, TP-107, and TP-108, east of TP-116, north and east of TP-111, and in the interior at TP-117, would be investigated with a Geoprobe to refine the limits of the coal ash to define potential excavation or treatment areas. The Alternative Analysis Report (AAR) will include these pre-design costs for proposed remedies of the coal ash. The details of the pre-design program will be presented in the Remedial Action Work Plan (RAWP). See Section 7.2 for additional discussion on the RAWP and pre-design activities.

3.2 Groundwater Investigation

The approved RIWP called for four (4) monitoring wells to be installed on the Site to determine the direction of groundwater flow and to monitor the groundwater for possible contamination due to the placement of the waste material. In addition, to provide further characterization of the groundwater over the entire property, shallow groundwater samples were to be collected from three (3) temporary well points (WP-1, WP-2 and WP-3) established within the interior of the property, and deep groundwater samples were to be collected from three (3) deeper temporary well points (WPD-4, WPD-5 and WPD-6) established along the downgradient edge of the property.

Well construction activities for the four permanent monitoring wells were conducted between March 1 and March 4, 2013. The six temporary well points were advanced on March 19, 2013, with groundwater samples collected the same day. Locations for the four monitoring wells and six temporary well points are shown on Figure 3-3. Well construction details are presented in Table 3-2. Monitoring well logs and field notes for the monitoring wells and well points are included in Appendix B.

Water level measurements were taken on June 10, 2013, at the same time that the locations and elevations of the monitoring wells and soil gas survey locations were surveyed. A groundwater elevation contour map showing the direction of groundwater flow is presented in Figure 3-4. The direction of flow for the unconfined aquifer beneath the Site is towards the southwest, towards Hempstead Harbor. Discharge of the unconfined groundwater is likely to Hempstead Harbor.

3.2.1 Standards, Criteria and Guidance

The groundwater samples collected from the 10 monitoring wells and well points were analyzed for the full TCL+30 (target compound list plus the 10 volatile organic compounds and 20 semi-volatile organic compounds highest concentration TICs) plus the full TAL inorganic analytical list, in accordance with DER-10 Section 2.1 and the approved RIWP. Groundwater samples were also analyzed for hexavalent and trivalent chromium. While the RIWP called for the use of Low Flow methodology for groundwater sampling, in the event that the collected samples exhibited turbidity, an additional field filtered sample was to be collected for dissolved metals analysis. Samples collected from the monitoring wells and well points were field filtered and submitted for dissolved metals analysis.

Analysis of the metals data (Section 3.2.4) showed high concentrations of sodium, magnesium, calcium and potassium in both total and dissolved groundwater samples. While Site groundwater likely discharges to Hempstead Harbor, due to its proximity, saltwater intrusion is likely impacting the groundwater quality beneath the Site, resulting in a brackish groundwater mixing zone. For this reason it is unlikely that the unconfined groundwater beneath the Site would be used as a potable water source. Further, the area is already serviced by a public water supply system. Due to the water quality beneath the Site, DEC may require an institutional control restricting the use of groundwater be applied to the Site. Based on these considerations, the SCG for groundwater beneath the Site is considered to be NYSDEC Surface Water Quality Standards for SA Waters (SWQS-SA). As detailed in Section 5, Hempstead Harbor in the vicinity of the Site is classified as SA. The analytical results presented in the following sections are compared to both Groundwater Quality Standards for Class GA (GWQS) and SWQS-SA, from NYSDEC Part 703.5 Table 1.

3.2.2 Volatile and Semi-Volatile Organics

Table 3-3 summarizes the results for volatile organics for groundwater samples from the six temporary well points, and Table 3-4 summarizes the results for the four monitoring wells. No volatile organics were detected above GWQS or SWQS-SA.

No semi-volatile organic compounds were detected in the groundwater samples for the four monitoring wells and six temporary well points.

3.2.3 Pesticides and PCBs

Table 3-5 summarizes the results for pesticides and PCBs for groundwater samples from the six temporary well points, and Table 3-6 summarizes the results for the four monitoring wells. Concentrations which exceed GWQS are shaded gray, and concentrations which exceed SWQS-SA are in red. Only one pesticide, dieldrin, exceeded GWQS. Dieldrin was detected above GWQS in WPD-4 and MW-2. Dieldrin also exceeded SWQS-SA in both wells. In addition, 4,4'-DDT exceeded SWQS-SA in WP-3. Pesticides and PCBs detected above GWQS and SWQS-SA are shown on Figure 3-5.

3.2.4 Metals

As stated in Section 3.2.1, Per the approved RIWP, groundwater samples were collected for both total metals analysis, and were also field filtered and submitted for dissolved metals analysis. Table 3-7 summarizes the results for total metals for groundwater samples from the six temporary well points, and Table 3-8 summarizes the dissolved metals results for the temporary well points. Table 3-9 summarizes the total metals results for the four monitoring wells, and Table 3-10 summarizes the dissolved metals results for the four monitoring wells. Concentrations which exceed GWQS are shaded gray, and concentrations which exceed SWQS-SA are in red.

Analysis of the metals data shows a distinct difference between the total and dissolved metals results. From the total metals data, nine (9) metals, arsenic, chromium, hexavalent chromium, iron, lead, manganese, nickel, selenium and sodium were detected above GWQS. Three metals, copper, nickel and zinc were detected above SWQS-SA. In the dissolved metals samples, four (4) metals, iron, manganese, selenium and sodium were detected above GWQS. No SWSQ-SA criteria exists for these four metals, thus no dissolved metals were detected above SWQS-SA.

As discussed in Section 3.2.1, due to the proximity to Hempstead Harbor, saltwater intrusion is likely impacting the groundwater quality beneath the Site, resulting in a brackish groundwater mixing zone. The high concentrations of sodium, magnesium, calcium and potassium in both total and dissolved groundwater samples would be expected to remain unchanged by field filtering. The significant reduction in concentrations of arsenic, chromium (total and hexavalent), copper, iron, lead and zinc are likely attributable to those metals being adhered to particulate matter rather than the aqueous fraction of the groundwater. From this analysis, the data suggests that the dissolved metals analysis is more representative of groundwater beneath the Site.

Total metals detected above GWQS and SWQS-SA are shown on Figure 3-6. Dissolved metals detected above GWQS are shown on Figure 3-7. Based on the analysis above and the determination that the SWQS-SA is the SGC for the Site groundwater, there are no metals detected above the Site SCG.

3.3 Soil Gas Survey

As specified in the approved RIWP, a soil gas survey was conducted on the Site. A draft Soil Gas Survey Work Plan & Project Schedule was submitted to NYSDEC and NYSDOH on May 22, 2013. Following comments received from NYSDEC and NYSDOH on June 3, 2013, a revised Soil Gas Survey Work Plan and Project Schedule was submitted to NYSDEC on June 4, 2013. The soil gas survey was conducted by Cornerstone on June 5, 2013. To correct errors later identified in the June 4th Work Plan that misidentified field monitoring equipment, a revised Soil Gas Survey Work Plan and Project Schedule was submitted to NYSDEC on June 24 which clarified aspects of the work that was conducted on June 5th. The Revised Soil Gas Survey Work Plan & Project Schedule dated June 24, 2013, included in Appendix C, which was prepared according to NYSDEC DER-10 Section 3.6 and NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 (NYSDOH Guidance) represents the procedures that were followed for the soil gas survey that was conducted on June 5th.

The purpose of the soil gas survey was to evaluate the potential for future exposures due to vapor intrusion from areas of known or suspected contamination. Based on the results of the test pit soil sampling and groundwater sampling from the Site's temporary and permanent monitoring wells, five (5) locations were selected for sampling. Soil gas sample locations SG-1 and SG-2 are in the vicinity of groundwater monitoring wells MW-1 and MW-3, which detected very low concentrations of chlorinated organic compounds in the March 2013 sampling event. While all VOC groundwater sampling results were below applicable NYSDEC criteria, two (2) soil gas sampling locations were selected to investigate the vadose zone soil vapor in these areas. Soil gas sample locations SG-3 through SG-5 are located in areas where test pits encountered construction debris, with or without coal ash. Location SG-2 is also located in an area of mixed ash and construction debris fill. Representative soil gas samples were collected at the five (5) locations from a depth of approximately eight (8) feet, comparable to the expected depth of foundation footings. In addition, depths great than 5 feet below grade are recommended in Section 2.6.1 of the NYSDOH Guidance to prevent negative bias due to infiltraton of outdoor air. Locations of the soil gas samples are presented on Figure 3-8.

According to NYSDOH Guidance Section 2.7.1, soil vapor probe installations may be permanent, semi-permanent, or temporary. It states that temporary probes should only be used if measures are taken to ensure that an adequate surface seal is created to prevent outdoor air infiltration and if tracer gas is used at every sampling location. Temporary soil gas sampling points were utilized for this event, and both measures were taken. Soil gas sampling points were installed using Geoprobe drilling performed by Zebra Environmental of Lynbrook, NY. Expendable soil vapor points were driven to a depth of eight feet. Approximately 2 feet of sand was backfilled around the point, and the remainder of the depth was sealed with a bentonite slurry. One quarter inch (1/4") ID Teflon tubing was used in each soil vapor point.

Sampling protocols followed those presented in NYSDOH Guidance Section 2.7.1, and included use of a tracer gas (helium) per Section 2.7.5. After all of the probes were installed and the bentonite had set, sampling was initiated. with approximately three

volumes of sample probe and tube purged prior to sampling. Purge volume calculations were conducted in the field, and based on an estimated 14 feet of 0.25" ID tubing, and a purge rate of 0.2 liters/minute, in order to purge approximately three volumes of sample probe and tubing, purging was performed for 2 minutes. A helium leak detector (MGD – 2002) was utilized to provide real time monitoring of tracer gas. Samples were collected into Tedlar bags and measured for the presence of the tracer gas. While helium was measured under the plastic tub placed over the probe assembly, no helium was detected in the tedlar bags. This confirmed that no outdoor air infiltration was occurring. Helium readings and beginning and ending pressure readings are included in the Soil Gas Field Notes which are also presented in Appendix C.

Soil vapor samples were collected into 6-liter Summa canisters and analyzed for volatile organics using Method TO-15 and methane using EPA 3C, and collected into Tedlar bags and analyzed for hydrogen sulfide using EPA 15_16. Samples were submitted to TestAmerica of South Burlington, VT, for analysis. Analytical results for the five soil gas samples are presented in Table 3-11. Methane and hydrogen sulfide were non-detect in all five samples. As stated in Sections 3.2.5 and 3.3.1 of the NYSDOH Guidance, the State of New York does not have any standards, criteria or guidance values for concentrations of volatile chemicals in subsurface vapors (either soil vapor or sub-slab vapor).

NYSDOH has developed several guidelines for chemicals in air. These chemicals and their air guidance values are presented in Table 3-1 of the NYSDOH Guidance. For screening purposes, the Site soil gas sample results were compared to these air guidance values. For the chemicals listed in Table 3-1, methylene chloride, tetrachloroethene, and trichloroethene, all the soil gas sample results were non-detect.

The results presented in Table 3-11 inidcate that seventeen compounds were detected above their respective reporting limit. Per NYSDOH Guidance Section 3.2.1, to further evaluate the analytical results of the soil gas survey, the type of volatile chemicals present in all environmental media was evaluated. As presented in Section 3.1.3, eight VOCs were detected in soil samples collected during the test pit program, however, none were detected above Unrestricted Use SCOs. As presented in Section 3.2.2, no volatile organics were detected in Site groundwater above GWQS or SWQS-SA. Based on an analysis of the soil and groundwater results, no area of VOC contamination has been identified on the Site. Detected compounds in the soil gas may be due to background interferences, as stated in Section 3.3.1 of the NYSDOH Guidance. While there are currently no databases available of background levels of volatile chemicals in soil vapor, the lack of an on-site source for these detected compounds indicates that these are trace contaminants perhaps ubiquitous to the area. And, as stated above, the Site soil gas samples were all non-detect for chemicals which which currently have NYSDOH air guidelines. Based on these results, vapor intrusion exposure to current or future Site receptors is not indicated and no further evaluation is proposed.

4 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

4.1 Introduction

Per the Draft Brownfield Cleanup Program Guide (NYSDEC, May 2004), the RI work plan developed by a Volunteer is required to address the nature and extent of on-site contamination and conduct sufficient investigation to conduct an on and off-site qualitative exposure assessment. A qualitative exposure assessment was conducted per DER-10 Section 3.3(c)4.

Per DER-10, the qualitative human health exposure assessment will evaluate the five elements associated with exposure pathways, and describe how each of these elements pertains to the Site. The exposure pathway elements that will be addressed include:

1) A description of the contaminant source(s) including the location of the contaminant release to the environment (any waste disposal area or point of discharge) or if the original source is unknown, the contaminated environmental medium (soil, indoor or outdoor air, biota, water) at the point of exposure;
2) An explanation of the contaminant release and transport mechanisms to the exposed population;
3) Identification of all potential exposure point(s) where actual or potential human contact with a contaminated medium may occur;
4) Description(s) of the route(s) of exposure (i.e., ingestion, inhalation, dermal absorption); and
5) A characterization of the receptor populations who may be exposed to contaminants at a point of exposure.

As called for in DER-10 for volunteers in the BCP, sufficient field information and sampling data are required to identify the presence of contamination, if any, that maybe leaving the Site to support qualitative off-site exposure assessments by others.

Land use within a half mile radius of the Site is shown on Figure 2-1. Shown are the Site's proximity to sensitive human or ecological receptors, including residences, parks, wetlands and surface water bodies, as well as the location of an emergency water supply well operated by Aqua New York of Sea Cliff (NYSDEC Well No. N-0091). Aqua New York is the water purveyor for the Village of Sea Cliff. The conditions under which this well are used are not known.

4.2 Selection of Chemicals of Potential Concern

From Section 3.1, based on the Residential SCO, four SVOCs (benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene), one pesticide (dieldrin), one PCB (aroclor-1254), and three metals (arsenic, barium and chromium) exceeded the Site SCG for soil.

As presented in Section 3.2, while the Site SCG for groundwater is considered to be the SWQS-SA, an institutional control may be required by NYSDEC for groundwater which exceeds GWQS. Therefore, the metals iron, manganese, selenium, and sodium, which were detected in Site groundwater (dissolved metals analysis) above GWQS, are retained as chemicals of potential concern (COPCs). There are no SWQS-SA criteria for these metals. As the area is serviced by a municipal water supplier, contact with Site groundwater would be limited to potential dermal contact by Site construction workers. Exposure through dermal contact would be unlikely though as groundwater is deeper than potential excavation depths.

As potential COPCs due to off-site exposure scenarios, two pesticides, dieldrin and 4,4'DDT, exceeded SWQS-SA. The SWQS-SA standard type for dieldrin is H(FC), meaning Health (Fish Consumption). The SWQS-SA standard type for 4,4'-DDT is W, meaning Wildlife. NYSDEC Part 702.13 discusses derivation of the Wildlife criteria, stating "Protection of the best usage of fishing shall include standards and guidance values for protection of the health of wildlife consumers of aquatic life and water. Such values are referred to as Wildlife values". The W criteria would therefore be a Wildlife COPC, not a human health. Only dieldrin would be a human COPC, through ingestion of fish and shellfish. Dieldrin is therefore retained as a Site COPC.

4.3 Exposure Setting and Identification of Potentially Exposed Populations

The objective of the exposure assessment is to estimate the type of and potential for human exposure to the COPCs that are present in, or may migrate from, the impacted media. The exposure assessment considers human populations that may be exposed to COPCs at the Site, currently and in the future, and evaluates the pathways by which these receptors may be exposed.

The potential for human exposure was considered under both current and future land use scenarios based on the current and anticipated Site uses. As presented in Section 3.1.1, the current and intended future use of the site is single-family Residential.

4.3.1 Current Scenarios

The residential home which occupies Lot 38 is currently vacant, and would likely remain vacant until after any site remedial actions are completed. Currently, the back of Lot 38, and all of Lots 81, 148, 149 and 150 are surrounded by a chain link fence, with access by a locked gate along Bryant Avenue as well as behind the house. Therefore, it is not expected

that trespassers would be able to obtain access to the Site, except for the immediate area around the vacant house. Trespassers to the yard of the house could be neighborhood adults, adolescents and children. Potential exposure to surface soils, and less likely, to subsurface soils, is possible for these individuals. The only COPC from test pits in this area of the Site is arsenic. The test pit located in the front yard of the house detected arsenic above the Residential SCO in the top 2 inches of soil.

Current off-site human populations considered in the exposure assessment could include adults, adolescents and children consuming fish or shellfish from areas of Hempstead Harbor directly downgradient of the Site. The effect of the groundwater discharge to Hempstead Harbor has not been quantitatively identified, but as indicated in Section 3.2, dieldrin and 4,4'-DDT were detected in Site groundwater above SWQS-SA, and only dieldrin is retained as a human COPC. Although not documented as a source of contamination to fish and shellfish downgradient of the Site, human exposure to dieldrin in fish and shellfish could potentially occur. It is not known though, if current restrictions or warnings exist regarding eating of fish and shellfish from this area of Hempstead Harbor. Restrictions are determined by NYSDEC and may change seasonally.

4.3.2 Future Scenarios

Construction workers who may perform future work at the Site would be provided access to the entire Site. They would potentially be exposed to surface and subsurface soils and groundwater, although exposure to groundwater is unlikely as it is deeper than potential excavation depths. Their exposure frequency would be during a typical 8-hour work day.

Adults, adolescents, children, and infants would be receptors under future use conditions as occupants of the house or other single-family residences constructed on the Site. As any future exposure scenario for occupants of the property would be following any site remediation to address the contamination above Residential SCOs, there would not be any anticipated exposure pathway and/or COPCs to humans on the Site.

Future off-site human populations would include adults, adolescents and children consuming fish and shellfish from areas of Hempstead Harbor directly downgradient of the Site.

4.4 Identification of Exposure Pathways for Current and Future Scenarios

Exposure of current trespassers to COPCs in surface soil, and to a limited extent, subsurface soils, would be through dermal contact with and incidental ingestion of soils above Residential SCOs. These exposure pathways are limited to soils in the immediate vicinity of the current house located on Lot 38. As any future exposure would be following any site remediation, there would not be any anticipated exposure pathway and/or COPCs to humans on the Site in the future.

Exposure of future construction workers to COPCs in surface and subsurface soils and groundwater would be through dermal contact and incidental ingestion of soils or groundwater. Exposure through dermal contact would be unlikely though as groundwater is deeper than potential excavation depths. Further, a Site-Specific Health and Safety Plan would be required for any site remedial activities, and appropriate personal protective equipment would be required for individuals working on the Site. Therefore, the exposure pathway would be incomplete, and there would be little potential for adverse human health effects from Site soil and groundwater on future construction workers.

For groundwater, given the availability of municipal water source at the Site, and the brackish quality of the groundwater, the potential for routine direct human contact or ingestion is unlikely, and direct groundwater exposure pathways for on-Site receptors are not considered relevant.

Groundwater beneath the Site currently discharges to Hempstead Harbor, and will continue to do so under future scenarios. As discussed in Section 4.3.1, exposure to potential COPCs in the groundwater which exceed SWQS-SA for fish consumption, namely dieldrin, would be through ingestion of fish or shellfish from areas of Hempstead Harbor directly downgradient of the Site.

4.5 Summary

Based upon the current use of the Site, the potential for trespasser exposure to COPCs in Site soils above Residential Use SCOs by dermal contact or incidental ingestion is possible. The only COPC from test pits in areas of the Site not currently fenced is arsenic. The test pit located in the front yard of the house detected arsenic above the Residential SCO in the top 2 inches of soil.

It is assumed that future use of the Site as a single-family Residential property would be following any remedial action. Therefore, there would not be any anticipated exposure pathway and/or COPCs to humans on the Site.

Under current and future scenarios for the Site, the potential for human (adult, adolescent and child) exposure to COPCs in groundwater above SWQS-SA (dieldrin) may exist through ingestion of fish and shellfish from Hempstead Harbor directly downgradient of the Site. It is not known though, if current restrictions or warnings exist regarding eating of fish and shellfish from this area of Hempstead Harbor. Restrictions are determined by NYSDEC and may change seasonally.

Per DER-10 Appendix 3B, an overview of the human exposure assessment is presented in Table 4-1.

5 FISH AND WILDLIFE RESOURCES IMPACT ANALYSIS

5.1 Introduction

A fish and wildlife resource impact analysis (FWRIA) is required to be completed during the RI in accordance with DER-10 sections 3.3(c) 3. The assessment includes what impacts site contaminates may have, if any, on all media (ground/surface water, soil, soil vapor, ambient air and biota). Ecological exposure impacts have been assessed as outlined in DER-10 Section 3.10.1 Fish and Wildlife Resources Impact Analysis Part 1: Resource Characterization.

The initial analysis of site contaminants, ecological resources and potential pathways found that a FWRIA was required based on the following:

- The Site groundwater exceeds unrestricted use SCGs;
- An ecological resource (surface water body - Hempstead Harbor) is located directly downgradient of the Site;
- An exposure pathway exists between the groundwater and the surface water body.

Therefore, a resource characterization was conducted to identify any actual or potential risks of impact to fish or wildlife residing on and near the site from chemicals potentially migrating from the site. The analysis focuses on risks associated with site-related chemicals detected in soil and groundwater. This analysis contains:

- Site descriptions and a characterization of plant and animal resources and their value to humans
- The identification of regulatory standards and criteria for wildlife
- Evaluations of potential exposure pathways to wildlife from site-related chemicals of potential ecological concern to regulatory criteria or derived toxicological benchmarks for the protection of wildlife
- Conclusions regarding the potential of exposure and possible risks to wildlife on or near the site.

The following sections detail the ecological resources on and in the vicinity of the Site. Informational sources include NYSDEC, the New York Natural Heritage Program, the Hempstead Harbor Protection Committee website (hempsteadharbor.org), including the Harbor Management Plan for Hempstead Harbor (October 2004), and the report the

"Water Quality Improvement Plan for Hempstead Harbor Nassau County New York," Coastal Environmental Services, May 1998.

5.2 Terrestrial Resources

As shown on Figure 2-1, the Site and surrounding properties are residential in nature. These areas typically consist of mowed lawns interspersed with trees and shrubs. Lots 81, 148, 149, 150, and the rear of Lot 38, consist of grasses and weeds that have been heavily disturbed during the various site investigations that have occurred over the past several years. Clearing of vegetation was conducted most recently in December 2012 and March 2013 in most areas of the Site to assist in gaining access for excavation, drilling and survey equipment and personnel. Figure 5-1 shows a photo of the Site taken in early 2013 from Bryant Street, looking north along the driveway access road. It should be noted that, as indicated by the photos, portions of the site perimeter fence were removed for equipment access during these same periods. Following completion of site investigation activities the perimeter fence was re-installed and the site secured.

5.3 Aquatic Resources

Hempstead Harbor is located directly west of the site, on the west side of Prospect Avenue. The water quality of Hempstead Harbor is classified by the NYSDEC based on location, the lower Harbor (south of Bar Beach) is classified SB, the upper Harbor is classified SA, and the area outside Glen Cove is classified SB. Sea Cliff is located in upper Hempstead Harbor. Title 6, Chapter X, Part 701 of the NYS Water Quality Regulations defines these classifications as follows:

Class SA saline surface waters: "The best usage of Class SA waters are shell fishing for market purposes, primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival."

Class SB saline waters: "The best usage of Class SB waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival."

While the water quality of Hempstead Harbor has greatly improved in recent years, extensive point and non-point sources (NPS) of pollution exist throughout the Harbor. Nassau County has identified over 180 outfall pipes that discharge storm water runoff either directly to the Harbor or to one of its major tributaries. Each of these outfalls represents a conduit for the transport of NPS pollutants from the surrounding watershed to Hempstead Harbor. Urbanization along the watershed has led to environmental impacts exemplified by beach and shellfish bed closures, intense summer algae blooms, fish kills, and the loss of riparian habitats due to infilling and the construction of bulkheads.

Scudder's Pond, located approximately 1000 feet to the south (see Figure 2-1), has a surface area of 1.6 acres. Water sources to the pond include spring tributaries from a small,

wet forested area to the east, storm flows which join those tributaries and fresh water seepage from the south shore. Scudder's Pond itself has been impacted by sediment influx. The outflow from Scudder's Pond empties under Shore Road (Prospect Avenue) into Tappen Beach.

An emergency water supply well operated by Aqua New York of Sea Cliff (NYSDEC Well No. N-0091) is located approximately 700 feet north and hydraulically upgradient of the Site. Information from the Nassau County Department of Health indicates that this well is 68 feet deep, with a screen depth of 47 feet, and screened in the glacial aquifer. Aqua New York is the water purveyor for the Village of Sea Cliff. The conditions under which this well are used are not known.

5.4 Freshwater Wetlands

Wetlands have been identified on the U.S. Fish and Wildlife NWI Maps (Sea Cliff, NY quadrangle) and are presented on Figure 2-1. Identified wetlands are side-gradient from the site with no direct migration pathways from the site to the wetlands.

5.5 Fish and Wildlife Resources

The entire area in Hempstead Harbor has been designated by NYS as a Significant Coastal Fish and Wildlife Habitat, due to its extensive tidal wetlands, use by waterfowl as a winter area, and productivity with respect to shellfish and finfish. According to the Long Island Sound Study website (longislandsoundstudy.net), nesting diamondback terrapins have been spotted in the lower harbor and, twice in recent years, pods of dolphins have visited the harbor. According to the "*Water Quality Improvement Plan for Hempstead Harbor Nassau County New York,*" Hempstead Harbor is an important waterfowl overwintering area (November through March). Concentrations of waterfowl are also found in the Harbor during the spring and fall migrations. The Harbor in general was classified as having high value as waterfowl habitat as well as a productive area for marine finfish and shellfish. The area provides nursery and feeding habitat for striped bass, scaup, bluefish, Atlantic silverside, menhaden, winter flounder and blackfish.

Sport fishing from boats is generally confined to the outer section of the Harbor, although shore-based fishing from piers and jetties also occurs. Hempstead Harbor is designated as an uncertified shellfishing area by NYSDEC due to the chronic problems with coliform bacteria; however, habitat does exist throughout the Harbor to support a highly productive hard clam (Mercenaria mercenaria) shellfishery. The majority of the Harbor is classified as a Transplant Harvest Area by NYSDEC, meaning that shellfish can be harvested in the area for the sole purpose of relaying to certified areas. Citing the positive results of sanitary surveys, water quality monitoring and shellfish tissue testing, the NYSDEC reopened (certified year-round) approximately 2,500 acres of shellfish beds for shellfish harvesting in outer Hempstead Harbor and Long Island Sound. This area had been closed to the harvest of shellfish for over 35 years. The reopening became effective June 1, 2011.

The NYSDEC maintains a list of animal species that are endangered, threatened, rare, or of special concern. A search of New York Nature Explorer's database for Nassau County, for

Mammals, Birds, Fish, Mussels and Clams that are on the State's Endangered, Threatened or Rare list resulted in 10 species of birds being identified. The list of bird species resulting from this search is presented in Appendix D.

Scudder's Pond (NYSDEC#30-9 "significant habitat area," Sub-watershed 8) area is a year-round home to many birds, including mallards, wintering teal, sora and Virginia rail, red-bellied woodpecker, king fishers, warbling vireos and snipe.

There is no evidence that the site is a habitat for any of the aforementioned species. No wildlife was observed on the Site during Cornerstone's site activities.

5.6 Observation of Stress

Due to the numerous site clearings that have occurred, indications of vegetative stress are in most areas not applicable. No signs of stress to vegetation along the cliff or in the front yard of the house were noted during Cornerstone's field activities. Figure 5-2 shows a photo of the Site from the corner of Prospect and Bryant Avenues. Figure 5-3 shows a photo of the Site from Prospect Avenue looking south. The photos shown in Figures 5-1 through 5-3 were taken during the same period that the test pit excavation program was being conducted, and the site had been cleared for access. A more recent photo, taken in October 2013, is presented in Figure 5-4. The photo shows that dense vegetative cover has overgrown the vacant site, including the perimeter fence. No indication of vegetative stress has been observed on site.

5.7 Value of Habitat to Associated Fauna

As discussed above, Hempstead Harbor is a habitat to a wide variety of birds, fish and shellfish. Landside, the residential properties (site and the surrounding area) are of little value to wildlife. The area is developed and only isolated pockets of natural vegetation exist. Lawns are maintained by frequent mowing, and the wildlife expected to occur in the vicinity of the site includes more urbanized bird and mammalian species such as mockingbird (Mimus polyglottos), gray squirrel (Sciurus carolinensis), and Norway rat (Rattus norvegicus).

There is very limited vegetation on the site itself, and the series of site clearings over the years would preclude the formation of a stable habitat. Potential environmental receptors on the Site could potentially include wildlife migrating through the Site (e.g. rodents, birds, etc.).

5.8 Value of Resources to Humans

In additional to its ecological value, Hempstead Harbor is a popular location for recreational boating and other recreational activities, including fishing and beaches for swimming. Landside, the site and surrounding residential area are of little value to humans for recreational use of wildlife. The developed nature of the area precludes small game and deer hunting.

5.9 Exposure Pathways Analysis

5.9.1 Chemicals of Potential Ecological Concern

A number of compounds were detected in the Site's surface soil, shallow subsurface soil, and groundwater. To focus the FWRIA on those chemicals that may pose risks to the environment, chemicals of potential ecological concern (COPECs) were selected.

As presented in Section 3.2, the applicable SCG for the shallow groundwater beneath the Site are NYS Surface Water Quality Standards for SA waters (SWQS-SA). As discussed in Section 3.2.4, further analysis of the dissolved and total metals data suggests that the dissolved metals data is more representative of site groundwater. Analysis of the metals data show that most all metals concentrations were significantly reduced in the filtered (dissolved) samples, except for sodium, magnesium and potassium. Besides indicating that the Site's brackish groundwater is likely influenced by salt water intrusion from the Harbor, the reduction of metals such as aluminum, iron and lead indicate that silty colloidal material may have been present in the unfiltered samples. At the same time, the concentrations of sodium, magnesium and potassium would not be expected to change in a filtered (i.e. dissolved) sample. As shown on Tables 3-8 and 3-10, no dissolved metals were detected above SWQS-SA.

Groundwater data for Pesticides and PCBs are presented in Tables 3-5 and 3-6. Dieldrin was detected in 2 well points (WP-3 & WPD-4) and 1 monitoring well (MW-2) above SWQS-SA (the sum of aldrin and dieldrin). In addition, 4,4'-DDT was detected above SWQS-SA (the sum of 4,4'-DDD ,- DDE and – DDT). The SWQS-SA standard type for dieldrin is H(FC), meaning Health (Fish Consumption). The SWQS-SA standard type for 4,4'-DDT is W, meaning Wildlife. NYSDEC Part 702.13 discusses derivation of the Wildlife criteria, stating "Protection of the best usage of fishing shall include standards and guidance values for protection of the health of wildlife consumers of aquatic life and water. Such values are referred to as Wildlife values". As presented in Section 4.2, dieldrin would be a human COPC, through ingestion of fish and shellfish.. Dieldrin and 4,4'-DDT are retained as a Site COPECs.

From NYSDEC Subpart 375-6, the Soil Cleanup Objectives for the protection of ecological resources do not apply to the protection of the aquatic environment. Given the transient nature of wildlife potentially passing through the Site, no significant terrestrial ecological resources exist. Since no significant habitat exists for food, cover, bedding, breeding, etc, exposure with Site soils would be extremely limited, and the exposure pathway would be considered incomplete. The chemicals detected in soil are therefore not considered COPECs for terrestrial or marine ecological receptors.

5.9.2 Ecological Receptors and Exposure Pathways

Based on the analysis of fish and wildlife resources in and around the Site, and the chemicals of potential ecological concern, the following represents potential biota that may to be exposed to the chemical contamination in the Site's groundwater:

- Aquatic life (most significantly fish and shellfish) in Hempstead Harbor – dieldrin only;
- Wildlife consumers of aquatic life and water in Hempstead Harbor – 4,4'-DDT only.

The exposure pathway from the Site to the aquatic life is through the discharge of the contaminated groundwater to Hempstead Harbor. Groundwater contours presented in Section 3.2 (Figure 3.4) show the direction of groundwater flow to the southwest, directly towards Hempstead Harbor. Groundwater from the Site, located just across Prospect Avenue from Hempstead Harbor, would discharge to Hempstead Harbor. While the thickness of the unconfined aquifer beneath the Site is unknown, the lateral discharge zone of Site groundwater to the Harbor, estimated from Figure 3.4, is approximately 650 feet.

5.10 Conclusions

Based on an analysis of the COPECs, exposure pathways and potential ecological receptors, two (2) pesticides, dieldrin and 4,4'-DDT, detected in Site groundwater discharging to Hempstead Harbor could potentially be adversely affecting local aquatic life and wildlife living in Hempstead Harbor or feeding on aquatic life in the vicinity of the Site. However, given the type of the COPECs (not acute or chronic based), there are no imminent ecological threats that would potentially require an interim remedial measure (IRM). Background concentrations of these COPECs are unknown and there is no indication that the Site is the source or sole source of potential contamination in the Harbor. Based on the findings of the RI, remedial actions, if required by NYSDEC, would be addressed during the development of a Remedial Action Work Plan.

6 QUALITY ASSURANCE/QUALITY CONTROL

6.1 Project Scope and Goals

The remedial investigation for the Site included soil/waste sampling, groundwater sampling, and a soil gas survey. The data collected during this field investigation was used for characterizing the quality of the soil/waste and groundwater, defining the horizontal and vertical extent of site-related constituents, assessing potential human health and ecological risks, and supporting remedial planning.

6.2 Data Quality Objectives

Data collected under the approved RIWP must be suitable for the purpose of characterizing the media (soil/waste, groundwater and soil gas), determining the presence of contaminant concentrations above applicable criteria and delineation of areas of contamination. In order to meet these data needs, the data quality objectives may be summarized as follows:

Data submitted for laboratory analysis must be collected, handled, and analyzed in accordance with consistent, standardized procedures. Detection limits for soil/waste samples must be capable of meeting the soil cleanup objectives listed in 6NYCRR Subpart 375-6.8. Soil/waste analytical results will be compared with both Unrestricted and Restricted Use Soil Cleanup Objectives (Tables 375-6.8(a) and 375-6.8(b)). Detection limits for groundwater samples must be capable of meeting water quality standards listed in Table 1 of Subpart 703.5 for water class GA. Detection limits for soil gas must be capable of being compared with NYSDOH Guidance values for air.

6.3 Laboratory Analytical Procedures and Reporting Requirements

Samples were analyzed by laboratories accredited pursuant to the NYSDOH Environmental Laboratory Accreditation Program (ELAP) for the category of parameters analyzed. Analytical details were presented in the Analytical Methods/Quality Assurance Summary Tables, Table 4-1 and 4-2 of the RIWP.

Analytical results were reported by Catagory B laboratory data deliverables reporting requirements. The Category B deliverable package includes a formal assessment of the quality of the data and undergoes a rigorous internal data validation procedure. A non-conformance summary checklist is supplied with the Category B deliverables package. This is filled out by the laboratory manager/director as he/she reviews the report in its entirety, utilizing supervisor reviewed data submissions from the various departments.

This summary assists with the assessment of the usability of the data in light of analytical performance and whether project data quality objectives have been met by the reported data. The data was evaluated for usability and applicability to the data quality objectives, and per DER-10, a Data Usability Summary Report (DUSR) was prepared for each analytical data set.

6.4 Data Usability

6.4.1 Soil Sample Results

As presented in Section 3.1, the test pit and shallow soil sampling program was conducted by CDM Smith. Soil samples were submitted to ALS Environmental for analysis. A full data validation was performed by EPA on the soils data. The data usability results for the soil samples is presented in the Phase II Report Section 3.3.1 (Appendix A). In general, the EPA found that all laboratory analyses were method compliant. Some QC parameters were outside criteria; associated sample results were qualified accordingly. Data qualified as estimated (J/UJ) are usable for project decisions. However, many VOC results were rejected, including all 1,4-dioxane results; rejected data (R) are not considered usable for project purposes because comparisons cannot be made due to a lack of existing data. Data validation reports are included in Appendix E of the Phase II Report.

6.4.2 Groundwater Sample Results

As presented in Section 3.2, the groundwater sampling program was conducted by Associated Environmental Services. Groundwater samples were submitted to Alpha Analytical. Cornerstone has reviewed the analytical data reports provided by Alpha Analytical to determine the usabililty of the groundwater analytical data. The DUSR for groundwater is presented in Appendix E of this report. The data qualifiers identified in the laboratory reports are determined to be correct, no changes or additions to the data qualifiers have been applied.

6.4.3 Soil Gas Sample Results

As presented in Section 3.3, the soil gas survey was conducted by Cornerstone on June 5, 2013. Soil gas samples were submitted to TestAmerica. The DUSR for the soil gas samples is presented in Appendix F. The data qualifiers identified in the laboratory reports are determined to be correct, no changes or additions to the data qualifiers have been applied.

7 CONCLUSIONS

7.1 Summary of Findings

The results of the Site-wide soil and groundwater investigation found contaminants in both soil and groundwater above their respective SCGs.

From the test pit investigation, SVOCs above Unrestricted Use/Residential SCOs were detected in three of the nineteen test pits. Four SVOCs, benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene were detected above Unrestricted Use/Residential SCOs at TP-105. Two SVOCs, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene were detected above Unrestricted Use/Residential SCOs at TP-102, and one SVOC, benzo(b)fluoranthene was detected above Unrestricted Use/Residential SCOs at TP-106. The exceedences were not confined to one particular soil type or depth. One PCB, Arochlor-1254, from the top soil fill sample at test pit TP-114, exceeded the Residential SCO, and one pesticide, dieldrin, was detected above Residential SCO from the top soil fill sample from TP-106. For metals, one or more exceedences of arsenic, barium, chromium and hexavalent chromium were detected above Residential SCOs in fifteen of the nineteen test pits. Twelve of the eighteen arsenic samples and eight of the nine barium samples above Residential SCOs were detected in coal ash samples. Three of the four chromium samples and the one hexavalent chromium sample detected above Residential SCOs were from the top 2 inches of top soil fill. Except for arsenic detected above Residential SCO in the shallow fill top soil sample from TP-112, located in the front yard of the vacant house, the remaining exceedences were found in test pits advanced in areas where past dumping activities may have occurred.

Results of the groundwater investigation of the unconfined aquifer beneath the Site determined that the Site SCG is SWQS-SA, as the groundwater likely discharges to Hepstead Harbor, located directly downgradient. The pestidice dieldrin exceeded SWQS-SA in temporary well point WPD-4 and monitoring well MW-2. In addition, 4,4'-DDT exceeded SWQS-SA in temporary well point WP-3. In the dissolved metals samples, four (4) metals, iron, manganese, selenium and sodium were detected above GWQS. No SWSQ-SA criteria exists for these four metals, thus no dissolved metals were detected above SWQS-SA.

As presented in Section 3.1.5, one or more of the pesticides 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane and dieldrin were detected above Unrestricted Use SCOs in 15 test pits. While the presence of these pesticides in the soil could be attributable to past dumping activities on the Site, the source of these pesticides in the Site groundwater may be from a regional or upgradient source. The water table beneath the interior of the Site, above the cliff is over 38 feet below ground surface, and pesticides are often adhered to soil particles

and are not considered highly mobile compounds. Also, both MW-2 and WPD-4, which detected dieldrin above SWQS-SA, are on the edges of the property, where off-site influences are immediately upgradient. Other Site soil contaminants, the metals arsenic, barium, chromium and hexavalent chromium detected above Residential SCOs, were not detected in groundwater beneath the Site (from dissolved metals samples).

7.2 Conclusions

Under current and future scenarios for the Site, the potential for human (adult, adolescent and child) exposure to COPCs in groundwater above SWQS-SA may exist through ingestion of fish and shellfish from Hempstead Harbor directly downgradient of the Site, although the extent of the use of this area for fishing and shellfishing purposes is not known. Further, as discussed in Section 5.10, background concentrations of these COPECs are unknown and there is no indication that the Site is the source or sole source of potential contamination in the Harbor. Also, as indicated in the previous section, the presence of these constituents in the Site groundwater may be attributable to upgradient or regional sources. Additional groundwater sampling of Site monitoring wells may be warranted following soil remedial activities to determine if dieldrin or other pesticides remain present in Site groundwater.

The results of the Site-wide soils investigation found four SVOCs, one pesticide, one PCB, and four metals at concentrations exceeding Residential SCOs. Except for arsenic detected above Residential SCO in the shallow fill top soil sample from TP-112, located in the front yard of the vacant house, the remaining exceedences were found in test pits advanced in areas where past dumping activities may have occurred. The Qualitative Human Health Exposure Assessment found that the potential for trespasser exposure to arsenic from the front yard location currently exists.

Future use of the Site as a single-family Residential property would require mitigation of the soil exceedences above Residential Use SCOs. Given the isolated nature of the arsenic exceedence found in TP-112, a limited soil excavation program might be applicable to remediate this area. A more extensive soil remedy would be necessary to address the soil contamination above Residential SCOs in the areas of site behind the house impacted by past coal ash dumping activities.

As discussed in Section 3.1.7, it is anticipated that further refinement in the horizontal and vertical extent of the coal ash (the grey shaded area shown on Figure 2-2 of the Phase II Report) would be conducted as part of a pre-design phase of the selected remedy of the coal ash. Areas to the west of TP-106, TP-107, and TP-108, east of TP-116, north and east of TP-111, and in the interior at TP-117, would be investigated with a Geoprobe to refine the limits of the coal ash to define potential excavation or treatment areas. The Alternative Analysis Report (AAR) will include these pre-design costs for proposed remedies of the coal ash. Per DER-10, Section 4.4(d)2, the AAR will present two or more alternatives that would achieve the cleanup Track and intended use identified for the site, and will include

the analysis of one alternative to achieve unrestricted use relative to soil contamination, without the use of institutional controls. The AAR will evaluate each remedy presented and recommend a remedy that best meets the RAOs for the site. Potential remedies to be evaluated may include excavation, in-situ or ex-situ treatment, or capping with institutional and engineering controls if change to restricted residential use is considered, For all proposed remedies, the pre-design program will also include sampling and analysis of the debris piles identified in Figure 1-2 of the Phase II Report, so that the material can be properly characterized for disposal, separation or reuse as part of the overall remedy.

The details of the pre-design program applicable to the selected and approved remedy will be presented in the Remedial Action Work Plan (RAWP) that will be prepared following approval of the AAR.

LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client and the New York State Department of Environmental Conservation (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

TABLES

Table 3.1 Summary of Soil Analytical Data
For Detected Compounds

Sample Location	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential		NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater		TP-100						TP-101						TP-102						TP-103					
Sample ID						TP-100-SS		TP-100-N		TP-100-B		TP-101-SS		TP-101-W		TP-101-B		TP-102-SS		TP-102-S		TP-102-B		TP-103-SS		TP-103-N		TP-103-B	
Sample Date						12/17/12		12/17/12		12/17/12		12/17/12		12/17/12		12/17/12		12/17/12		12/17/12		12/17/12		12/10/12		12/10/12		12/10/12	
Lithological Layer						Fill/Top Soil		Sand		Sand		Fill/Top Soil		Silty Sand		Sand		Fill/Top Soil		Sand		Sand		Fill/Top Soil		Fill		Sand	
Sample Depth						0 to 2 inches bgs		0.5 to 1 ft bgs (North Wall)		1.5 to 2 ft bgs		0 to 2 inches bgs		0.5 to 1 ft bgs		2 to 2.5 ft bgs		0 to 2 inches bgs		3 to 3.5 ft bgs		4 to 4.5 ft bgs		0 to 2 inches bgs		3 to 3.5 ft bgs		6 to 6.5 ft bgs	
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)																													
Benzo(a)anthracene	1,000	1000	f	1000	*f*	8,000	U	13	J	180	U	570	J	75	J	210	U	740	J	98	J	67	J	810	J	360	J	930	U
Benzo(a)pyrene	1,000	1000	f	22000		8,000	U	11	J	180	U	390	J	78	J	210	U	360	J	82	J	39	J	700	J	340	J	930	U
Benzo(b)fluoranthene	1,000	1000	f	1700		460	J	20	J	180	U	960	J	120	J	210	U	*1,100*	*J*	110	J	87	J	880	J	410	J	930	U
Chrysene	1,000	1000		1000	*f*	330	J	14	J	180	U	660	J	80	J	210	U	800	J	94	J	65	J	760	J	350	J	930	U
Indeno(1,2,3-cd)pyrene	500	500	f	8200		8,000	U	11	J	180	U	490	J	67	J	210	U	*590*	*J*	59	J	45	J	320	J	140	J	930	U
Pesticides (µg/kg)																													
4,4'-DDD	3.3	2600		14000		7.80	U	4.20	U	3.60	U	54.00	U	4.20	U	4.10	U	47.00	U	4.90		3.80	U	39.00	U	3.80	U	3.60	U
4,4'-DDE	3.3	1800		17000		5.30	J	1.30	J	3.60	U	5.40	J	4.20	U	0.03	J	47.00	U	5.70		0.87	J	3.10	J	3.80	UJ	3.60	U
4,4'-DDT	3.3	1700		136000		11.00		4.20	U	3.60	U	54.00	U	4.20	U	4.10	U	47.00	UJ	6.20		3.80	U	39.00	U	5.60		3.60	U
alpha-Chlordane	94	910		2900		4.00	U	2.10	U	1.80	U	28.00	U	2.20	U	2.10	U	24.00	U	5.00	NJ	1.90	U	20.00	U	8.70	JN	1.90	U
Dieldrin	5	39		100		7.80	U	4.20	U	3.60	U	54.00	U	4.20	U	4.10	UJ	47.00	U	3.90	U	3.80	U	39.00	U	2.10	J	0.25	J
Polychlorinated Biphenyls (µg/kg)																													
Aroclor-1254	100	1000	*	3200	*	78	U	42	U	36	U	540	U	42	U	41	U	470	U	39	U	38	U	390	U	38	U	36	U
Aroclor-1260	100	1000	*	3200	*	78	U	42	U	36	U	540	U	42	U	41	U	470	U	39	U	38	U	390	U	38	U	36	U
Metals (mg/kg)																													
Arsenic	13	16	f	16	*f*	4.50	J	3.00	U	0.97	J	4.20		3.00	U	1.30	J	**18.20**		**16.20**		8.80		6.20		3.90		2.10	
Barium	350	350		820		55.00	J	30.10	U	25.90	U	49.60		30.00	U	28.20	U	134.00		126.00		63.80		33.80		40.70		25.30	J
Chromium	30	36		NS		*45.10*	*J*	5.10	J	5.20	U	*37.90*		9.30		6.40		*36.50*		12.10		8.40		11.10		15.60		15.70	
Hexavalent Chromium	1	22		19		2.50	R	*2.40*	*J-*	*0.64*	*J*	**23.00**	*J*	*1.60*	*J-*	1.20	UJ	1.40	R	*2.20*	*J-*	0.90	J	*2.00*	*J-*	*2.00*	*J-*	*1.90*	*J-*
Copper	50	270		1720		23.90	J	3.60	J	5.20	U	21.60		5.70	J	5.60	U	29.40		14.30		10.60		21.30		13.60		8.20	
Lead	63	400		450		*149.00*	*J*	18.30		2.60	U	*296.00*		36.00		4.00		*253.00*		44.90		44.30		54.80		40.70		10.70	
Manganese	1,600	2000	f	2000	f	562.00	J	67.60		159.00		272.00		136.00		120.00		183.00		133.00		105.00		215.00		215.00		116.00	
Mercury	0.18	0.81	a	0.73		0.13	J	0.00	J	0.10	U	0.13		0.08	J	0.10	U	0.14		0.06	J	0.05	J	0.12		0.12		0.10	U
Nickel	30	140		130		24.10	J	3.30		3.30		10.20		6.70		5.80		16.20		12.00		7.80		9.30		10.80		7.60	
Zinc	109	2200	d	2480		*132.00*	*J*	15.70		8.10		102.00		26.40		12.80		*175.00*		53.90		43.20		50.30		41.00		22.30	

Table 3.1 Summary of Soil Analytical Data
For Detected Compounds

Sample Location	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential		NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater		TP-104								TP-105								TP-106									
Sample ID						TP-104-SS		TP-104-N		TP-104-B		TP-104-BR		TP-105-SS		TP-105-B		TP-105-BR		TP-106-SS		TP-906-SS		TP-106-S		TP-106-CA		TP-106-B	
Sample Date						12/10/12		12/10/12		12/10/12		12/13/12		12/10/12		12/10/12		12/17/12		12/11/12		12/11/12		12/11/12		12/11/12		12/11/12	
Lithological Layer						Fill/Top Soil		Fill		Fill		Fill		Fill/Top Soil		Fill		Fill		Fill/Top Soil - Duplicate				Fill		Coal Ash		Sand	
Sample Depth						0 to 2 inches bgs		2.5 to 3 ft bgs		5.5 to 6 ft bgs (Fill		14 to 14.5 ft bgs		0 to 2 inches bgs		6 to 6.5 ft bgs (Fill		14 to 14.5 ft bgs		0 to 2 inches bgs (Surface Soil)				2.5 to 3 ft bgs		3.5 to 4ft bgs (Coal Ash		5.5 to 6 ft bgs	
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)																													
Benzo(a)anthracene	1,000	1000	f	1000	*f*	130	J	210	J	270	J	2,200	U	280	J	280	J	1,400	J	310	J	240	J	370	J	*1,000*		13	J
Benzo(a)pyrene	1,000	1000	f	22000		130	J	200	J	260	J	400	J	300	J	280	J	740	J	300	J	220	J	410	J	830	J	12	J
Benzo(b)fluoranthene	1,000	1000	f	1700		190	J	290	J	310	J	550	J	410	J	380	J	1,800	*J*	440	J	320	J	560	J	*1,200*		19	J
Chrysene	1,000	1000		1000	*f*	130	J	200	J	240	J	360	J	260	J	250	J	1,300	*J*	300	J	240	J	360	J	980	J	15	J
Indeno(1,2,3-cd)pyrene	500	500	f	8200		96	J	110	J	160	J	220	J	200	J	180	J	*1,000*	*J*	220	J	150	J	200	J	340	J	9	J
Pesticides (µg/kg)																													
4,4'-DDD	3.3	2600		14000		3.90	U	44.00		3.70	U	43.00	U	3.90	R	15.00	NJ	38.00	U	4.00	U	4.10	U	320.00		16.00	J	6.90	
4,4'-DDE	3.3	1800		17000		20.00	J	27.00		2.10	J	43.00	U	26.00	J	9.70		6.40	J	56.00	J	54.00	J	48.00		8.10	J	2.90	J
4,4'-DDT	3.3	1700		136000		15.00	J	34.00		3.70	U	51.00	NJ	16.00		9.40	J	38.00	U	21.00	NJ	19.00	J	64.00		11.00		3.30	J
alpha-Chlordane	94	910		2900		63.00	JN	66.00	J	7.20	NJ	100.00	J	170.00	J	46.00	J	20.00	U	590.00	J	510.00	J	8.10	NJ	2.50	NJ	7.00	NJ
Dieldrin	5	39		100		7.50	J	7.70	J	0.80	J	34.00	J	28.00		7.50		38.00	U	43.00		24.00	J	3.60	U	4.00	U	3.60	U
Polychlorinated Biphenyls (µg/kg)																													
Aroclor-1254	100	1000	*	3200	*	39	U	38	U	37	U	430	U	39	U	37	U	380	U	40	U	41	U	36	U	40	U	36	U
Aroclor-1260	100	1000	*	3200	*	39	U	38	U	37	U	430	U	39	U	37	U	380	U	40	U	41	U	36	U	40	U	36	U
Metals (mg/kg)																													
Arsenic	13	16	f	16	*f*	4.50		*15.00*		5.90		9.00		5.00		4.10		12.30		8.00		7.20		2.80	U	48.40		2.10	J
Barium	350	350		820		53.30		57.40		30.70		142.00		88.50		69.00		26.30	U	143.00		129.00		28.20	U	51.40		17.00	J
Chromium	30	36		NS		20.20		15.50		9.80		*38.20*		19.20		12.70		7.40		*33.10*		26.00		9.90		21.20		8.10	
Hexavalent Chromium	1	22		19		*2.80*	*J-*	*5.70*	*J-*	0.89	J-	1.20	UJ	4.40	J-	0.96	J-	0.32	J	*5.50*	*J-*	*8.80*	*J-*	1.10	UJ	1.20	UJ	*1.40*	*J-*
Copper	50	270		1720		17.70		21.80		13.70		*50.10*		26.00		12.20		12.20		40.20		36.60		9.50		29.50		7.80	J
Lead	63	400		450		*64.60*		*79.00*		*113.00*		*316.00*		*174.00*		*134.00*		35.90		*300.00*		*242.00*		37.00		*103.00*		10.40	J
Manganese	1,600	2000	f	2000	f	246.00		313.00		186.00		506.00		232.00		193.00		121.00		370.00		295.00		124.00		96.90		115.00	J
Mercury	0.18	0.81	a	0.73		0.16		0.10	J	0.10	U	*0.29*		0.14		0.14		0.04	J	*0.35*		*0.35*		0.04	J	*0.19*		0.10	U
Nickel	30	140		130		13.70		11.00		8.70		24.80		14.50		8.70		8.50		20.70		18.20		9.40		21.10		5.60	J
Zinc	109	2200	d	2480		69.70		72.20		39.20		*324.00*		*125.00*		65.00		38.10		*185.00*		*182.00*		33.30		72.50		13.10	J

Table 3.1 Summary of Soil Analytical Data
For Detected Compounds

Sample Location	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential		NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater		TP-107								TP-108						TP-109								TP-110			
Sample ID						TP-107-SS		TP-107-W		TP-107-CA		TP-107-B		TP-108-SS		TP-108-CA		TP-108-B		TP-109-SS		TP-109-S		TP-109-CA		TP-109-B		TP-110-SS		TP-110-B	
Sample Date						12/11/12		12/11/12		12/11/12		12/11/12		12/12/12		12/12/12		12/12/12		12/12/12		12/12/12		12/12/12		12/12/12		12/12/12		12/12/12	
Lithological Layer						Fill/Top Soil		Fill		Coal Ash		Sand		Fill/Top Soil		Coal Ash		Sand		Fill/Top Soil		Fill		Coal Ash		Sand		Fill/Top Soil		Coal Ash	
Sample Depth						0 to 2 inches bgs		2 to 2.5 ft bgs		6 to 6.5 ft bgs (Coal Ash		6.5 to 7 ft bgs		0 to 2 inches bgs		14 to 14.5 ft bgs		14 to 14.5 ft bgs		0 to 2 inches bgs		0.5 to 1.5 ft bgs		1.5 to 2.5 ft bgs		6.5 to 7 ft bgs		0 to 2 inches bgs		14 to 14.5 ft bgs	
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)																															
Benzo(a)anthracene	1,000	1000	f	1000	*f*	220	J	190		100	J	560	J	76	J	210	UJ	110	J	6,900	U	84	J	79	J	9	J	39	J	230	UJ
Benzo(a)pyrene	1,000	1000	f	22000		180	J	200		87	J	530	J	69	J	210	UJ	110	J	6,900	U	2,000	U	58	J	8	J	42	J	230	UJ
Benzo(b)fluoranthene	1,000	1000	f	1700		250	J	300		140	J	790	J	97	J	210	UJ	140	J	330	J	110	J	91	J	10	J	61	J	230	UJ
Chrysene	1,000	1000		1000	*f*	200	J	220		120	J	600	J	66	J	210	UJ	98	J	6,900	U	59	J	72	J	190	U	42	J	230	UJ
Indeno(1,2,3-cd)pyrene	500	500	f	8200		120	J	130	J	57	J	380	J	44	J	210	UJ	63	J	6,900	U	2,000	U	35	J	190	U	29	J	230	UJ
Pesticides (µg/kg)																															
4,4'-DDD	3.3	2600		14000		3.90	U	3.60	UJ	4.10	U	5.10		4.30	U	4.10	U	3.50	U	45.00	U	8.90		4.20	U	3.70	UJ	3.60	U	4.50	U
4,4'-DDE	3.3	1800		17000		5.70		6.80		4.10	UJ	11.00		7.60		4.10	U	4.40		45.00	U	5.40	J	11.00		3.70	U	3.60	UJ	4.50	U
4,4'-DDT	3.3	1700		136000		4.20	JN	6.70		5.50		13.00		6.80		0.14	J	6.90	J	24.00	J	8.30		5.50	J	1.70	J	3.60	U	4.50	U
alpha-Chlordane	94	910		2900		26.00	J	2.70	NJ	2.10	U	2.40	J	20.00	NJ	2.10	U	1.80	U	23.00	U	2.80	JN	2.20	U	1.90	U	1.90	U	2.30	U
Dieldrin	5	39		100		3.20	J	3.60	U	4.10	U	4.00	U	5.40		4.10	U	3.50	U	45.00	U	2.50	J	4.20	U	3.70	U	2.00	J	0.18	J
Polychlorinated Biphenyls (µg/kg)																															
Aroclor-1254	100	1000	*	3200	*	39	U	36	U	41	U	40	U	43	U	41	U	35	U	440	U	39	U	42	U	37	U	36	U	45	U
Aroclor-1260	100	1000	*	3200	*	39	U	36	U	41	U	40	U	43	U	41	U	35	U	440	U	39	U	42	U	37	U	36	U	45	U
Metals (mg/kg)																															
Arsenic	13	16	f	16	*f*	7.30		7.50		**39.00**		12.70		2.90	U	**178.00**		4.00		3.80		6.50		**25.20**		2.90	J	3.70		**81.70**	*J*
Barium	350	350		820		71.00		41.70		*725.00*		157.00		28.90	U	*627.00*		41.10		29.40	U	60.40		189.00		40.50		36.20		*787.00*	
Chromium	30	36		NS		12.70		10.50		22.00		17.60		4.90	J	*35.40*		9.20		9.30		11.80		16.20		15.50		13.50		*30.60*	
Hexavalent Chromium	1	22		19		*3.70*	*J-*	0.30	J-	1.20	UJ	*6.30*	*J-*	2.50	UJ	1.30	UJ	2.80	UJ	*13.00*	*J-*	1.20	UJ	1.30	UJ	*5.10*	*J-*	2.60	UJ	3.30	UJ
Copper	50	270		1720		12.10		8.70		24.60		12.50		4.60	J	38.90		7.50		18.70		18.50		15.40		10.40		9.20		31.00	
Lead	63	400		450		25.50		20.70		17.30		25.70		8.00		41.20		17.50		59.40		51.10		26.70		10.90		15.90		23.40	
Manganese	1,600	2000	f	2000	f	192.00		149.00		128.00		134.00		71.20		114.00		198.00		144.00		202.00		269.00		238.00		152.00		112.00	
Mercury	0.18	0.81	a	0.73		0.16		0.06	J	0.13		0.10	U	0.11	U	*0.18*		0.11	U	0.10	U	0.09	J	0.14		0.10	U	0.10	U	*0.23*	
Nickel	30	140		130		11.00		7.60		28.40		12.10		3.70		*35.80*		7.50		8.60		12.20		14.50		10.40		8.20		*32.40*	
Zinc	109	2200	d	2480		34.50		28.70		31.90		46.50		14.50		97.70		24.20		57.00		56.10		35.10		26.70		25.80		47.20	J

Table 3.1 Summary of Soil Analytical Data
For Detected Compounds

Sample Location	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential		NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater		TP-111										TP-112												TP-113					
Sample ID						TP-111-SS		TP-911-SS		TP-111-N		TP-111-CA		TP-111-B		TP-112-SS		TP-112-SS		TP-112-E		TP-112-S		TP-112-B		TP-113-SS		TP-113-E		TP-113-B	
Sample Date						12/18/12		12/18/12		12/18/12		12/18/12		12/18/12		12/13/12		12/13/12		12/13/12		12/13/12		12/13/12		12/11/12		12/11/12		12/11/12	
Lithological Layer						Fill/Top Soil - Duplicate				Fill		Coal Ash		Sand		Fill/Top Soil - Duplicate				Sand		Sand		Sand		Fill/Top Soil		Coal Ash		Coal Ash	
Sample Depth						0 to 2 inches bgs (Surface Soil)				1.5 to 2 ft bgs		12.5 to 13 ft bgs		12.5 to 13 ft bgs		0 to 2 inches bgs (Surface Soil)				1 to 1.5 ft bgs		1 to 1.5 ft bgs		5.5 to 6 ft bgs		0 to 2 inches bgs		6.5 to 7 ft bgs		6.5 to 7 ft bgs	
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)																															
Benzo(a)anthracene	1,000	1000	f	1000	*f*	28	J	50	J	190	UJ	200	UJ	210	U	33	J	34	J	180	U	190	U	180	U	53	J	26	J	10	J
Benzo(a)pyrene	1,000	1000	f	22000		31	J	52	J	190	UJ	200	UJ	210	U	39	J	41	J	180	U	190	U	180	U	57	J	28	J	210	UJ
Benzo(b)fluoranthene	1,000	1000	f	1700		49	J	82	J	190	UJ	200	UJ	210	U	63	J	63	J	180	U	190	U	180	U	83	J	41	J	210	UJ
Chrysene	1,000	1000		1000	*f*	34	J	65	J	190	UJ	200	UJ	210	U	42	J	44	J	180	U	190	U	180	U	64	J	32	J	10	J
Indeno(1,2,3-cd)pyrene	500	500	f	8200		26	J	47	J	190	UJ	200	UJ	210	U	26	J	26	J	180	U	190	U	180	U	42	J	20	J	210	UJ
Pesticides (µg/kg)																															
4,4'-DDD	3.3	2600		14000		3.60	U	4.60	U	3.60	U	3.90	U	4.10	U	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U	4.40	U	3.60	U	4.10	U
4,4'-DDE	3.3	1800		17000		9.60		14.00		0.54	J	0.53	J	4.10	U	6.30		4.40		3.50	U	3.70	U	3.40	U	4.40	U	3.60	U	4.10	U
4,4'-DDT	3.3	1700		136000		11.00		67.00	J	3.60	U	3.90	UJ	4.10	U	5.40	J	3.90	U	3.50	U	3.70	U	3.40	U	4.40	U	3.60	U	4.10	U
alpha-Chlordane	94	910		2900		1.90	U	2.40	U	1.90	U	2.00	U	2.10	U	2.10	U	2.00	U	1.80	U	1.90	U	1.80	U	2.30	U	1.80	U	2.10	U
Dieldrin	5	39		100		3.60	UJ	4.60	U	3.60	U	3.90	U	4.10	U	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U	4.40	U	3.60	U	4.10	U
Polychlorinated Biphenyls (µg/kg)																															
Aroclor-1254	100	1000	*	3200	*	36	U	46	U	36	U	39	U	41	U	41	U	39	U	35	U	37	U	34	U	44	U	36	U	41	U
Aroclor-1260	100	1000	*	3200	*	36	U	46	U	36	U	39	U	41	U	41	U	39	U	35	U	37	U	34	U	44	U	36	U	41	U
Metals (mg/kg)																															
Arsenic	13	16	f	16	*f*	5.90		6.60		2.70	U	4.80		3.20		**99.30**		**74.70**		2.70	U	2.70	U	2.60	U	**45.00**		7.20		**64.90**	
Barium	350	350		820		44.90		48.70		34.20		73.00		26.50	U	38.30		38.60		26.60	U	26.90	U	26.30	U	346.00		65.80		*602*	
Chromium	30	36		NS		12.00		12.40		9.70		16.30		12.60		16.30		14.30		3.90		11.40		4.20		18.40		12.70		27.80	
Hexavalent Chromium	1	22		19		1.20	R	1.20	R	1.10	UJ	0.98	J-	1.10	UJ	*6.00*	*J-*	1.20	UJ	1.10	UJ	1.10	UJ	1.00	UJ	*3.90*	*J-*	1.10	UJ	*4.70*	*J-*
Copper	50	270		1720		13.40		14.70		7.90		9.40		8.30		19.80		17.40		2.70	J	5.30	J	2.80	J	20.00		10.00		27.50	
Lead	63	400		450		40.30		43.40		8.60		20.20		6.30		*120.00*		*78.70*		2.70	U	4.90		2.60	U	20.50		18.80		18.60	
Manganese	1,600	2000	f	2000	f	195.00		220.00		209.00		193.00		200.00	J	242.00		239.00		56.90		126.00		47.70		91.30		191.00		89.20	
Mercury	0.18	0.81	a	0.73		0.17		0.13		0.02	J	0.13		0.01	J	*0.38*		*0.31*		0.09	U	0.01	J	0.10	U	0.13		0.03	J	*0.20*	
Nickel	30	140		130		9.40		10.10		8.80		11.30		8.50		10.30		9.60		2.90		7.30		2.30		18.80		11.40		*31.50*	
Zinc	109	2200	d	2480		39.10		41.00		17.30		31.40		17.70		38.30		36.00		9.70		16.50		5.30	U	32.20		27.70		37.10	

Table 3.1 Summary of Soil Analytical Data
For Detected Compounds

Sample Location	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential		NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater		TP-114												TP-115								TP-116							
Sample ID						TP-114-SS		TP-114-FL		TP-114-CA		TP-114-E		TP-114-S		TP-114-B		TP-115-SS		TP-115-FL		TP-115-W		TP-115-B		TP-116-SS		TP-116-E		TP-116-CA		TP-116-B	
Sample Date						12/13/12		12/13/12		12/13/12		12/13/12		12/13/12		12/13/12		12/18/12		12/18/12		12/18/12		12/18/12		12/18/12		12/18/12		12/18/12		12/18/12	
Lithological Layer						Fill/Top Soil		Fill		Coal Ash		Fill		Fill		Sand		Fill/Top Soil		Fill		Sand		Sand		Fill/Top Soil		Fill		Coal Ash		Sand	
Sample Depth						0 to 2 inches bgs		0 to 2 inches bgs		2.5 to 3 ft bgs		2.5 to 3 feet (East		2.5 to 3 feet		6 to 6.5 feet (Bottom)		0 to 2 inches bgs		0.5 to 1 ft bgs (Fill		1 to 1.5 ft bgs		8 to 8.5 ft bgs (Bottom)		0 to 2 inches bgs		2 to 2.5 ft bgs		10 to 10.5 ft bgs		11 to 11.5 ft bgs	
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)																																	
Benzo(a)anthracene	1,000	1000	f	1000	*f*	9	J	44	J	120	J	180	U	23	J	180	U	22	J	17	J	190	UJ	190	U	58	J	47	J	210	UJ	21	J
Benzo(a)pyrene	1,000	1000	f	22000		8	J	39	J	100	J	180	U	23	J	180	U	25	J	15	J	190	UJ	190	U	56	J	47	J	210	UJ	19	J
Benzo(b)fluoranthene	1,000	1000	f	1700		11	J	54	J	150	J	180	U	31	J	180	U	42	J	28	J	190	UJ	190	U	96	J	65	J	210	UJ	30	J
Chrysene	1,000	1000		1000	*f*	180	U	45	J	120	J	180	U	20	J	180	U	28	J	19	J	190	UJ	190	U	71	J	54	J	210	UJ	22	J
Indeno(1,2,3-cd)pyrene	500	500	f	8200		180	U	22	J	54	J	180	U	17	J	180	U	21	J	9	J	190	UJ	190	U	53	J	38	J	210	UJ	11	J
Pesticides (µg/kg)																																	
4,4'-DDD	3.3	2600		14000		3.60	U	3.60	U	4.10	U	3.50	U	3.50	U	3.50	U	3.70	U	3.80	U	3.70	U	3.60	U	3.80	U	3.60	U	4.00	U	4.00	U
4,4'-DDE	3.3	1800		17000		28.00		3.60	U	4.10	U	3.50	U	3.50	UJ	3.50	U	0.55	J	0.18	J	0.28	J	3.60	U	12.00		0.77	J	0.40	J	2.40	J
4,4'-DDT	3.3	1700		136000		3.60	U	3.60	U	4.10	U	3.50	U	3.50	U	3.50	U	3.70	U	3.80	U	3.70	UJ	3.60	U	8.80		3.60	UJ	4.00	UJ	4.00	U
alpha-Chlordane	94	910		2900		1.80	U	1.90	U	2.10	U	1.80	U	1.80	U	1.80	U	1.90	U	2.00	U	1.90	U	1.90	U	1.90	U	1.90	U	2.10	U	2.00	U
Dieldrin	5	39		100		3.60	R	3.60	U	4.10	U	3.50	U	3.50	U	3.50	U	3.70	U	3.80	U	3.70	U	3.60	U	3.80	U	3.60	U	4.00	U	4.00	U
Polychlorinated Biphenyls (µg/kg)																																	
Aroclor-1254	100	1000	*	3200	*	1,100		79		45	J	35	U	27	J	35	U	37	U	38	U	37	U	36	U	38	U	36	U	40	U	40	U
Aroclor-1260	100	1000	*	3200	*	410		36	U	37	J	35	U	35	U	35	U	37	U	38	U	37	U	36	U	38	U	36	U	40	U	40	U
Metals (mg/kg)																																	
Arsenic	13	16	f	16	*f*	3.70		3.20		28.10		2.60	U	2.50	U	3.70		12.10		3.70		3.20		2.30	J	3.20		29.30		52.80		1.60	J
Barium	350	350		820		26.80	U	27.20	U	293		26	U	31.70		26.30	U	32.70		36.20		28.70		26.60	U	53.60		*457*		*624*		30.40	
Chromium	30	36		NS		7.50		6.70		17.00		4.90		6.20		5.80		11.90		11.30		10.00		10.30		14.20		17.80		23.10		8.90	
Hexavalent Chromium	1	22		19		1.10	UJ	1.10	UJ	1.20	UJ	1.10	UJ	1.10	UJ	0.30	J-	*2.10*	J	0.80	J	*1.50*	J-	0.52	J	*4.10*	J	*2.90*	J-	1.20	UJ	*1.10*	J
Copper	50	270		1720		6.10		5.00	J	18.20		3.20	J	3.50	J	4.00	J	12.30		9.20		7.30		5.70		13.40		19.10		26.50		6.60	
Lead	63	400		450		14.00		8.10		24.40		2.60	U	3.90		6.30		29.20		22.50		12.30		6.50		36.70		14.60		14.90		7.20	
Manganese	1,600	2000	f	2000	f	127		112		151		57.40		96.30		80.90		182		219		148		126		275		141		111		152	
Mercury	0.18	0.81	a	0.73		0.01	J	0.01	J	0.09	J	0.10	U	0.01	J	0.01	J	0.05	J	0.08	J	0.02	J	0.01	J	0.05	J	0.02	J	0.16		0.04	J
Nickel	30	140		130		5.80		4.80		18.50		3.50		4.30		3.90		9.10		7.70		7.10		6.60		11.20		19.20		*31.00*		7.70	
Zinc	109	2200	d	2480		17.20		14.50		35.30		5.80		12.50		11.90		37.60		21.10		21.20		15.10		44.60		23.20		34		20.20	

Table 3.1 Summary of Soil Analytical Data
For Detected Compounds

Sample Location	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential		NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater		TP-117								TP-118											
Sample ID						TP-117-SS		TP-117-CA		TP-117-B		TP-917-B		TP-118-SS		TP-118-FL		TP-118-S		TP-118-W		TP-118-CA		TP-118-B	
Sample Date						12/19/12		12/19/12		12/19/12		12/19/12		12/19/12		12/19/12		12/19/12		12/19/12		12/19/12		12/19/12	
Lithological Layer						Fill/Top Soil		Coal Ash		Coal Ash - Duplicate				Fill/Top Soil		Fill		Fill		Fill		Coal Ash		Sand	
Sample Depth						0 to 2 inches bgs		7 to 7.5 ft bgs (Coal Ash		14 to 14.5 ft bgs		(Bottom)		0 to 2 inches bgs		0.5 to 1 ft bgs (Fill		1 to 1.5 ft bgs		1 to 1.5 ft bgs		5 to 5.5 ft bgs		8 to 8.5 ft bgs (Bottom)	
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)																									
Benzo(a)anthracene	1,000	1000	f	1000	*f*	20	J	190	UJ	220	UJ	220	UJ	280	J	290	J	5,600	U	260	J	310	J	760	
Benzo(a)pyrene	1,000	1000	f	22000		20	J	190	UJ	220	UJ	220	UJ	240	J	230	J	5,600	U	200	J	250	J	610	J
Benzo(b)fluoranthene	1,000	1000	f	1700		36	J	190	UJ	220	UJ	220	UJ	360	J	340	J	5,600	U	230	J	380	J	880	J
Chrysene	1,000	1000		1000	*f*	25	J	190	UJ	220	UJ	220	UJ	280	J	270	J	5,600	U	280	J	310	J	720	
Indeno(1,2,3-cd)pyrene	500	500	f	8200		17	J	190	UJ	220	UJ	220	UJ	180	J	150	J	5,600	U	3,700	U	140	J	380	J
Pesticides (µg/kg)																									
4,4'-DDD	3.3	2600		14000		3.80	U	3.80	U	4.20	U	4.30	U	4.40	U	38	U	36	U	36	U	3.90	U	3.70	U
4,4'-DDE	3.3	1800		17000		1.90	J	3.80	U	4.20	U	4.30	U	26.00		110		1.20	J	36	U	2.30	J	8.80	
4,4'-DDT	3.3	1700		136000		3.80	U	3.80	U	4.20	U	4.30	U	15.00	NJ	93	NJ	36	U	36	U	7.20	J	12	
alpha-Chlordane	94	910		2900		1.90	U	1.90	U	2.20	U	2.20	U	42.00	NJ	640	NJ	19	U	18	U	2	U	4	NJ
Dieldrin	5	39		100		3.80	U	3.80	U	4.20	U	4.30	U	4.40	U	38	U	36	U	36	U	4	U	4	U
Polychlorinated Biphenyls (µg/kg)																									
Aroclor-1254	100	1000	*	3200	*	38	U	38	U	42	U	43	U	44	U	38	U	360	U	360	U	39	U	37	U
Aroclor-1260	100	1000	*	3200	*	38	U	38	U	42	U	43	U	44	U	38	U	360	U	360	U	39	U	37	U
Metals (mg/kg)																									
Arsenic	13	16	f	16	*f*	4.90	J	**65.00**		**52.10**		**45.50**		*14.30*		8.00		2.70	U	2.70	U	**31.10**		10.70	
Barium	350	350		820		53.40		*694.00*		*688.00*		*612.00*		111.00		41.10		16.50	J	17.90	J	249		106	
Chromium	30	36		NS		15.50		22.00		24.60		20.40		14.80		14.40		6.80		5.80		16.70		12.90	
Hexavalent Chromium	1	22		19		*8.10*	*J-*	*1.00*	*J-*	1.30	UJ	*1.60*	*J-*	*13.00*	*J-*	*3.50*	*J-*	1.10	UJ	*1.40*	*J-*	*4.20*	*J-*	*2.80*	J-
Copper	50	270		1720		15.30		25.20		25.20		21.20		17.30		15.60		9.50		32.60		15.90		9.60	
Lead	63	400		450		*73*		16.40		14.80		12.70		34.00		43.30		42.90		23.00		23.40		16.90	
Manganese	1,600	2000	f	2000	f	295		63.50		95.50		97.30		180		248		119		115		168		127	
Mercury	0.18	0.81	a	0.73		0.07	J	*0.22*		0.15		0.12		0.08	J	0.11		0.03	J	0.02	J	0.12		0.07	J
Nickel	30	140		130		11.80		26.20		*38.10*		*30.00*		11.70		11.90		6.90		5.90		14.30		9.70	
Zinc	109	2200	d	2480		51.80		34.70		32.10		27.40		59.50		64.10		24.10		22.40		36.10		24.70	

Table 3-1 Key

	Exceeds NYSDEC Unrestricted Use SCO
	Exceeds NYDEC Residential SCO
RED	Exceeds NYDEC Protection of Groundwater SCO
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccutate or imprecise.
j-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentraion.
f	For consistuents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentraion is used as the Track 2 SCO value for this use of the site.
e	For constituents where the calcuated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.
c	The SCOs for industrial use and the protection of groundwater ewre capped at a maximum value of 1000 ppm. See TSD section 9.3.
a	This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts) See TSD Table 5.6-1.
d	The SCOs for metals were capped at a maximum vale of 10.000 ppm. See TSD section 9.3.
*	SCO is for Total PCBs

Table 3-2
Site Monitoring Wells and Temporary Well Points - 34 Woodridge Lane BCP Site

Monitoring Well	Reference Elevation of Top of PVC Casing	Ground Elevation*	Top of Well Screen		Bottom of Well Screen	
			Depth (Ft)	Elevation (Ft)	Depth (Ft)	Elevation (Ft)
MW-1	68.91	69.13	55.0	14.13	70.0	-0.87
MW-2	42.76	39.55	35.0	4.55	45.0	-5.45
MW-3	20.3	17.68	14.0	3.68	24.0	-6.32
MW-4	12.38	9.34	3.0	6.34	13.0	-3.66
Temporary Well Points						
WP-1	-	48	36.0	12.00	40.0	8.00
WP-2	-	45	43.0	2.00	47.0	-2.00
WP-3	-	40	52.0	-12.00	56.0	-16.00
WPD-4	-	9	26.0	-17.00	30.0	-21.00
WPD-5	-	15	24.0	-9.00	28.0	-13.00
WPD-6	-	17.7	36.0	-18.30	40.0	-22.30

*** estimated for temporary well points**

Table 3-3 - Temporary Wells
VOCs

Sample ID:		GWQS	SWQS-SA		WP-1				WP-2				WP-3			
Sample Date:					3/19/2013				3/19/2013				3/19/2013			
Lab ID:					L1304679-01		RL	MDL	L1304679-02		RL	MDL	L1304679-03		RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
1,1,1,2-Tetrachloroethane	630-20-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,1,1-Trichloroethane	71-55-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,1,2,2-Tetrachloroethane	79-34-5	5	5	H(WS)	ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
1,1,2-Trichloroethane	79-00-5	1			ND		1.5	0.5	ND		1.5	0.5	ND		1.5	0.5
1,1-Dichloroethane	75-34-3	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,1-Dichloroethene	75-35-4	5	5	H(WS)	ND		0.5	0.18	ND		0.5	0.18	ND		0.5	0.18
1,1-Dichloropropene	563-58-6				ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,3-Trichlorobenzene	87-61-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,3-Trichloropropane	96-18-4	0.04			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,4,5-Tetramethylbenzene	95-93-2	0			ND		2	0.65	ND		2	0.65	ND		2	0.65
1,2,4-Trichlorobenzene	120-82-1	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
			5	A(C)												
1,2,4-Trimethylbenzene	95-63-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromo-3-chloropropane	96-12-8	0.04			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006			ND		2	0.65	ND		2	0.65	ND		2	0.65
1,2-Dichlorobenzene	95-50-1	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dichloroethane	107-06-2	0.6			ND		0.5	0.16	ND		0.5	0.16	ND		0.5	0.16
1,2-Dichloropropane	78-87-5	1			ND		1	0.3	ND		1	0.3	ND		1	0.3
1,3,5-Trimethylbenzene	108-67-8	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,3-Dichlorobenzene	541-73-1	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,3-Dichloropropane	142-28-9	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,4-Dichlorobenzene	106-46-7	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,4-Diethylbenzene	105-05-5	0			ND		2	0.7	ND		2	0.7	ND		2	0.7
1,4-Dioxane	123-91-1	0			ND		250	76	ND		250	76	ND		250	76
2,2-Dichloropropane	594-20-7	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
2-Butanone	78-93-3				ND		5	1	ND		5	1	ND		5	1
2-Hexanone	591-78-6				ND		5	1	ND		5	1	ND		5	1
4-Ethyltoluene	622-96-8	0			ND		2	0.7	ND		2	0.7	ND		2	0.7
4-Methyl-2-pentanone	108-10-1				ND		5	1	ND		5	1	ND		5	1
Acetone	67-64-1				ND		5	1	ND		5	1	3.3	J	5	1
Acrylonitrile	107-13-1	5			ND		5	1.5	ND		5	1.5	ND		5	1.5
Benzene	71-43-2	1	10	H(FC)	ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Bromobenzene	108-86-1	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Bromochloromethane	74-97-5	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Bromodichloromethane	75-27-4				ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Bromoform	75-25-2				ND		2	0.65	ND		2	0.65	ND		2	0.65
Bromomethane	74-83-9	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Carbon disulfide	75-15-0	60			ND		5	1	ND		5	1	ND		5	1
Carbon tetrachloride	56-23-5	5			ND		0.5	0.16	ND		0.5	0.16	ND		0.5	0.16
Chlorobenzene	108-90-7		400	H(FC)	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Chloroethane	75-00-3	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Chloroform	67-66-3	7			0.75	J	2.5	0.7	0.97	J	2.5	0.7	1	J	2.5	0.7
Chloromethane	74-87-3	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
cis-1,2-Dichloroethene	156-59-2	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
cis-1,3-Dichloropropene	10061-01-5				ND		0.5	0.14	ND		0.5	0.14	ND		0.5	0.14
Dibromochloromethane	124-48-1				ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Dibromomethane	74-95-3	5			ND		5	1	ND		5	1	ND		5	1
Dichlorodifluoromethane	75-71-8	5			ND		5	1	ND		5	1	ND		5	1
Ethyl ether	60-29-7	0			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Ethylbenzene	100-41-4	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Hexachlorobutadiene	87-68-3	0.5	0.3	A(C)	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Isopropylbenzene	98-82-8	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Methyl tert butyl ether	1634-04-4				ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Methylene chloride	75-09-2	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7

Table 3-3 - Temporary Wells
VOCs

Sample ID:		GWQS	SWQS-SA		WP-1			WP-2			WP-3		
Sample Date:					3/19/2013			3/19/2013			3/19/2013		
Lab ID:					L1304679-01	RL	MDL	L1304679-02	RL	MDL	L1304679-03	RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Naphthalene	91-20-3				ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
n-Butylbenzene	104-51-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
n-Propylbenzene	103-65-1	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
o-Chlorotoluene	95-49-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
o-Xylene	95-47-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p/m-Xylene	179601-23-1	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p-Chlorotoluene	106-43-4	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p-Isopropyltoluene	99-87-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
sec-Butylbenzene	135-98-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Styrene	100-42-5	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
tert-Butylbenzene	98-06-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Tetrachloroethene	127-18-4	5			ND	0.5	0.18	ND	0.5	0.18	ND	0.5	0.18
Toluene	108-88-3	5	6000	H(FC)	ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
trans-1,2-Dichloroethene	156-60-5	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
trans-1,3-Dichloropropene	10061-02-6				ND	0.5	0.16	ND	0.5	0.16	ND	0.5	0.16
trans-1,4-Dichloro-2-butene	110-57-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Trichloroethene	79-01-6	5	40	H(FC)	ND	0.5	0.17	ND	0.5	0.17	ND	0.5	0.17
Trichlorofluoromethane	75-69-4	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Vinyl acetate	108-05-4				ND	5	1	ND	5	1	ND	5	1
Vinyl chloride	75-01-4	2			ND	1	0.33	ND	1	0.33	ND	1	0.33

Table 3-3 - Temporary Wells
VOCs

Sample ID:		GWQS	SWQS-SA		WPD-4				WPD-5				WPD-6			
Sample Date:					3/19/2013				3/19/2013				3/19/2013			
Lab ID:					L1304679-04		RL	MDL	L1304679-05		RL	MDL	L1304679-06		RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
1,1,1,2-Tetrachloroethane	630-20-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,1,1-Trichloroethane	71-55-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,1,2,2-Tetrachloroethane	79-34-5	5	5	H(WS)	ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
1,1,2-Trichloroethane	79-00-5	1			ND		1.5	0.5	ND		1.5	0.5	ND		1.5	0.5
1,1-Dichloroethane	75-34-3	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,1-Dichloroethene	75-35-4	5	5	H(WS)	ND	`	0.5	0.18	ND		0.5	0.18	ND		0.5	0.18
1,1-Dichloropropene	563-58-6				ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,3-Trichlorobenzene	87-61-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,3-Trichloropropane	96-18-4	0.04			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,4,5-Tetramethylbenzene	95-93-2	0			ND		2	0.65	ND		2	0.65	ND		2	0.65
1,2,4-Trichlorobenzene	120-82-1	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
			5	A(C)												
1,2,4-Trimethylbenzene	95-63-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromo-3-chloropropane	96-12-8	0.04			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006			ND		2	0.65	ND		2	0.65	ND		2	0.65
1,2-Dichlorobenzene	95-50-1	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dichloroethane	107-06-2	0.6			ND		0.5	0.16	ND		0.5	0.16	ND		0.5	0.16
1,2-Dichloropropane	78-87-5	1			ND		1	0.3	ND		1	0.3	ND		1	0.3
1,3,5-Trimethylbenzene	108-67-8	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,3-Dichlorobenzene	541-73-1	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,3-Dichloropropane	142-28-9	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,4-Dichlorobenzene	106-46-7	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,4-Diethylbenzene	105-05-5	0			ND		2	0.7	ND		2	0.7	ND		2	0.7
1,4-Dioxane	123-91-1	0			ND		250	76	ND		250	76	ND		250	76
2,2-Dichloropropane	594-20-7	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
2-Butanone	78-93-3				ND		5	1	ND		5	1	ND		5	1
2-Hexanone	591-78-6				ND		5	1	ND		5	1	ND		5	1
4-Ethyltoluene	622-96-8	0			ND		2	0.7	ND		2	0.7	ND		2	0.7
4-Methyl-2-pentanone	108-10-1				ND		5	1	ND		5	1	ND		5	1
Acetone	67-64-1				ND		5	1	2.3	J	5	1	1.1	J	5	1
Acrylonitrile	107-13-1	5			ND		5	1.5	ND		5	1.5	ND		5	1.5
Benzene	71-43-2	1	10	H(FC)	ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Bromobenzene	108-86-1	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Bromochloromethane	74-97-5	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Bromodichloromethane	75-27-4				ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Bromoform	75-25-2				ND		2	0.65	ND		2	0.65	ND		2	0.65
Bromomethane	74-83-9	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Carbon disulfide	75-15-0	60			ND		5	1	ND		5	1	ND		5	1
Carbon tetrachloride	56-23-5	5			ND		0.5	0.16	ND		0.5	0.16	ND		0.5	0.16
Chlorobenzene	108-90-7		400	H(FC)	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Chloroethane	75-00-3	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Chloroform	67-66-3	7			1.1	J	2.5	0.7	0.71	J	2.5	0.7	1	J	2.5	0.7
Chloromethane	74-87-3	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
cis-1,2-Dichloroethene	156-59-2	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
cis-1,3-Dichloropropene	10061-01-5				ND		0.5	0.14	ND		0.5	0.14	ND		0.5	0.14
Dibromochloromethane	124-48-1				ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Dibromomethane	74-95-3	5			ND		5	1	ND		5	1	ND		5	1
Dichlorodifluoromethane	75-71-8	5			ND		5	1	ND		5	1	ND		5	1
Ethyl ether	60-29-7	0			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Ethylbenzene	100-41-4	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Hexachlorobutadiene	87-68-3	0.5	0.3	A(C)	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Isopropylbenzene	98-82-8	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Methyl tert butyl ether	1634-04-4				1	J	2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Methylene chloride	75-09-2	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7

Table 3-3 - Temporary Wells
VOCs

Sample ID:		GWQS	SWQS-SA		WPD-4			WPD-5			WPD-6		
Sample Date:					3/19/2013			3/19/2013			3/19/2013		
Lab ID:					L1304679-04	RL	MDL	L1304679-05	RL	MDL	L1304679-06	RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Naphthalene	91-20-3				ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
n-Butylbenzene	104-51-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
n-Propylbenzene	103-65-1	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
o-Chlorotoluene	95-49-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
o-Xylene	95-47-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p/m-Xylene	179601-23-1	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p-Chlorotoluene	106-43-4	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p-Isopropyltoluene	99-87-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
sec-Butylbenzene	135-98-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Styrene	100-42-5	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
tert-Butylbenzene	98-06-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Tetrachloroethene	127-18-4	5			ND	0.5	0.18	ND	0.5	0.18	ND	0.5	0.18
Toluene	108-88-3	5	6000	H(FC)	ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
trans-1,2-Dichloroethene	156-60-5	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
trans-1,3-Dichloropropene	10061-02-6				ND	0.5	0.16	ND	0.5	0.16	ND	0.5	0.16
trans-1,4-Dichloro-2-butene	110-57-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Trichloroethene	79-01-6	5	40	H(FC)	ND	0.5	0.17	ND	0.5	0.17	ND	0.5	0.17
Trichlorofluoromethane	75-69-4	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Vinyl acetate	108-05-4				ND	5	1	ND	5	1	ND	5	1
Vinyl chloride	75-01-4	2			ND	1	0.33	ND	1	0.33	ND	1	0.33

Table 3-3 - Temporary Wells
VOCs

Sample ID:		GWQS	SWQS-SA		TRIP BLK 3/19/2013	RL	MDL
Sample Date:							
Lab ID:					L1304679-07		
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)
1,1,1,2-Tetrachloroethane	630-20-6	5			ND	2.5	0.7
1,1,1-Trichloroethane	71-55-6	5			ND	2.5	0.7
1,1,2,2-Tetrachloroethane	79-34-5	5	5	H(WS)	ND	0.5	0.19
1,1,2-Trichloroethane	79-00-5	1			ND	1.5	0.5
1,1-Dichloroethane	75-34-3	5			ND	2.5	0.7
1,1-Dichloroethene	75-35-4	5	5	H(WS)	ND	0.5	0.18
1,1-Dichloropropene	563-58-6				ND	2.5	0.7
1,2,3-Trichlorobenzene	87-61-6	5			ND	2.5	0.7
1,2,3-Trichloropropane	96-18-4	0.04			ND	2.5	0.7
1,2,4,5-Tetramethylbenzene	95-93-2	0			ND	2	0.65
1,2,4-Trichlorobenzene	120-82-1	5			ND	2.5	0.7
			5	A(C)			
1,2,4-Trimethylbenzene	95-63-6	5			ND	2.5	0.7
1,2-Dibromo-3-chloropropane	96-12-8	0.04			ND	2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006			ND	2	0.65
1,2-Dichlorobenzene	95-50-1	3			ND	2.5	0.7
1,2-Dichloroethane	107-06-2	0.6			ND	0.5	0.16
1,2-Dichloropropane	78-87-5	1			ND	1	0.3
1,3,5-Trimethylbenzene	108-67-8	5			ND	2.5	0.7
1,3-Dichlorobenzene	541-73-1	3			ND	2.5	0.7
1,3-Dichloropropane	142-28-9	5			ND	2.5	0.7
1,4-Dichlorobenzene	106-46-7	3			ND	2.5	0.7
1,4-Diethylbenzene	105-05-5	0			ND	2	0.7
1,4-Dioxane	123-91-1	0			ND	250	76
2,2-Dichloropropane	594-20-7	5			ND	2.5	0.7
2-Butanone	78-93-3				ND	5	1
2-Hexanone	591-78-6				ND	5	1
4-Ethyltoluene	622-96-8	0			ND	2	0.7
4-Methyl-2-pentanone	108-10-1				ND	5	1
Acetone	67-64-1				ND	5	1
Acrylonitrile	107-13-1	5			ND	5	1.5
Benzene	71-43-2	1	10	H(FC)	ND	0.5	0.19
Bromobenzene	108-86-1	5			ND	2.5	0.7
Bromochloromethane	74-97-5	5			ND	2.5	0.7
Bromodichloromethane	75-27-4				ND	0.5	0.19
Bromoform	75-25-2				ND	2	0.65
Bromomethane	74-83-9	5			ND	2.5	0.7
Carbon disulfide	75-15-0	60			ND	5	1
Carbon tetrachloride	56-23-5	5			ND	0.5	0.16
Chlorobenzene	108-90-7		400	H(FC)	ND	2.5	0.7
Chloroethane	75-00-3	5			ND	2.5	0.7
Chloroform	67-66-3	7			ND	2.5	0.7
Chloromethane	74-87-3	5			ND	2.5	0.7
cis-1,2-Dichloroethene	156-59-2	5			ND	2.5	0.7
cis-1,3-Dichloropropene	10061-01-5				ND	0.5	0.14
Dibromochloromethane	124-48-1				ND	0.5	0.19
Dibromomethane	74-95-3	5			ND	5	1
Dichlorodifluoromethane	75-71-8	5			ND	5	1
Ethyl ether	60-29-7	0			ND	2.5	0.7
Ethylbenzene	100-41-4	5			ND	2.5	0.7
Hexachlorobutadiene	87-68-3	0.5	0.3	A(C)	ND	2.5	0.7
Isopropylbenzene	98-82-8	5			ND	2.5	0.7
Methyl tert butyl ether	1634-04-4				ND	2.5	0.7
Methylene chloride	75-09-2	5			ND	2.5	0.7

Table 3-3 - Temporary Wells
VOCs

Sample ID:		GWQS	SWQS-SA		TRIP BLK 3/19/2013		RL	MDL
Sample Date:								
Lab ID:					L1304679-07			
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Naphthalene	91-20-3				ND		2.5	0.7
n-Butylbenzene	104-51-8	5			ND		2.5	0.7
n-Propylbenzene	103-65-1	5			ND		2.5	0.7
o-Chlorotoluene	95-49-8	5			ND		2.5	0.7
o-Xylene	95-47-6	5			ND		2.5	0.7
p/m-Xylene	179601-23-1	5			ND		2.5	0.7
p-Chlorotoluene	106-43-4	5			ND		2.5	0.7
p-Isopropyltoluene	99-87-6	5			ND		2.5	0.7
sec-Butylbenzene	135-98-8	5			ND		2.5	0.7
Styrene	100-42-5	5			ND		2.5	0.7
tert-Butylbenzene	98-06-6	5			ND		2.5	0.7
Tetrachloroethene	127-18-4	5			ND		0.5	0.18
Toluene	108-88-3	5	6000	H(FC)	ND		2.5	0.7
trans-1,2-Dichloroethene	156-60-5	5			ND		2.5	0.7
trans-1,3-Dichloropropene	10061-02-6				ND		0.5	0.16
trans-1,4-Dichloro-2-butene	110-57-6	5			ND		2.5	0.7
Trichloroethene	79-01-6	5	40	H(FC)	ND		0.5	0.17
Trichlorofluoromethane	75-69-4	5			ND		2.5	0.7
Vinyl acetate	108-05-4				ND		5	1
Vinyl chloride	75-01-4	2			ND		1	0.33

Table 3-4 Monitoring Wells
VOCs

Sample ID:		GWQS	SWQS-SA		MW-1				MW-2				MW-3			
Sample Date:					3/22/2013				3/22/2013				3/22/2013			
Lab ID:					L1304892-06		RL	MDL	L1304892-05		RL	MDL	L1304892-04		RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
1,1,1,2-Tetrachloroethane	630-20-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,1,1-Trichloroethane	71-55-6	5			1.2	J	2.5	0.7	ND		2.5	0.7	0.89	J	2.5	0.7
1,1,2,2-Tetrachloroethane	79-34-5	5	5	H(WS)	ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
1,1,2-Trichloroethane	79-00-5	1			ND		1.5	0.5	ND		1.5	0.5	ND		1.5	0.5
1,1-Dichloroethane	75-34-3	5			2.2	J	2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,1-Dichloroethene	75-35-4	5	5	H(WS)	ND		0.5	0.18	ND		0.5	0.18	ND		0.5	0.18
1,1-Dichloropropene	563-58-6				ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,3-Trichlorobenzene	87-61-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,3-Trichloropropane	96-18-4	0.04			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2,4,5-Tetramethylbenzene	95-93-2				ND		2	0.65	ND		2	0.65	ND		2	0.65
1,2,4-Trichlorobenzene	120-82-1	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Sum of 1,2,3 - 1,2,4 - Trichlorobenzenes			5	A(C)	ND				ND				ND			
1,2,4-Trimethylbenzene	95-63-6	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromo-3-chloropropane	96-12-8	0.04			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006			ND		2	0.65	ND		2	0.65	ND		2	0.65
1,2-Dichlorobenzene	95-50-1	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,2-Dichloroethane	107-06-2	0.6			ND		0.5	0.16	ND		0.5	0.16	ND		0.5	0.16
1,2-Dichloropropane	78-87-5	1			ND		1	0.3	ND		1	0.3	ND		1	0.3
1,3,5-Trimethylbenzene	108-67-8	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,3-Dichlorobenzene	541-73-1	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,3-Dichloropropane	142-28-9	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,4-Dichlorobenzene	106-46-7	3			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
1,4-Diethylbenzene	105-05-5				ND		2	0.7	ND		2	0.7	ND		2	0.7
1,4-Dioxane	123-91-1				ND		250	76	ND		250	76	ND		250	76
2,2-Dichloropropane	594-20-7	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
2-Butanone	78-93-3				ND		5	1	ND		5	1	ND		5	1
2-Hexanone	591-78-6				ND		5	1	ND		5	1	ND		5	1
4-Ethyltoluene	622-96-8				ND		2	0.7	ND		2	0.7	ND		2	0.7
4-Methyl-2-pentanone	108-10-1				ND		5	1	ND		5	1	ND		5	1
Acetone	67-64-1				ND		5	1	ND		5	1	ND		5	1
Acrylonitrile	107-13-1	5			ND		5	1.5	ND		5	1.5	ND		5	1.5
Benzene	71-43-2	1	10	H(FC)	ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Bromobenzene	108-86-1	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Bromochloromethane	74-97-5	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Bromodichloromethane	75-27-4				ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Bromoform	75-25-2				ND		2	0.65	ND		2	0.65	ND		2	0.65
Bromomethane	74-83-9	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Carbon disulfide	75-15-0	60			ND		5	1	ND		5	1	ND		5	1
Carbon tetrachloride	56-23-5	5			ND		0.5	0.16	ND		0.5	0.16	ND		0.5	0.16
Chlorobenzene	108-90-7		400	H(FC)	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Chloroethane	75-00-3	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Chloroform	67-66-3	7			ND		2.5	0.7	0.78	J	2.5	0.7	ND		2.5	0.7
Chloromethane	74-87-3	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
cis-1,2-Dichloroethene	156-59-2	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
cis-1,3-Dichloropropene	10061-01-5				ND		0.5	0.14	ND		0.5	0.14	ND		0.5	0.14
Dibromochloromethane	124-48-1				ND		0.5	0.19	ND		0.5	0.19	ND		0.5	0.19
Dibromomethane	74-95-3	5			ND		5	1	ND		5	1	ND		5	1
Dichlorodifluoromethane	75-71-8	5			ND		5	1	ND		5	1	ND		5	1
Ethyl ether	60-29-7				ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Ethylbenzene	100-41-4	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Hexachlorobutadiene	87-68-3	0.5	0.3	A(C)	ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Isopropylbenzene	98-82-8	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Methyl tert butyl ether	1634-04-4				ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7
Methylene chloride	75-09-2	5			ND		2.5	0.7	ND		2.5	0.7	ND		2.5	0.7

Table 3-4 Monitoring Wells
VOCs

Sample ID:		GWQS	SWQS-SA		MW-1			MW-2			MW-3		
Sample Date:					3/22/2013			3/22/2013			3/22/2013		
Lab ID:					L1304892-06	RL	MDL	L1304892-05	RL	MDL	L1304892-04	RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Naphthalene	91-20-3				ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
n-Butylbenzene	104-51-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
n-Propylbenzene	103-65-1	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
o-Chlorotoluene	95-49-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
o-Xylene	95-47-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p/m-Xylene	179601-23-	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p-Chlorotoluene	106-43-4	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
p-Isopropyltoluene	99-87-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
sec-Butylbenzene	135-98-8	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Styrene	100-42-5	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
tert-Butylbenzene	98-06-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Tetrachloroethene	127-18-4	5			ND	0.5	0.18	ND	0.5	0.18	ND	0.5	0.18
Toluene	108-88-3	5	6000	H(FC)	ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
trans-1,2-Dichloroethene	156-60-5	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
trans-1,3-Dichloropropene	10061-02-6				ND	0.5	0.16	ND	0.5	0.16	ND	0.5	0.16
trans-1,4-Dichloro-2-butene	110-57-6	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Trichloroethene	79-01-6	5	40	H(FC)	1	0.5	0.17	0.33 J	0.5	0.17	ND	0.5	0.17
Trichlorofluoromethane	75-69-4	5			ND	2.5	0.7	ND	2.5	0.7	ND	2.5	0.7
Vinyl acetate	108-05-4				ND	5	1	ND	5	1	ND	5	1
Vinyl chloride	75-01-4	2			ND	1	0.33	ND	1	0.33	ND	1	0.33

Table 3-4 Monitoring Wells
VOCs

Sample ID:		GWQS	SWQS-SA		MW-4				MW-4 DUP			
Sample Date:					3/22/2013				3/22/2013			
Lab ID:					L1304892-03		RL	MDL	L1304892-07		RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
1,1,1,2-Tetrachloroethane	630-20-6	5			ND		2.5	0.7	ND		2.5	0.7
1,1,1-Trichloroethane	71-55-6	5			ND		2.5	0.7	ND		2.5	0.7
1,1,2,2-Tetrachloroethane	79-34-5	5	5	H(WS)	ND		0.5	0.19	ND		0.5	0.19
1,1,2-Trichloroethane	79-00-5	1			ND		1.5	0.5	ND		1.5	0.5
1,1-Dichloroethane	75-34-3	5			ND		2.5	0.7	ND		2.5	0.7
1,1-Dichloroethene	75-35-4	5	5	H(WS)	ND		0.5	0.18	ND		0.5	0.18
1,1-Dichloropropene	563-58-6				ND		2.5	0.7	ND		2.5	0.7
1,2,3-Trichlorobenzene	87-61-6	5			ND		2.5	0.7	ND		2.5	0.7
1,2,3-Trichloropropane	96-18-4	0.04			ND		2.5	0.7	ND		2.5	0.7
1,2,4,5-Tetramethylbenzene	95-93-2				ND		2	0.65	ND		2	0.65
1,2,4-Trichlorobenzene	120-82-1	5			ND		2.5	0.7	ND		2.5	0.7
Sum of 1,2,3 - 1,2,4 - Trichlorobenzenes			5	A(C)	ND				ND			
1,2,4-Trimethylbenzene	95-63-6	5			ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromo-3-chloropropane	96-12-8	0.04			ND		2.5	0.7	ND		2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006			ND		2	0.65	ND		2	0.65
1,2-Dichlorobenzene	95-50-1	3			ND		2.5	0.7	ND		2.5	0.7
1,2-Dichloroethane	107-06-2	0.6			ND		0.5	0.16	ND		0.5	0.16
1,2-Dichloropropane	78-87-5	1			ND		1	0.3	ND		1	0.3
1,3,5-Trimethylbenzene	108-67-8	5			ND		2.5	0.7	ND		2.5	0.7
1,3-Dichlorobenzene	541-73-1	3			ND		2.5	0.7	ND		2.5	0.7
1,3-Dichloropropane	142-28-9	5			ND		2.5	0.7	ND		2.5	0.7
1,4-Dichlorobenzene	106-46-7	3			ND		2.5	0.7	ND		2.5	0.7
1,4-Diethylbenzene	105-05-5				ND		2	0.7	ND		2	0.7
1,4-Dioxane	123-91-1				ND		250	76	ND		250	76
2,2-Dichloropropane	594-20-7	5			ND		2.5	0.7	ND		2.5	0.7
2-Butanone	78-93-3				ND		5	1	ND		5	1
2-Hexanone	591-78-6				ND		5	1	ND		5	1
4-Ethyltoluene	622-96-8				ND		2	0.7	ND		2	0.7
4-Methyl-2-pentanone	108-10-1				ND		5	1	ND		5	1
Acetone	67-64-1				ND		5	1	ND		5	1
Acrylonitrile	107-13-1	5			ND		5	1.5	ND		5	1.5
Benzene	71-43-2	1	10	H(FC)	ND		0.5	0.19	ND		0.5	0.19
Bromobenzene	108-86-1	5			ND		2.5	0.7	ND		2.5	0.7
Bromochloromethane	74-97-5	5			ND		2.5	0.7	ND		2.5	0.7
Bromodichloromethane	75-27-4				ND		0.5	0.19	ND		0.5	0.19
Bromoform	75-25-2				ND		2	0.65	ND		2	0.65
Bromomethane	74-83-9	5			ND		2.5	0.7	ND		2.5	0.7
Carbon disulfide	75-15-0	60			ND		5	1	ND		5	1
Carbon tetrachloride	56-23-5	5			ND		0.5	0.16	ND		0.5	0.16
Chlorobenzene	108-90-7		400	H(FC)	ND		2.5	0.7	ND		2.5	0.7
Chloroethane	75-00-3	5			ND		2.5	0.7	ND		2.5	0.7
Chloroform	67-66-3	7			0.8	J	2.5	0.7	0.81	J	2.5	0.7
Chloromethane	74-87-3	5			ND		2.5	0.7	ND		2.5	0.7
cis-1,2-Dichloroethene	156-59-2	5			ND		2.5	0.7	ND		2.5	0.7
cis-1,3-Dichloropropene	10061-01-5				ND		0.5	0.14	ND		0.5	0.14
Dibromochloromethane	124-48-1				ND		0.5	0.19	ND		0.5	0.19
Dibromomethane	74-95-3	5			ND		5	1	ND		5	1
Dichlorodifluoromethane	75-71-8	5			ND		5	1	ND		5	1
Ethyl ether	60-29-7				ND		2.5	0.7	ND		2.5	0.7
Ethylbenzene	100-41-4	5			ND		2.5	0.7	ND		2.5	0.7
Hexachlorobutadiene	87-68-3	0.5	0.3	A(C)	ND		2.5	0.7	ND		2.5	0.7
Isopropylbenzene	98-82-8	5			ND		2.5	0.7	ND		2.5	0.7
Methyl tert butyl ether	1634-04-4				ND		2.5	0.7	ND		2.5	0.7
Methylene chloride	75-09-2	5			ND		2.5	0.7	ND		2.5	0.7

Table 3-4 Monitoring Wells
VOCs

Sample ID:		GWQS	SWQS-SA		MW-4				MW-4 DUP			
Sample Date:					3/22/2013				3/22/2013			
Lab ID:					L1304892-03		RL	MDL	L1304892-07		RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Naphthalene	91-20-3				ND		2.5	0.7	ND		2.5	0.7
n-Butylbenzene	104-51-8	5			ND		2.5	0.7	ND		2.5	0.7
n-Propylbenzene	103-65-1	5			ND		2.5	0.7	ND		2.5	0.7
o-Chlorotoluene	95-49-8	5			ND		2.5	0.7	ND		2.5	0.7
o-Xylene	95-47-6	5			ND		2.5	0.7	ND		2.5	0.7
p/m-Xylene	179601-23-	5			ND		2.5	0.7	ND		2.5	0.7
p-Chlorotoluene	106-43-4	5			ND		2.5	0.7	ND		2.5	0.7
p-Isopropyltoluene	99-87-6	5			ND		2.5	0.7	ND		2.5	0.7
sec-Butylbenzene	135-98-8	5			ND		2.5	0.7	ND		2.5	0.7
Styrene	100-42-5	5			ND		2.5	0.7	ND		2.5	0.7
tert-Butylbenzene	98-06-6	5			ND		2.5	0.7	ND		2.5	0.7
Tetrachloroethene	127-18-4	5			ND		0.5	0.18	ND		0.5	0.18
Toluene	108-88-3	5	6000	H(FC)	ND		2.5	0.7	ND		2.5	0.7
trans-1,2-Dichloroethene	156-60-5	5			ND		2.5	0.7	ND		2.5	0.7
trans-1,3-Dichloropropene	10061-02-6				ND		0.5	0.16	ND		0.5	0.16
trans-1,4-Dichloro-2-butene	110-57-6	5			ND		2.5	0.7	ND		2.5	0.7
Trichloroethene	79-01-6	5	40	H(FC)	ND		0.5	0.17	ND		0.5	0.17
Trichlorofluoromethane	75-69-4	5			ND		2.5	0.7	ND		2.5	0.7
Vinyl acetate	108-05-4				ND		5	1	ND		5	1
Vinyl chloride	75-01-4	2			ND		1	0.33	ND		1	0.33

Table 3-4 Monitoring Wells
VOCs

Sample ID:		GWQS	SWQS-SA		FB			TB		
Sample Date:					3/22/2013			3/22/2013		
Lab ID:					L1304892-02	RL	MDL	L1304892-01	RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
1,1,1,2-Tetrachloroethane	630-20-6	5			ND	2.5	0.7	ND	2.5	0.7
1,1,1-Trichloroethane	71-55-6	5			ND	2.5	0.7	ND	2.5	0.7
1,1,2,2-Tetrachloroethane	79-34-5	5	5	H(WS)	ND	0.5	0.19	ND	0.5	0.19
1,1,2-Trichloroethane	79-00-5	1			ND	1.5	0.5	ND	1.5	0.5
1,1-Dichloroethane	75-34-3	5			ND	2.5	0.7	ND	2.5	0.7
1,1-Dichloroethene	75-35-4	5	5	H(WS)	ND	0.5	0.18	ND	0.5	0.18
1,1-Dichloropropene	563-58-6				ND	2.5	0.7	ND	2.5	0.7
1,2,3-Trichlorobenzene	87-61-6	5			ND	2.5	0.7	ND	2.5	0.7
1,2,3-Trichloropropane	96-18-4	0.04			ND	2.5	0.7	ND	2.5	0.7
1,2,4,5-Tetramethylbenzene	95-93-2				ND	2	0.65	ND	2	0.65
1,2,4-Trichlorobenzene	120-82-1	5			ND	2.5	0.7	ND	2.5	0.7
Sum of 1,2,3 - 1,2,4 - Trichlorobenzenes			5	A(C)	ND			ND		
1,2,4-Trimethylbenzene	95-63-6	5			ND	2.5	0.7	ND	2.5	0.7
1,2-Dibromo-3-chloropropane	96-12-8	0.04			ND	2.5	0.7	ND	2.5	0.7
1,2-Dibromoethane	106-93-4	0.0006			ND	2	0.65	ND	2	0.65
1,2-Dichlorobenzene	95-50-1	3			ND	2.5	0.7	ND	2.5	0.7
1,2-Dichloroethane	107-06-2	0.6			ND	0.5	0.16	ND	0.5	0.16
1,2-Dichloropropane	78-87-5	1			ND	1	0.3	ND	1	0.3
1,3,5-Trimethylbenzene	108-67-8	5			ND	2.5	0.7	ND	2.5	0.7
1,3-Dichlorobenzene	541-73-1	3			ND	2.5	0.7	ND	2.5	0.7
1,3-Dichloropropane	142-28-9	5			ND	2.5	0.7	ND	2.5	0.7
1,4-Dichlorobenzene	106-46-7	3			ND	2.5	0.7	ND	2.5	0.7
1,4-Diethylbenzene	105-05-5				ND	2	0.7	ND	2	0.7
1,4-Dioxane	123-91-1				ND	250	76	ND	250	76
2,2-Dichloropropane	594-20-7	5			ND	2.5	0.7	ND	2.5	0.7
2-Butanone	78-93-3				ND	5	1	ND	5	1
2-Hexanone	591-78-6				ND	5	1	ND	5	1
4-Ethyltoluene	622-96-8				ND	2	0.7	ND	2	0.7
4-Methyl-2-pentanone	108-10-1				ND	5	1	ND	5	1
Acetone	67-64-1				7.5	5	1	1 J	5	1
Acrylonitrile	107-13-1	5			ND	5	1.5	ND	5	1.5
Benzene	71-43-2	1	10	H(FC)	ND	0.5	0.19	ND	0.5	0.19
Bromobenzene	108-86-1	5			ND	2.5	0.7	ND	2.5	0.7
Bromochloromethane	74-97-5	5			ND	2.5	0.7	ND	2.5	0.7
Bromodichloromethane	75-27-4				ND	0.5	0.19	ND	0.5	0.19
Bromoform	75-25-2				ND	2	0.65	ND	2	0.65
Bromomethane	74-83-9	5			ND	2.5	0.7	ND	2.5	0.7
Carbon disulfide	75-15-0	60			ND	5	1	ND	5	1
Carbon tetrachloride	56-23-5	5			ND	0.5	0.16	ND	0.5	0.16
Chlorobenzene	108-90-7		400	H(FC)	ND	2.5	0.7	ND	2.5	0.7
Chloroethane	75-00-3	5			ND	2.5	0.7	ND	2.5	0.7
Chloroform	67-66-3	7			ND	2.5	0.7	ND	2.5	0.7
Chloromethane	74-87-3	5			ND	2.5	0.7	ND	2.5	0.7
cis-1,2-Dichloroethene	156-59-2	5			ND	2.5	0.7	ND	2.5	0.7
cis-1,3-Dichloropropene	10061-01-5				ND	0.5	0.14	ND	0.5	0.14
Dibromochloromethane	124-48-1				ND	0.5	0.19	ND	0.5	0.19
Dibromomethane	74-95-3	5			ND	5	1	ND	5	1
Dichlorodifluoromethane	75-71-8	5			ND	5	1	ND	5	1
Ethyl ether	60-29-7				ND	2.5	0.7	ND	2.5	0.7
Ethylbenzene	100-41-4	5			ND	2.5	0.7	ND	2.5	0.7
Hexachlorobutadiene	87-68-3	0.5	0.3	A(C)	ND	2.5	0.7	ND	2.5	0.7
Isopropylbenzene	98-82-8	5			ND	2.5	0.7	ND	2.5	0.7
Methyl tert butyl ether	1634-04-4				ND	2.5	0.7	ND	2.5	0.7
Methylene chloride	75-09-2	5			ND	2.5	0.7	ND	2.5	0.7

Table 3-4 Monitoring Wells
VOCs

Sample ID:		GWQS	SWQS-SA		FB			TB		
Sample Date:					3/22/2013			3/22/2013		
Lab ID:					L1304892-02	RL	MDL	L1304892-01	RL	MDL
VOCs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Naphthalene	91-20-3				ND	2.5	0.7	ND	2.5	0.7
n-Butylbenzene	104-51-8	5			ND	2.5	0.7	ND	2.5	0.7
n-Propylbenzene	103-65-1	5			ND	2.5	0.7	ND	2.5	0.7
o-Chlorotoluene	95-49-8	5			ND	2.5	0.7	ND	2.5	0.7
o-Xylene	95-47-6	5			ND	2.5	0.7	ND	2.5	0.7
p/m-Xylene	179601-23-	5			ND	2.5	0.7	ND	2.5	0.7
p-Chlorotoluene	106-43-4	5			ND	2.5	0.7	ND	2.5	0.7
p-Isopropyltoluene	99-87-6	5			ND	2.5	0.7	ND	2.5	0.7
sec-Butylbenzene	135-98-8	5			ND	2.5	0.7	ND	2.5	0.7
Styrene	100-42-5	5			ND	2.5	0.7	ND	2.5	0.7
tert-Butylbenzene	98-06-6	5			ND	2.5	0.7	ND	2.5	0.7
Tetrachloroethene	127-18-4	5			ND	0.5	0.18	ND	0.5	0.18
Toluene	108-88-3	5	6000	H(FC)	ND	2.5	0.7	ND	2.5	0.7
trans-1,2-Dichloroethene	156-60-5	5			ND	2.5	0.7	ND	2.5	0.7
trans-1,3-Dichloropropene	10061-02-6				ND	0.5	0.16	ND	0.5	0.16
trans-1,4-Dichloro-2-butene	110-57-6	5			ND	2.5	0.7	ND	2.5	0.7
Trichloroethene	79-01-6	5	40	H(FC)	ND	0.5	0.17	ND	0.5	0.17
Trichlorofluoromethane	75-69-4	5			ND	2.5	0.7	ND	2.5	0.7
Vinyl acetate	108-05-4				ND	5	1	ND	5	1
Vinyl chloride	75-01-4	2			ND	1	0.33	ND	1	0.33

Table 3-5 - Temporary Wells
Pesticides and PCBs

Sample ID:		GWQS	SWQS-SA		WP-1			WP-2			WP-3		
Sample Date:					3/19/2013			3/19/2013			3/19/2013		
Lab ID:					L1304679-01	RL	MDL	L1304679-02	RL	MDL	L1304679-03	RL	MDL
Pesticides	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
4,4'-DDD	72-54-8	0.3			ND	0.04	0.005	ND	0.04	0.005	ND	0.04	0.005
4,4'-DDE	72-55-9	0.2			ND	0.04	0.004	ND	0.04	0.004	ND	0.04	0.004
4,4'-DDT	50-29-3	0.2			ND	0.04	0.004	ND	0.04	0.004	0.009 J	0.04	0.004
Sum of DDD, DDE, DDT			1E-05	W	ND			ND			**0.009** J		
Aldrin	309-00-2	0.001			ND	0.02	0.002	ND	0.02	0.002	ND	0.02	0.002
Alpha-BHC	319-84-6	0.01	0.002	H(FC)	ND	0.02	0.004	ND	0.02	0.004	ND	0.02	0.004
Beta-BHC	319-85-7	0.04	0.007	H(FC)	ND	0.02	0.006	ND	0.02	0.006	ND	0.02	0.006
Chlordane	57-74-9	0.05			ND	0.2	0.046	ND	0.2	0.046	ND	0.2	0.046
cis-Chlordane	5103-71-9				ND	0.02	0.007	ND	0.02	0.007	ND	0.02	0.007
Delta-BHC	319-86-8	0.04	0.008	H(FC)	ND	0.02	0.005	ND	0.02	0.005	ND	0.02	0.005
Dieldrin	60-57-1	0.004			ND	0.04	0.004	ND	0.04	0.004	ND	0.04	0.004
Sum of Aldrin and Dieldrin			0.001	H(FC)	ND			ND			ND		
Endosulfan I	959-98-8				ND	0.02	0.003	ND	0.02	0.003	ND	0.02	0.003
Endosulfan II	33213-65-9				ND	0.04	0.005	ND	0.04	0.005	ND	0.04	0.005
Endosulfan sulfate	1031-07-8				ND	0.04	0.005	ND	0.04	0.005	ND	0.04	0.005
Endrin	72-20-8				ND	0.04	0.004	ND	0.04	0.004	ND	0.04	0.004
Endrin ketone	53494-70-5	5			ND	0.04	0.005	ND	0.04	0.005	ND	0.04	0.005
Heptachlor	76-44-8	0.04	0.0004	H(FC)	ND	0.02	0.003	ND	0.02	0.003	ND	0.02	0.003
Heptachlor epoxide	1024-57-3	0.03	0.0004	H(FC)	ND	0.02	0.004	ND	0.02	0.004	ND	0.02	0.004
Lindane	58-89-9	0.05			ND	0.02	0.004	ND	0.02	0.004	ND	0.02	0.004
Methoxychlor	72-43-5	35	0.03	A(C)	ND	0.2	0.007	ND	0.2	0.007	ND	0.2	0.007
Toxaphene	8001-35-2	0.06			ND	0.2	0.063	ND	0.2	0.063	ND	0.2	0.063
trans-Chlordane	5103-74-2				ND	0.02	0.006	ND	0.02	0.006	ND	0.02	0.006
PCBs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aroclor 1016	12674-11-2	5			ND	0.083	0.055	ND	0.083	0.055	ND	0.083	0.055
Aroclor 1221	11104-28-2	5			ND	0.083	0.053	ND	0.083	0.053	ND	0.083	0.053
Aroclor 1232	11141-16-5	5			ND	0.083	0.031	ND	0.083	0.031	ND	0.083	0.031
Aroclor 1242	53469-21-9	5			ND	0.083	0.06	ND	0.083	0.06	ND	0.083	0.06
Aroclor 1248	12672-29-6	5			ND	0.083	0.051	ND	0.083	0.051	ND	0.083	0.051
Aroclor 1254	11097-69-1	5			ND	0.083	0.034	ND	0.083	0.034	ND	0.083	0.034
Aroclor 1260	11096-82-5	5			ND	0.083	0.032	ND	0.083	0.032	ND	0.083	0.032
Sum of PCBs			0.0001	W	ND			ND			ND		

Exceeds New York GA Ground Water Quality Standards

RED Exceeds New York SA Surface Water Quality Standards

Table 3-5 - Temporary Wells
Pesticides and PCBs

Sample ID:		GWQS	SWQS-SA		WPD-4			WPD-5			WPD-6		
Sample Date:					3/19/2013			3/19/2013			3/19/2013		
Lab ID:					L1304679-04			L1304679-05			L1304679-06		
						RL	MDL		RL	MDL		RL	MDL
Pesticides	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)		(ug/l)	(ug/l)		(ug/l)
4,4'-DDD	72-54-8	0.3			ND	0.04	0.005	ND	0.04	0.005	ND	0.04	0.005
4,4'-DDE	72-55-9	0.2			ND	0.04	0.004	ND	0.04	0.004	ND	0.04	0.004
4,4'-DDT	50-29-3	0.2			ND	0.04	0.004	ND	0.04	0.004	ND	0.04	0.004
Sum of DDD, DDE, DDT			1E-05	W	ND			ND			ND		
Aldrin	309-00-2	0.001			ND	0.02	0.002	ND	0.02	0.002	ND	0.02	0.002
Alpha-BHC	319-84-6	0.01	0.002	H(FC)	ND	0.02	0.004	ND	0.02	0.004	ND	0.02	0.004
Beta-BHC	319-85-7	0.04	0.007	H(FC)	ND	0.02	0.006	ND	0.02	0.006	ND	0.02	0.006
Chlordane	57-74-9	0.05			ND	0.2	0.046	ND	0.2	0.046	ND	0.2	0.046
cis-Chlordane	5103-71-9				ND	0.02	0.007	ND	0.02	0.007	ND	0.02	0.007
Delta-BHC	319-86-8	0.04	0.008	H(FC)	ND	0.02	0.005	ND	0.02	0.005	ND	0.02	0.005
Dieldrin	60-57-1	0.004			0.022 J	0.04	0.004	ND	0.04	0.004	ND	0.04	0.004
Sum of Aldrin and Dieldrin			0.001	H(FC)	**0.022** J			ND			ND		
Endosulfan I	959-98-8				ND	0.02	0.003	ND	0.02	0.003	ND	0.02	0.003
Endosulfan II	33213-65-9				ND	0.04	0.005	ND	0.04	0.005	ND	0.04	0.005
Endosulfan sulfate	1031-07-8				ND	0.04	0.005	ND	0.04	0.005	ND	0.04	0.005
Endrin	72-20-8				ND	0.04	0.004	ND	0.04	0.004	ND	0.04	0.004
Endrin ketone	53494-70-5	5			0.008 J	0.04	0.005	ND	0.04	0.005	ND	0.04	0.005
Heptachlor	76-44-8	0.04	0.0004	H(FC)	ND	0.02	0.003	ND	0.02	0.003	ND	0.02	0.003
Heptachlor epoxide	1024-57-3	0.03	0.0004	H(FC)	ND	0.02	0.004	ND	0.02	0.004	ND	0.02	0.004
Lindane	58-89-9	0.05			ND	0.02	0.004	ND	0.02	0.004	ND	0.02	0.004
Methoxychlor	72-43-5	35	0.03	A(C)	ND	0.2	0.007	ND	0.2	0.007	ND	0.2	0.007
Toxaphene	8001-35-2	0.06			ND	0.2	0.063	ND	0.2	0.063	ND	0.2	0.063
trans-Chlordane	5103-74-2				ND	0.02	0.006	ND	0.02	0.006	ND	0.02	0.006
PCBs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aroclor 1016	12674-11-2	5			ND	0.083	0.055	ND	0.083	0.055	ND	0.083	0.055
Aroclor 1221	11104-28-2	5			ND	0.083	0.053	ND	0.083	0.053	ND	0.083	0.053
Aroclor 1232	11141-16-5	5			ND	0.083	0.031	ND	0.083	0.031	ND	0.083	0.031
Aroclor 1242	53469-21-9	5			ND	0.083	0.06	ND	0.083	0.06	ND	0.083	0.06
Aroclor 1248	12672-29-6	5			ND	0.083	0.051	ND	0.083	0.051	ND	0.083	0.051
Aroclor 1254	11097-69-1	5			ND	0.083	0.034	ND	0.083	0.034	ND	0.083	0.034
Aroclor 1260	11096-82-5	5			ND	0.083	0.032	ND	0.083	0.032	ND	0.083	0.032
Sum of PCBs			0.0001	W	ND			ND			ND		

Exceeds New York GA Ground Water (
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Table 3-6 Monitoring Wells
Pesticides and PCBs

Sample ID:		GWQS	SWQS-SA		MW-1		RL	MDL	MW-2		RL	MDL	MW-3		RL	MDL
Sample Date:					3/22/2013				3/22/2013				3/22/2013			
Lab ID:					L1304892-06		RL	MDL	L1304892-05		RL	MDL	L1304892-04		RL	MDL
Pesticides	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
4,4'-DDD	72-54-8	0.3			ND		0.04	0.005	ND		0.04	0.005	ND		0.04	0.005
4,4'-DDE	72-55-9	0.2			ND		0.04	0.004	ND		0.04	0.004	ND		0.04	0.004
4,4'-DDT	50-29-3	0.2			ND		0.04	0.004	ND		0.04	0.004	ND		0.04	0.004
Sum of DDD, DDE, DDT			1E-05	W	ND				ND				ND			
Aldrin	309-00-2	0.001			ND		0.02	0.002	ND		0.02	0.002	ND		0.02	0.002
Alpha-BHC	319-84-6	0.01	0.002	H(FC)	ND		0.02	0.004	ND		0.02	0.004	ND		0.02	0.004
Beta-BHC	319-85-7	0.04	0.007	H(FC)	ND		0.02	0.006	ND		0.02	0.006	ND		0.02	0.006
Chlordane	57-74-9	0.05			ND		0.2	0.046	ND		0.2	0.046	ND		0.2	0.046
cis-Chlordane	5103-71-9				ND		0.02	0.007	ND		0.02	0.007	ND		0.02	0.007
Delta-BHC	319-86-8	0.04	0.008	H(FC)	ND		0.02	0.005	ND		0.02	0.005	ND		0.02	0.005
Dieldrin	60-57-1	0.004			ND		0.04	0.004	0.014	J	0.04	0.004	ND		0.04	0.004
Sum of Aldrin and Dieldrin			0.001	H(FC)	ND				**0.014**	J			ND			
Endosulfan I	959-98-8				ND		0.02	0.003	ND		0.02	0.003	ND		0.02	0.003
Endosulfan II	33213-65-9				ND		0.04	0.005	ND		0.04	0.005	ND		0.04	0.005
Endosulfan sulfate	1031-07-8				0.014	J	0.04	0.005	ND		0.04	0.005	ND		0.04	0.005
Endrin	72-20-8				ND		0.04	0.004	ND		0.04	0.004	ND		0.04	0.004
Endrin ketone	53494-70-5	5			ND		0.04	0.005	ND		0.04	0.005	ND		0.04	0.005
Heptachlor	76-44-8	0.04	0.0004	H(FC)	ND		0.02	0.003	ND		0.02	0.003	ND		0.02	0.003
Heptachlor epoxide	1024-57-3	0.03	0.0004	H(FC)	ND		0.02	0.004	ND		0.02	0.004	ND		0.02	0.004
Lindane	58-89-9	0.05			ND		0.02	0.004	ND		0.02	0.004	ND		0.02	0.004
Methoxychlor	72-43-5	35	0.03	A(C)	ND		0.2	0.007	ND		0.2	0.007	ND		0.2	0.007
Toxaphene	8001-35-2	0.06			ND		0.2	0.063	ND		0.2	0.063	ND		0.2	0.063
trans-Chlordane	5103-74-2				ND		0.02	0.006	ND		0.02	0.006	ND		0.02	0.006
PCBs	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Aroclor 1016	12674-11-2	5			ND		0.083	0.055	ND		0.083	0.055	ND		0.083	0.055
Aroclor 1221	11104-28-2	5			ND		0.083	0.053	ND		0.083	0.053	ND		0.083	0.053
Aroclor 1232	11141-16-5	5			ND		0.083	0.031	ND		0.083	0.031	ND		0.083	0.031
Aroclor 1242	53469-21-9	5			ND		0.083	0.06	ND		0.083	0.06	ND		0.083	0.06
Aroclor 1248	12672-29-6	5			ND		0.083	0.051	ND		0.083	0.051	ND		0.083	0.051
Aroclor 1254	11097-69-1	5			ND		0.083	0.034	ND		0.083	0.034	ND		0.083	0.034
Aroclor 1260	11096-82-5	5			ND		0.083	0.032	ND		0.083	0.032	ND		0.083	0.032
Sum of PCBs			0.0001	W	ND				ND				ND			

Exceeds New York GA Ground Water Quality Standards

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Table 3-6 Monitoring Wells
Pesticides and PCBs

Sample ID:		GWQS	SWQS-SA		MW-4	RL	MDL	MW-4 DUP	RL	MDL	FB	RL	MDL
Sample Date:					3/22/2013			3/22/2013			3/22/2013		
Lab ID:					L1304892-03 R1			L1304892-07			L1304892-02		
Pesticides	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
4,4'-DDD	72-54-8	0.3			ND	0.04	0.005	ND	0.04	0.005	ND	0.043	0.005
4,4'-DDE	72-55-9	0.2			ND	0.04	0.004	ND	0.04	0.004	ND	0.043	0.004
4,4'-DDT	50-29-3	0.2			ND	0.04	0.004	ND	0.04	0.004	ND	0.043	0.005
Sum of DDD, DDE, DDT			1E-05	W	ND			ND			ND		
Aldrin	309-00-2	0.001			ND	0.02	0.002	ND	0.02	0.002	ND	0.022	0.002
Alpha-BHC	319-84-6	0.01	0.002	H(FC)	ND	0.02	0.004	ND	0.02	0.004	ND	0.022	0.005
Beta-BHC	319-85-7	0.04	0.007	H(FC)	ND	0.02	0.006	ND	0.02	0.006	ND	0.022	0.006
Chlordane	57-74-9	0.05			ND	0.2	0.046	ND	0.2	0.046	ND	0.215	0.05
cis-Chlordane	5103-71-9				ND	0.02	0.007	ND	0.02	0.007	ND	0.022	0.007
Delta-BHC	319-86-8	0.04	0.008	H(FC)	ND	0.02	0.005	ND	0.02	0.005	ND	0.022	0.005
Dieldrin	60-57-1	0.004			ND	0.04	0.004	ND	0.04	0.004	ND	0.043	0.005
Sum of Aldrin and Dieldrin			0.001	H(FC)	ND			ND			ND		
Endosulfan I	959-98-8				ND	0.02	0.003	ND	0.02	0.003	ND	0.022	0.004
Endosulfan II	33213-65-9				ND	0.04	0.005	ND	0.04	0.005	ND	0.043	0.006
Endosulfan sulfate	1031-07-8				ND	0.04	0.005	ND	0.04	0.005	ND	0.043	0.005
Endrin	72-20-8				ND	0.04	0.004	ND	0.04	0.004	ND	0.043	0.005
Endrin ketone	53494-70-5	5			ND	0.04	0.005	ND	0.04	0.005	ND	0.043	0.005
Heptachlor	76-44-8	0.04	0.0004	H(FC)	ND	0.02	0.003	ND	0.02	0.003	ND	0.022	0.003
Heptachlor epoxide	1024-57-3	0.03	0.0004	H(FC)	ND	0.02	0.004	ND	0.02	0.004	ND	0.022	0.004
Lindane	58-89-9	0.05			ND	0.02	0.004	ND	0.02	0.004	ND	0.022	0.005
Methoxychlor	72-43-5	35	0.03	A(C)	ND	0.2	0.007	ND	0.2	0.007	ND	0.215	0.007
Toxaphene	8001-35-2	0.06			ND	0.2	0.063	ND	0.2	0.063	ND	0.215	0.068
trans-Chlordane	5103-74-2				ND	0.02	0.006	ND	0.02	0.006	ND	0.022	0.007
PCBs	CasNum	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aroclor 1016	12674-11-2	5			ND	0.083	0.055	ND	0.083	0.055	ND	0.083	0.055
Aroclor 1221	11104-28-2	5			ND	0.083	0.053	ND	0.083	0.053	ND	0.083	0.053
Aroclor 1232	11141-16-5	5			ND	0.083	0.031	ND	0.083	0.031	ND	0.083	0.031
Aroclor 1242	53469-21-9	5			ND	0.083	0.06	ND	0.083	0.06	ND	0.083	0.06
Aroclor 1248	12672-29-6	5			ND	0.083	0.051	ND	0.083	0.051	ND	0.083	0.051
Aroclor 1254	11097-69-1	5			ND	0.083	0.034	ND	0.083	0.034	ND	0.083	0.034
Aroclor 1260	11096-82-5	5			ND	0.083	0.032	ND	0.083	0.032	ND	0.083	0.032
Sum of PCBs			0.0001	W	ND			ND			ND		

	Exceeds New York GA Ground Water (
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Table 3-7 - Temporary Wells
Total Metals

Sample ID: / Sample Date: / Lab ID:		GWQS	SWQS-SA		WP-1 3/19/2013 L1304679-01		RL	MDL	WP-2 3/19/2013 L1304679-02		RL	MDL	WP-3 3/19/2013 L1304679-03		RL	MDL
Total Metals	CasNum	(ug/l)			(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Aluminum, Total	7429-90-5				3370	D	2000	400	11000	D	2000	400	3240	D	2000	400
Antimony, Total	7440-36-0	3			0.16	J	0.5	0.1	0.24	J	0.5	0.1	0.13	J	0.5	0.1
Arsenic, Total	7440-38-2	25	63	A(C)	5.77		0.5	0.2	5.88		0.5	0.2	4.93		0.5	0.2
Barium, Total	7440-39-3	1000			131.4		0.5	0.1	234.9		0.5	0.1	95.66		0.5	0.1
Beryllium, Total	7440-41-7				0.62		0.5	0.1	1.21		0.5	0.1	0.55		0.5	0.1
Cadmium, Total	7440-43-9	5	21	A(A)	0.49		0.2	0.1	0.45		0.2	0.1	0.25		0.2	0.1
Calcium, Total	7440-70-2				24300		100	32	60600	D	20000	6400	24600		100	32
Chromium, Total	7440-47-3	50		A(A)	57.84		1	0.2	101.4		1	0.2	75.79		1	0.2
Cobalt, Total	7440-48-4				13.08		0.5	0.1	17.46		0.5	0.1	6.58		0.5	0.1
Copper, Total	7440-50-8	200	4.8	A(A)	**22.27**		1	0.1	**58.88**		1	0.1	**36.46**		1	0.1
Iron, Total	7439-89-6	300			12800		50	13	30100		50	13	15200		50	13
Lead, Total	7439-92-1	25	204	A(A)	49.77		1	0.2	32.11		1	0.2	36.3		1	0.2
Magnesium, Total	7439-95-4				10700		70	23	15300		70	23	9580		70	23
Manganese, Total	7439-96-5	300			904.4	D	100	20	1496	D	100	20	197.4		0.5	0.1
Mercury, Total	7439-97-6	0.7			0.14	J	0.2	0.1	0.06	J	0.2	0.1	ND	D	0.2	0.1
Nickel, Total	7440-02-0	100	74	A(A)	47.66		0.5	0.1	44.03		0.5	0.1	26.45		0.5	0.1
Potassium, Total	7440-09-7				2520		100	27	5340		100	27	2440		100	27
Selenium, Total	7782-49-2	10			5.37		5	0.3	3.73	J	5	0.3	3.46	J	5	0.3
Silver, Total	7440-22-4	50			ND		0.4	0.1	ND		0.4	0.1	ND		0.4	0.1
Sodium, Total	7440-23-5	20000			20600		100	15	27000		100	15	25200		100	15
Thallium, Total	7440-28-0				0.29	J	0.5	0.03	0.56		0.5	0.03	0.11	J	0.5	0.03
Vanadium, Total	7440-62-2				48.84		5	0.1	34.54		5	0.1	40.03		5	0.1
Zinc, Total	7440-66-6		95	A(A)	17.1		10	1.2	83.85		10	1.2	78.02		10	1.2
General Chemistry	CasNum	(ug/l)			(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Chromium, Trivalent	16065-83-1				58		10	10	100		10	10	76		10	10
Cyanide, Total	57-12-5	200	1	A(A)	**16**		5	1	**4**	J	5	1	**2**	J	5	1
Chromium, Hexavalent	18540-29-9	50			ND		10	1	ND		10	1	ND		10	1

Exceeds New York Ground Water Quality Standards

RED Exceeds New York Surface Water Quality Standards

Table 3-7 - Temporary Wells
Total Metals

Sample ID:		GWQS	SWQS-SA		WPD-4				WPD-5				WPD-6			
Sample Date:					3/19/2013				3/19/2013				3/19/2013			
Lab ID:					L1304679-04		RL	MDL	L1304679-05		RL	MDL	L1304679-06		RL	MDL
Total Metals	CasNum	(ug/l)			(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Aluminum, Total	7429-90-5				310		20	4	110000	D	4000	800	23700	D	2000	400
Antimony, Total	7440-36-0	3			ND		1	0.2	0.2	J	1	0.2	0.45	J	1	0.2
Arsenic, Total	7440-38-2	25	63	A(C)	1.95		1	0.4	8.58		1	0.4	12.72		1	0.4
Barium, Total	7440-39-3	1000			50.14		1	0.2	1376	D	100	20	435.8		1	0.2
Beryllium, Total	7440-41-7				ND		1	0.2	6.86		1	0.2	1.87		1	0.2
Cadmium, Total	7440-43-9	5	21	A(A)	ND		0.4	0.1	2.23		0.4	0.1	1.15		0.4	0.1
Calcium, Total	7440-70-2				24900		200	64	152000	D	20000	6400	32000		200	64
Chromium, Total	7440-47-3	50		A(A)	6.58		2	0.4	185.1		2	0.4	122.9		2	0.4
Cobalt, Total	7440-48-4				0.82	J	1	0.2	108.2		1	0.2	51.72		1	0.2
Copper, Total	7440-50-8	200	4.8	A(A)	4.48		2	0.2	**101**		2	0.2	**60.16**		2	0.2
Iron, Total	7439-89-6	300			1460		100	26	155000	D	10000	2600	65400	D	10000	2600
Lead, Total	7439-92-1	25	204	A(A)	2.52		2	0.4	137.3		2	0.4	25.04		2	0.4
Magnesium, Total	7439-95-4				9530		140	46	46600		140	46	16300		140	46
Manganese, Total	7439-96-5	300			61.28		1	0.2	15660	D	100	20	5614		1	0.2
Mercury, Total	7439-97-6	0.7			ND	D	0.2	0.1	0.17	J	0.2	0.1	ND	D	0.2	0.1
Nickel, Total	7440-02-0	100	74	A(A)	7.34		1	0.2	**189.8**		1	0.2	**168.7**		1	0.2
Potassium, Total	7440-09-7				2760		200	54	29000		200	54	8330		200	54
Selenium, Total	7782-49-2	10			0.99	J	10	1	18.1		10	1	6.6	J	10	1
Silver, Total	7440-22-4	50			ND		0.8	0.2	ND		0.8	0.2	ND		0.8	0.2
Sodium, Total	7440-23-5	20000			29100		200	30	17600		200	30	33100		200	30
Thallium, Total	7440-28-0				ND		1	0.1	4.42		1	0.1	1.1		1	0.1
Vanadium, Total	7440-62-2				5.93	J	10	0.2	124.6		10	0.2	56.7		10	0.2
Zinc, Total	7440-66-6		95	A(A)	11.63	J	20	2.4	**342**		20	2.4	**98.46**		20	2.4
General Chemistry	CasNum	(ug/l)			(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Chromium, Trivalent	16065-83-1				ND		10	10	180		10	10	120		10	10
Cyanide, Total	57-12-5	200	1	A(A)	**2**	J	5	1	**2**	J	5	1	**3**	J	5	1
Chromium, Hexavalent	18540-29-9	50			ND		10	1	ND		10	1	ND		10	1

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Table 3-8 - Temporary Wells
Dissolved Metals

Sample ID:		GWQS	SWQS-SA		WP-1				WP-2				WP-3			
Sample Date:					3/19/2013				3/19/2013				3/19/2013			
Lab ID:					L1304679-01		RL	MDL	L1304679-02		RL	MDL	L1304679-03		RL	MDL
Dissolved Metals	CasNum	(ug/l)			(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Aluminum, Dissolved	7429-90-5				126	J	500	100	187	J	500	100	ND		500	100
Antimony, Dissolved	7440-36-0	3			ND		50	5	ND		50	5	ND		50	5
Arsenic, Dissolved	7440-38-2	25	63	A(C)	ND		25	10	ND		25	10	ND		25	10
Barium, Dissolved	7440-39-3	1000			64		25	5	52.45		25	5	34.95		25	5
Beryllium, Dissolved	7440-41-7				ND		25	5	ND		25	5	ND		25	5
Cadmium, Dissolved	7440-43-9	5	21	A(A)	ND		25	2.5	ND		25	2.5	ND		25	2.5
Calcium, Dissolved	7440-70-2				27300		5000	1600	46700		5000	1600	27400		5000	1600
Chromium, Dissolved	7440-47-3	50		A(A)	ND		50	10	ND		50	10	ND		50	10
Cobalt, Dissolved	7440-48-4				7	J	25	5	8.95	J	25	5	13.15	J	25	5
Copper, Dissolved	7440-50-8	200	4.8	A(A)	ND		50	5	ND		50	5	ND		50	5
Iron, Dissolved	7439-89-6	300			ND		2500	650	1300	J	2500	650	9060		2500	650
Lead, Dissolved	7439-92-1	25	204	A(A)	ND		50	10	ND		50	10	ND		50	10
Magnesium, Dissolved	7439-95-4				12400		5000	1150	13700		5000	1150	11200		5000	1150
Manganese, Dissolved	7439-96-5	300			406		25	5	887		25	5	417.1		25	5
Mercury, Dissolved	7439-97-6	0.7	0.0026	W	ND		0.2	0.1	ND		0.2	0.1	ND		0.2	0.1
Nickel, Dissolved	7440-02-0	100	74	A(A)	20	J	25	5	15.1	J	25	5	31.75		25	5
Potassium, Dissolved	7440-09-7				2450	J	5000	1350	3140	J	5000	1350	2800	J	5000	1350
Selenium, Dissolved	7782-49-2	10			ND		250	15	ND		250	15	ND		250	15
Silver, Dissolved	7440-22-4	50			ND		25	5	ND		25	5	ND		25	5
Sodium, Dissolved	7440-23-5	20000			23600		5000	750	29000		5000	750	30800		5000	750
Thallium, Dissolved	7440-28-0				ND		25	1.5	18	J	25	1.5	ND		25	1.5
Vanadium, Dissolved	7440-62-2				ND		250	5	ND		250	5	ND		250	5
Zinc, Dissolved	7440-66-6		95	A(A)	ND		500	60	ND		500	60	ND		500	60
General Chemistry	CasNum	(ug/l)			(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Chromium, Hexavalent, Diss	18540-29-9	50	54	A(C)	ND		10	1	ND		10	1	ND		10	1

Exceeds New York GA Ground Water Quality Standards

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Table 3-8 - Temporary Wells
Dissolved Metals

Sample ID:		GWQS	SWQS-SA		WPD-4			WPD-5			WPD-6		
Sample Date:					3/19/2013			3/19/2013			3/19/2013		
Lab ID:					L1304679-04	RL	MDL	L1304679-05	RL	MDL	L1304679-06	RL	MDL
Dissolved Metals	CasNum	(ug/l)			(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aluminum, Dissolved	7429-90-5				ND	500	100	ND	500	100	ND	500	100
Antimony, Dissolved	7440-36-0	3			ND	50	5	ND	50	5	ND	50	5
Arsenic, Dissolved	7440-38-2	25	63	A(C)	ND	25	10	ND	25	10	ND	25	10
Barium, Dissolved	7440-39-3	1000			41.45	25	5	26.5	25	5	53.1	25	5
Beryllium, Dissolved	7440-41-7				ND	25	5	ND	25	5	ND	25	5
Cadmium, Dissolved	7440-43-9	5	21	A(A)	ND	25	2.5	ND	25	2.5	ND	25	2.5
Calcium, Dissolved	7440-70-2				21500	5000	1600	96600	5000	1600	26500	5000	1600
Chromium, Dissolved	7440-47-3	50		A(A)	ND	50	10	ND	50	10	ND	50	10
Cobalt, Dissolved	7440-48-4				ND	25	5	14.85 J	25	5	9.55 J	25	5
Copper, Dissolved	7440-50-8	200	4.8	A(A)	ND	50	5	ND	50	5	ND	50	5
Iron, Dissolved	7439-89-6	300			ND	2500	650	ND	2500	650	ND	2500	650
Lead, Dissolved	7439-92-1	25	204	A(A)	ND	50	10	ND	50	10	ND	50	10
Magnesium, Dissolved	7439-95-4				8840	5000	1150	31000	5000	1150	10800	5000	1150
Manganese, Dissolved	7439-96-5	300			70.55	25	5	3160	25	5	1714	25	5
Mercury, Dissolved	7439-97-6	0.7	0.0026	W	ND	0.2	0.1	ND	0.2	0.1	ND	0.2	0.1
Nickel, Dissolved	7440-02-0	100	74	A(A)	5.15 J	25	5	28.7	25	5	33.8	25	5
Potassium, Dissolved	7440-09-7				2200 J	5000	1350	10500	5000	1350	2480 J	5000	1350
Selenium, Dissolved	7782-49-2	10			ND	250	15	ND	250	15	ND	250	15
Silver, Dissolved	7440-22-4	50			ND	25	5	ND	25	5	ND	25	5
Sodium, Dissolved	7440-23-5	20000			27300	5000	750	23600	5000	750	33200	5000	750
Thallium, Dissolved	7440-28-0				ND	25	1.5	ND	25	1.5	ND	25	1.5
Vanadium, Dissolved	7440-62-2				ND	250	5	ND	250	5	ND	250	5
Zinc, Dissolved	7440-66-6		95	A(A)	ND	500	60	ND	500	60	ND	500	60
General Chemistry	CasNum	(ug/l)			(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Chromium, Hexavalent, Diss	18540-29-9	50	54	A(C)	ND	10	1	ND	10	1	ND	10	1
	Exceeds New York GA Ground Water (												
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Table 3-9 - Monitoring Wells
Total Metals

Sample ID:		GWQS	SWQS-SA		MW-1				MW-2				MW-3			
Sample Date:					3/22/2013				3/22/2013				3/22/2013			
Lab ID:					L1304892-06		RL	MDL	L1304892-05		RL	MDL	L1304892-04		RL	MDL
Total Metals	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Aluminum, Total	7429-90-5				19600		1000	200	207		10	2	3190		100	20
Antimony, Total	7440-36-0	3			1.57		1.5	0.1	ND		1.5	0.2	2.06		0.5	0.1
Arsenic, Total	7440-38-2	25	63	A(C)	31.54		0.5	0.2	0.34	J	0.5	0.2	3.01		0.5	0.2
Barium, Total	7440-39-3	1000			225.4		0.5	0.1	65.84		0.5	0.1	52.85		0.5	0.1
Beryllium, Total	7440-41-7				1.34		0.5	0.1	ND		0.5	0.1	0.17	J	0.5	0.1
Cadmium, Total	7440-43-9	5	21	A(A)	0.21		0.2	0.1	ND		0.2	0.1	ND		0.2	0.1
Calcium, Total	7440-70-2				32300		100	32	33700		100	32	137000		1000	320
Chromium, Total	7440-47-3	50		A(A)	74.65		1	0.2	2.61		1	0.2	12.28		1	0.2
Cobalt, Total	7440-48-4				11.03		0.5	0.1	0.57		0.5	0.1	2.66		0.5	0.1
Copper, Total	7440-50-8	200	4.8	A(A)	**59.04**		1	0.1	0.72	J	1	0.1	**6.27**		1	0.1
Iron, Total	7439-89-6	300			21800		50	13	473		50	13	6350		50	13
Lead, Total	7439-92-1	25	204	A(A)	117.4		0.5	0.2	0.26	J	0.5	0.2	4.3		1	0.2
Magnesium, Total	7439-95-4				20900		100	23	14300		100	23	31200		70	23
Manganese, Total	7439-96-5	300			601.4		5	1	42.17		0.5	0.1	192.4		0.5	0.1
Mercury, Total	7439-97-6	0.7			0.38		0.2	0.1	ND		0.2	0.1	ND		0.2	0.1
Nickel, Total	7440-02-0	100	74	A(A)	63.11		0.5	0.1	5.38		0.5	0.1	10.2		0.5	0.1
Potassium, Total	7440-09-7				4150		100	27	3430		100	27	10800		100	27
Selenium, Total	7782-49-2	10			11.4		5	0.3	0.48	J	5	0.3	17.8		5	0.3
Silver, Total	7440-22-4	50			0.15	J	0.4	0.1	ND		0.4	0.1	ND		0.4	0.1
Sodium, Total	7440-23-5	20000			20000		100	15	36000		100	15	38100		100	15
Thallium, Total	7440-28-0				0.17	J	0.5	0.03	ND		0.5	0.03	0.26	J	0.5	0.03
Vanadium, Total	7440-62-2				97.36		5	0.1	0.1	J	5	0.1	15.84		5	0.1
Zinc, Total	7440-66-6		95	A(A)	**163.2**		10	1.2	1.63	J	10	1.2	13.52		10	1.2
General Chemistry	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Chromium, Trivalent	16065-83-1	50			83		10	10	ND		10	10	13		10	10
Cyanide, Total	57-12-5	200	1	A(A)	**3**	J	5	1	**2**	J	5	1	**2**	J	5	1
Chromium, Hexavalent	18540-29-9	50			ND		10	1	ND		10	1	ND		10	1

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Table 3-9 - Monitoring Wells
Total Metals

Sample ID:		GWQS	SWQS-SA		MW-4				MW-4 DUP				FB			
Sample Date:					3/22/2013				3/22/2013				3/22/2013			
Lab ID:					L1304892-03		RL	MDL	L1304892-07		RL	MDL	L1304892-02		RL	MDL
Total Metals	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Aluminum, Total	7429-90-5				770		100	20	812	D	100	20	ND	D	4000	800
Antimony, Total	7440-36-0	3			1.82		1	0.2	1.24	J	1.5	0.1	0.98	J	1	0.2
Arsenic, Total	7440-38-2	25	63	A(C)	0.87		1	0.4	0.94		0.5	0.2	ND		1	0.4
Barium, Total	7440-39-3	1000			63.45		1	0.2	63.59		0.5	0.1	ND		100	20
Beryllium, Total	7440-41-7				ND		1	0.2	ND		0.5	0.1	ND		1	0.2
Cadmium, Total	7440-43-9	5	21	A(A)	0.05	J	0.4	0.1	ND		0.2	0.1	ND		0.4	0.1
Calcium, Total	7440-70-2				30400		200	64	29000		100	32	ND		20000	6400
Chromium, Total	7440-47-3	50		A(A)	2.05		2	0.4	2.16		1	0.2	0.41	J	2	0.4
Cobalt, Total	7440-48-4				0.96		1	0.2	0.91		0.5	0.1	ND		1	0.2
Copper, Total	7440-50-8	200	4.8	A(A)	1.89		2	0.2	2		1	0.1	0.1	J	2	0.2
Iron, Total	7439-89-6	300			1360		100	26	1440		50	13	ND		10000	2600
Lead, Total	7439-92-1	25	204	A(A)	2.98		2	0.4	2.86		0.5	0.2	ND		2	0.4
Magnesium, Total	7439-95-4				15000		140	46	14700		100	23	ND		140	46
Manganese, Total	7439-96-5	300			73.48		1	0.2	72.4		0.5	0.1	0.13	J	100	20
Mercury, Total	7439-97-6	0.7			ND		0.2	0.1	ND		0.2	0.1	ND		0.2	0.1
Nickel, Total	7440-02-0	100	74	A(A)	3.94		1	0.2	4.22		0.5	0.1	ND		1	0.2
Potassium, Total	7440-09-7				3890		200	54	3600		100	27	ND		200	54
Selenium, Total	7782-49-2	10			0.5	J	10	1	0.46	J	5	0.3	ND		10	1
Silver, Total	7440-22-4	50			ND		0.8	0.2	ND		0.4	0.1	ND		0.8	0.2
Sodium, Total	7440-23-5	20000			37800		200	30	37300		100	15	ND		200	30
Thallium, Total	7440-28-0				ND		1	0.1	ND		0.5	0.03	ND		1	0.1
Vanadium, Total	7440-62-2				2.03	J	10	0.2	2.17	J	5	0.1	ND		10	0.2
Zinc, Total	7440-66-6		95	A(A)	8.01	J	20	2.4	8.61	J	10	1.2	ND		20	2.4
General Chemistry	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Chromium, Trivalent	16065-83-1	50			ND			10	ND		10	10	ND		10	10
Cyanide, Total	57-12-5	200	1	A(A)	**2**	J		1	**2**	J	5	1	**2**	J	5	1
Chromium, Hexavalent	18540-29-9	50			ND			1	ND		10	1	ND		10	1

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Table 3-10 - Monitoring Wells
Dissolved Metals

Sample ID:		GWQS	SWQS-SA		MW-1				MW-2				MW-3			
Sample Date:					3/22/2013				3/22/2013				3/22/2013			
Lab ID:					L1304892-12		RL	MDL	L1304892-11		RL	MDL	L1304892-10		RL	MDL
Dissolved Metals	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Aluminum, Dissolved	7429-90-5				489	D	100	20	2.13	J	10	2	58.2		10	2
Antimony, Dissolved	7440-36-0	3			0.42	J	0.5	0.1	0.17	J	0.5	0.1	0.89		0.5	0.1
Arsenic, Dissolved	7440-38-2	25	63	A(C)	0.48	J	0.5	0.2	ND		0.5	0.2	0.57		0.5	0.2
Barium, Dissolved	7440-39-3	1000			40.98		0.5	0.1	67.85		0.5	0.1	28.14		0.5	0.1
Beryllium, Dissolved	7440-41-7				ND		0.5	0.1	ND		0.5	0.1	ND		0.5	0.1
Cadmium, Dissolved	7440-43-9	5	21	A(A)	ND		0.2	0.1	ND		0.2	0.1	ND		0.2	0.1
Calcium, Dissolved	7440-70-2				28500		100	32	33100		100	32	147000		1000	320
Chromium, Dissolved	7440-47-3	50		A(A)	0.94	J	1	0.2	1.01		1	0.2	2.45		1	0.2
Cobalt, Dissolved	7440-48-4				0.58		0.5	0.1	0.16	J	0.5	0.1	0.32	J	0.5	0.1
Copper, Dissolved	7440-50-8	200	4.8	A(A)	0.82	J	1	0.1	0.36	J	1	0.1	0.88	J	1	0.1
Iron, Dissolved	7439-89-6	300			235		50	13	170		50	13	725		50	13
Lead, Dissolved	7439-92-1	25	204	A(A)	0.38	J	1	0.2	ND		1	0.2	ND		1	0.2
Magnesium, Dissolved	7439-95-4				14100		70	23	13000		70	23	26700		70	23
Manganese, Dissolved	7439-96-5	300			29.73		0.5	0.1	11.77		0.5	0.1	31.82		0.5	0.1
Mercury, Dissolved	7439-97-6	0.7	0.0026	W	ND		0.2	0.1	ND		0.2	0.1	ND		0.2	0.1
Nickel, Dissolved	7440-02-0	100	74	A(A)	9.48		0.5	0.1	4.17		0.5	0.1	3.34		0.5	0.1
Potassium, Dissolved	7440-09-7				2120		100	27	2790		100	27	9480		100	27
Selenium, Dissolved	7782-49-2	10			5.04		5	0.3	0.79	J	5	0.3	18		5	0.3
Silver, Dissolved	7440-22-4	50			ND		0.4	0.1	ND		0.4	0.1	ND		0.4	0.1
Sodium, Dissolved	7440-23-5	20000			17500		100	15	33600		100	15	33700		100	15
Thallium, Dissolved	7440-28-0				ND		0.5	0.03	ND		0.5	0.03	0.32	J	0.5	0.03
Vanadium, Dissolved	7440-62-2				1.21	J	5	0.1	0.15	J	5	0.1	4.01	J	5	0.1
Zinc, Dissolved	7440-66-6		95	A(A)	7.03	J	10	1.2	2.72	J	10	1.2	5.68	J	10	1.2
General Chemistry	CasNum	(ug/l)			(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Chromium, Hexavalent, Diss	18540-29-9	50	54	A(A)	ND		10	1	ND		10	1	1	J	10	1

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Table 3-10 - Monitoring Wells
Dissolved Metals

Sample ID:		GWQS	SWQS-SA		MW-4				MW-4 DUP				FB			
Sample Date:					3/22/2013				3/22/2013				3/22/2013			
Lab ID:					L1304892-09		RL	MDL	L1304892-13		RL	MDL	L1304892-08		RL	MDL
Dissolved Metals	CasNum	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Aluminum, Dissolved	7429-90-5				8.02	J	10	2	16.4		10	2	ND		10	2
Antimony, Dissolved	7440-36-0	3			0.27	J	0.5	0.1	0.17	J	0.5	0.1	0.44	J	0.5	0.1
Arsenic, Dissolved	7440-38-2	25	63	A(C)	ND		0.5	0.2	0.2	J	0.5	0.2	ND		0.5	0.2
Barium, Dissolved	7440-39-3	1000			62.82		0.5	0.1	60.77		0.5	0.1	0.22	J	0.5	0.1
Beryllium, Dissolved	7440-41-7				ND		0.5	0.1	ND		0.5	0.1	ND		0.5	0.1
Cadmium, Dissolved	7440-43-9	5	21	A(A)	ND		0.2	0.1	ND		0.2	0.1	ND		0.2	0.1
Calcium, Dissolved	7440-70-2				32200		100	32	31200		100	32	32.6	J	100	32
Chromium, Dissolved	7440-47-3	50		A(A)	0.98	J	1	0.2	0.81	J	1	0.2	0.3	J	1	0.2
Cobalt, Dissolved	7440-48-4				0.19	J	0.5	0.1	0.18	J	0.5	0.1	ND		0.5	0.1
Copper, Dissolved	7440-50-8	200	4.8	A(A)	0.41	J	1	0.1	0.46	J	1	0.1	0.2	J	1	0.1
Iron, Dissolved	7439-89-6	300			162		50	13	163		50	13	16.6	J	50	13
Lead, Dissolved	7439-92-1	25	204	A(A)	ND		1	0.2	ND		1	0.2	ND		1	0.2
Magnesium, Dissolved	7439-95-4				14400		70	23	14000		70	23	ND		70	23
Manganese, Dissolved	7439-96-5	300			6.42		0.5	0.1	7.07		0.5	0.1	0.27	J	0.5	0.1
Mercury, Dissolved	7439-97-6	0.7	0.0026	W	ND		0.2	0.1	ND		0.2	0.1	ND		0.2	0.1
Nickel, Dissolved	7440-02-0	100	74	A(A)	2.98		0.5	0.1	2.85		0.5	0.1	0.12	J	0.5	0.1
Potassium, Dissolved	7440-09-7				3370		100	27	3270		100	27	ND		100	27
Selenium, Dissolved	7782-49-2	10			0.6	J	5	0.3	0.56	J	5	0.3	ND		5	0.3
Silver, Dissolved	7440-22-4	50			ND		0.4	0.1	ND		0.4	0.1	ND		0.4	0.1
Sodium, Dissolved	7440-23-5	20000			36900		100	15	35800		100	15	149		100	15
Thallium, Dissolved	7440-28-0				0.03	J	0.5	0.03	ND		0.5	0.03	ND		0.5	0.03
Vanadium, Dissolved	7440-62-2				0.28	J	5	0.1	0.29	J	5	0.1	ND		5	0.1
Zinc, Dissolved	7440-66-6		95	A(A)	5.63	J	10	1.2	4.81	J	10	1.2	15.15		10	1.2
General Chemistry	CasNum	(ug/l)			(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Chromium, Hexavalent, Diss	18540-29-9	50	54	A(A)	ND		10	1	ND		10	1	ND		10	1

Exceeds New York GA Ground Water

RED Exceeds New York SA Surface Water

Table 3-11 - Soil Gas
TO-15, Methane and Hydrogen Sulfide

Sample ID:		SG-1			SG-2			SG-3		
Sample Date:		6/5/2013			6/5/2013			6/5/2013		
Lab ID:		200-16909-5		RL	200-16909-2		RL	200-16909-1		RL
TO-15	CasNum	ug/m3		ug/m3	ug/m3		ug/m3	ug/m3		ug/m3
1,1,1-Trichloroethane	71-55-6	8.7	U	8.7	210		18	27		16
1,1,2,2-Tetrachloroethane	79-34-5	11	U	11	23	U	23	20	U	20
1,1,2-Trichloroethane	79-00-5	8.7	U	8.7	18	U	18	16	U	16
1,1-Dichloroethane	75-34-3	6.4	U	6.4	13	U	13	12	U	12
1,1-Dichloroethene	75-35-4	6.3	U	6.3	13	U	13	12	U	12
1,2,4-Trichlorobenzene	120-82-1	30	U	30	61	U	61	54	U	54
1,2,4-Trimethylbenzene	95-63-6	7.8	U	7.8	16	U	16	14	U	14
1,2-Dibromoethane	106-93-4	12	U	12	25	U	25	22	U	22
1,2-Dichlorobenzene	95-50-1	9.6	U	9.6	20	U	20	18	U	18
1,2-Dichloroethane	107-06-2	6.4	U	6.4	13	U	13	12	U	12
1,2-Dichloropropane	78-87-5	7.4	U	7.4	15	U	15	13	U	13
1,2-Dichlorotetrafluoroethane	76-14-2	11	U	11	23	U	23	20	U	20
1,3,5-Trimethylbenzene	108-67-8	7.8	U	7.8	16	U	16	14	U	14
1,3-Butadiene	106-99-0	6.3		3.5	9.9		7.3	12		6.5
1,3-Dichlorobenzene	541-73-1	9.6	U	9.6	20	U	20	18	U	18
1,4-Dichlorobenzene	106-46-7	9.6	U	9.6	20	U	20	18	U	18
1,4-Dioxane	123-91-1	140	U	140	300	U	300	260	U	260
2,2,4-Trimethylpentane	540-84-1	7.4	U	7.4	15	U	15	14	U	14
2-Chlorotoluene	95-49-8	8.2	U	8.2	17	U	17	15	U	15
3-Chloropropene	107-05-1	12	U	12	26	U	26	23	U	23
4-Ethyltoluene	622-96-8	7.8	U	7.8	16	U	16	14	U	14
4-Isopropyltoluene	99-87-6	8.7	U	8.7	18	U	18	16	U	16
Acetone	67-64-1	470		95	1200		190	640		170
Benzene	71-43-2	5.1	U	5.1	10	U	10	10		9.3
Benzyl chloride	100-44-7	8.2	U	8.2	17	U	17	15	U	15
Bromodichloromethane	75-27-4	11	U	11	22	U	22	20	U	20
Bromoethene(Vinyl Bromide)	593-60-2	7	U	7	14	U	14	13	U	13
Bromoform	75-25-2	16	U	16	34	U	34	30	U	30
Bromomethane	74-83-9	6.2	U	6.2	13	U	13	11	U	11
Carbon disulfide	75-15-0	12	U	12	26	U	26	30		23
Carbon tetrachloride	56-23-5	10	U	10	21	U	21	18	U	18
Chlorobenzene	108-90-7	7.3	U	7.3	15	U	15	13	U	13
Chloroethane	75-00-3	11	U	11	22	U	22	19	U	19
Chloroform	67-66-3	7.8	U	7.8	16	U	16	14	U	14
Chloromethane	74-87-3	8.2	U	8.2	17	U	17	15	U	15
cis-1,2-Dichloroethene	156-59-2	6.3	U	6.3	13	U	13	12	U	12
cis-1,3-Dichloropropene	10061-01-5	7.2	U	7.2	15	U	15	13	U	13
Cumene	98-82-8	7.8	U	7.8	16	U	16	14	U	14
Cyclohexane	110-82-7	5.5	U	5.5	11	U	11	10	U	10
Dibromochloromethane	124-48-1	14	U	14	28	U	28	25	U	25
Dichlorodifluoromethane	75-71-8	20	U	20	41	U	41	36	U	36
Ethylbenzene	100-41-4	6.9	U	6.9	28		14	13		13
Freon 22	75-45-6	14	U	14	29	U	29	26	U	26
Freon TF	76-13-1	12	U	12	25	U	25	22	U	22
Hexachlorobutadiene	87-68-3	17	U	17	35	U	35	31	U	31
Isopropyl alcohol	67-63-0	98	U	98	200	U	200	180	U	180
m,p-Xylene	179601-23-1	17	U	17	61		36	36		32
Methyl Butyl Ketone (2-Hexanone)	591-78-6	16	U	16	34	U	34	30	U	30
Methyl Ethyl Ketone	78-93-3	12	U	12	26		24	30		22
methyl isobutyl ketone	108-10-1	16	U	16	34	U	34	30	U	30
Methyl methacrylate	80-62-6	16	U	16	34	U	34	30	U	30
Methyl tert-butyl ether	1634-04-4	5.7	U	5.7	12	U	12	11	U	11
Methylene Chloride	75-09-2	14	U	14	28	U	28	25	U	25
Naphthalene	91-20-3	21	U	21	43	U	43	38	U	38
n-Butane	106-97-8	30		9.5	34		19	95		17
n-Butylbenzene	104-51-8	8.7	U	8.7	18	U	18	16	U	16
n-Heptane	142-82-5	6.5	U	6.5	21		13	86		12
n-Hexane	110-54-3	5.6	U	5.6	12	U	12	21		10
n-Propylbenzene	103-65-1	7.8	U	7.8	16	U	16	14	U	14
sec-Butylbenzene	135-98-8	8.7	U	8.7	18	U	18	16	U	16
Styrene	100-42-5	6.8	U	6.8	14	U	14	12	U	12

Table 3-11 - Soil Gas
TO-15, Methane and Hydrogen Sulfide

Sample ID:		SG-1			SG-2			SG-3		
Sample Date:		6/5/2013			6/5/2013			6/5/2013		
Lab ID:		200-16909-5		RL	200-16909-2		RL	200-16909-1		RL
TO-15	CasNum	ug/m3		ug/m3	ug/m3		ug/m3	ug/m3		ug/m3
tert-Butyl alcohol	75-65-0	120	U	120	250	U	250	220	U	220
tert-Butylbenzene	98-06-6	8.7	U	8.7	18	U	18	16	U	16
Tetrachloroethene	127-18-4	11	U	11	22	U	22	20	U	20
Tetrahydrofuran	109-99-9	120	U	120	240	U	240	220	U	220
Toluene	108-88-3	6	U	6	19		12	29		11
trans-1,2-Dichloroethene	156-60-5	6.3	U	6.3	13	U	13	12	U	12
trans-1,3-Dichloropropene	10061-02-6	7.2	U	7.2	15	U	15	13	U	13
Trichloroethene	79-01-6	8.6	U	8.6	18	U	18	16	U	16
Trichlorofluoromethane	75-69-4	8.9	U	8.9	18	U	18	16	U	16
Vinyl chloride	75-01-4	4.1	U	4.1	8.4	U	8.4	7.5	U	7.5
Xylene, o-	95-47-6	6.9	U	6.9	16		14	13		13
1,2-Dichloroethene, Total	540-59-0	6.3	U	6.3	13	U	13	12	U	12
Xylene (total)	1330-20-7	6.9	U	6.9	77		14	49		13
EPA 3C	% v/v	% v/v		% v/v	% v/v		% v/v	% v/v		% v/v
Methane	74-82-8	0.072	U	0.072	0.066	U	0.066	0.058	U	0.058
EPA 15_16	ppm v/v	ppm v/v		ppm v/v	ppm v/v		ppm v/v	ppm v/v		ppm v/v
Hydrogen Sulfide	7783-06-4	0.4	U	0.4	0.4	U	0.4	0.4	U	0.4

Table 3-11 - Soil Gas
TO-15, Methane and Hydrogen Sulfide

Sample ID:		SG-4			SG-5		
Sample Date:		6/5/2013			6/5/2013		
Lab ID:		200-16909-3		RL	200-16909-4		RL
TO-15	CasNum	ug/m3		ug/m3	ug/m3		ug/m3
1,1,1-Trichloroethane	71-55-6	11	U	11	17	U	17
1,1,2,2-Tetrachloroethane	79-34-5	14	U	14	22	U	22
1,1,2-Trichloroethane	79-00-5	11	U	11	17	U	17
1,1-Dichloroethane	75-34-3	8.1	U	8.1	13	U	13
1,1-Dichloroethene	75-35-4	7.9	U	7.9	13	U	13
1,2,4-Trichlorobenzene	120-82-1	37	U	37	59	U	59
1,2,4-Trimethylbenzene	95-63-6	9.8	U	9.8	16	U	16
1,2-Dibromoethane	106-93-4	15	U	15	24	U	24
1,2-Dichlorobenzene	95-50-1	12	U	12	19	U	19
1,2-Dichloroethane	107-06-2	8.1	U	8.1	13	U	13
1,2-Dichloropropane	78-87-5	9.2	U	9.2	15	U	15
1,2-Dichlorotetrafluoroethane	76-14-2	14	U	14	22	U	22
1,3,5-Trimethylbenzene	108-67-8	9.8	U	9.8	16	U	16
1,3-Butadiene	106-99-0	6.2		4.4	7	U	7
1,3-Dichlorobenzene	541-73-1	12	U	12	19	U	19
1,4-Dichlorobenzene	106-46-7	12	U	12	19	U	19
1,4-Dioxane	123-91-1	180	U	180	280	U	280
2,2,4-Trimethylpentane	540-84-1	26		9.3	15	U	15
2-Chlorotoluene	95-49-8	10	U	10	16	U	16
3-Chloropropene	107-05-1	16	U	16	25	U	25
4-Ethyltoluene	622-96-8	9.8	U	9.8	16	U	16
4-Isopropyltoluene	99-87-6	180		11	17	U	17
Acetone	67-64-1	190		120	190	U	190
Benzene	71-43-2	6.6		6.4	10	U	10
Benzyl chloride	100-44-7	10	U	10	16	U	16
Bromodichloromethane	75-27-4	13	U	13	21	U	21
Bromoethene(Vinyl Bromide)	593-60-2	8.7	U	8.7	14	U	14
Bromoform	75-25-2	21	U	21	33	U	33
Bromomethane	74-83-9	7.8	U	7.8	12	U	12
Carbon disulfide	75-15-0	19		16	25	U	25
Carbon tetrachloride	56-23-5	13	U	13	20	U	20
Chlorobenzene	108-90-7	9.2	U	9.2	15	U	15
Chloroethane	75-00-3	13	U	13	21	U	21
Chloroform	67-66-3	9.8	U	9.8	15	U	15
Chloromethane	74-87-3	10	U	10	16	U	16
cis-1,2-Dichloroethene	156-59-2	7.9	U	7.9	13	U	13
cis-1,3-Dichloropropene	10061-01-5	9.1	U	9.1	14	U	14
Cumene	98-82-8	9.8	U	9.8	16	U	16
Cyclohexane	110-82-7	8		6.9	11	U	11
Dibromochloromethane	124-48-1	17	U	17	27	U	27
Dichlorodifluoromethane	75-71-8	29		25	39	U	39
Ethylbenzene	100-41-4	8.7	U	8.7	14	U	14
Freon 22	75-45-6	18	U	18	28	U	28
Freon TF	76-13-1	15	U	15	24	U	24
Hexachlorobutadiene	87-68-3	21	U	21	34	U	34
Isopropyl alcohol	67-63-0	120	U	120	190	U	190
m,p-Xylene	179601-23-1	22	U	22	34	U	34
Methyl Butyl Ketone (2-Hexanone)	591-78-6	20	U	20	32	U	32
Methyl Ethyl Ketone	78-93-3	25		15	23	U	23
methyl isobutyl ketone	108-10-1	20	U	20	32	U	32
Methyl methacrylate	80-62-6	20	U	20	32	U	32
Methyl tert-butyl ether	1634-04-4	7.2	U	7.2	11	U	11
Methylene Chloride	75-09-2	17	U	17	27	U	27
Naphthalene	91-20-3	26	U	26	41	U	41
n-Butane	106-97-8	56		12	19	U	19
n-Butylbenzene	104-51-8	11	U	11	17	U	17
n-Heptane	142-82-5	29		8.2	13		13
n-Hexane	110-54-3	11		7	11	U	11
n-Propylbenzene	103-65-1	9.8	U	9.8	16	U	16
sec-Butylbenzene	135-98-8	11	U	11	17	U	17
Styrene	100-42-5	8.5	U	8.5	13	U	13

Table 3-11 - Soil Gas
TO-15, Methane and Hydrogen Sulfide

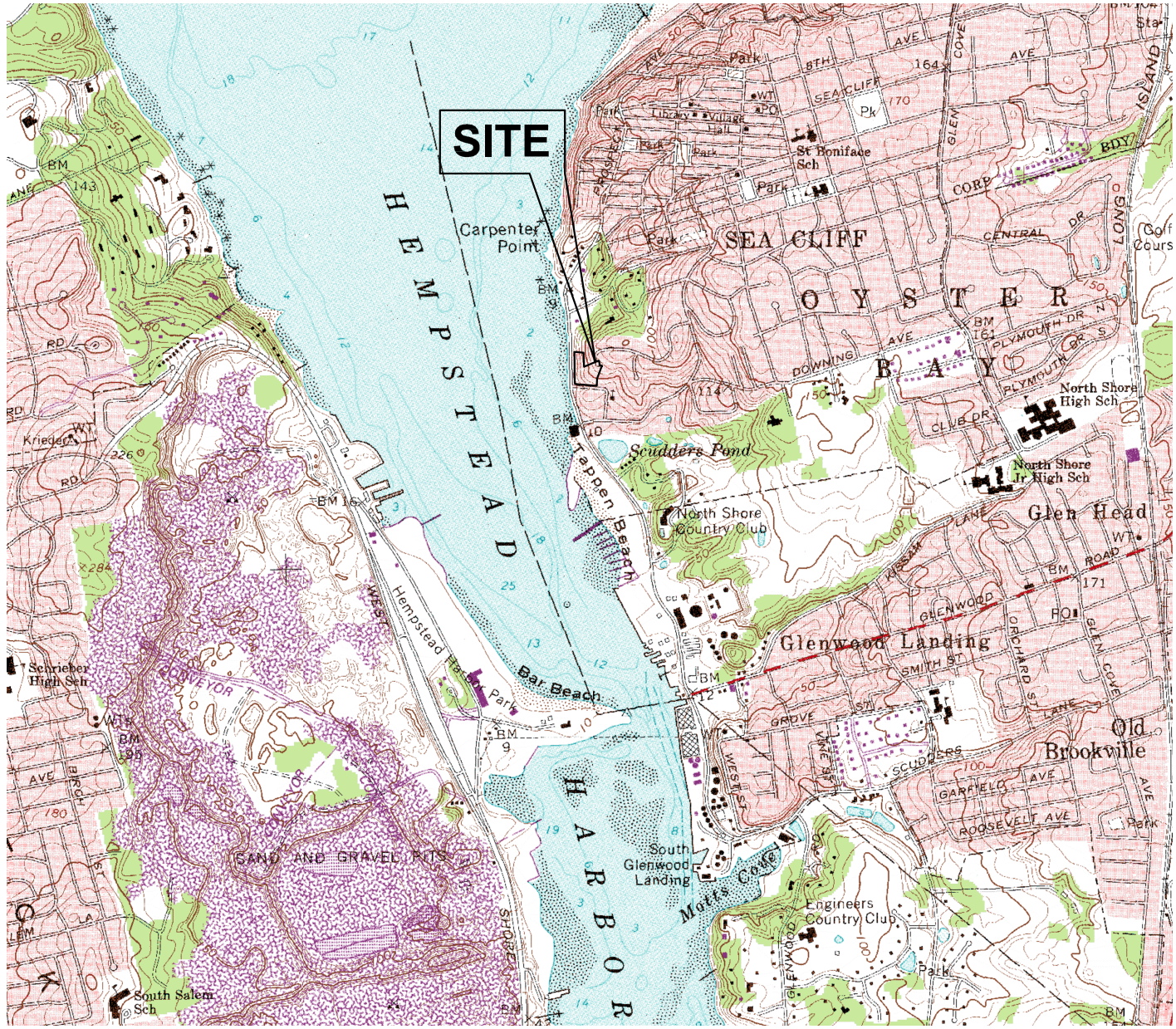
Sample ID:		SG-4			SG-5		
Sample Date:		6/5/2013			6/5/2013		
Lab ID:		200-16909-3		RL	200-16909-4		RL
TO-15	CasNum	ug/m3		ug/m3	ug/m3		ug/m3
tert-Butyl alcohol	75-65-0	150	U	150	240	U	240
tert-Butylbenzene	98-06-6	11	U	11	17	U	17
Tetrachloroethene	127-18-4	14	U	14	21	U	21
Tetrahydrofuran	109-99-9	150	U	150	230	U	230
Toluene	108-88-3	16		7.5	18		12
trans-1,2-Dichloroethene	156-60-5	7.9	U	7.9	13	U	13
trans-1,3-Dichloropropene	10061-02-6	9.1	U	9.1	14	U	14
Trichloroethene	79-01-6	11	U	11	17	U	17
Trichlorofluoromethane	75-69-4	41		11	52		18
Vinyl chloride	75-01-4	5.1	U	5.1	8.1	U	8.1
Xylene, o-	95-47-6	8.7	U	8.7	14	U	14
1,2-Dichloroethene, Total	540-59-0	7.9	U	7.9	13	U	13
Xylene (total)	1330-20-7	26		8.7	31		14
EPA 3C	% v/v	% v/v		% v/v	% v/v		% v/v
Methane	74-82-8	0.062	U	0.062	0.063	U	0.063
EPA 15_16	ppm v/v	ppm v/v		ppm v/v	ppm v/v		ppm v/v
Hydrogen Sulfide	7783-06-4	0.4	U	0.4	0.4	U	0.4

Table 4.1 Overview of Human Exposure Assessment

Environmental Media & Exposure Route	Human Exposure Assessment
Direct contact with surface soils (and incidental ingestion)	- People can come into contact if they trespass on areas of the Site around the vacant house - People are not coming into contact with the majority of the Site because public access to the Site is restricted by fencing. - People can come into contact if they complete ground-intrusive work at the site but this would be mitigated by the use of appropriate PPE.
Direct contact with subsurface soils (and incidental ingestion)	- People can come into contact if they complete ground-intrusive work at the site, but this would be mitigated by the use of appropriate PPE.
Ingestion of groundwater	- Contaminated groundwater is not being used for drinking water, as the area is served by a public water supply.
Direct contact with groundwater	- People can come into contact if they complete ground-intrusive work at the site but this is unlikely due to depth of groundwater and would be mitigated by the use of appropriate PPE.
Inhalation of air (exposures related to soil vapor intrusion)	- A soil gas survey was completed and no vapor issues were identified.
Other: Consumption of fish and shellfish	- Anyone consuming fish or shellfish from Hempstead Harbor adjacent to the Site may come into contact with Site COPECs.

FIGURES

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SOURCE:
1968 SEA CLIFF, NY
USGS QUADRANGLE,
7.5 MIN. SERIES

0 2000 4000
SCALE IN FEET

CORNERSTONE
Environmental Group, LLC

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SAEID JALAYER / KNAUF SHAW
34 WOODRIDGE LANE (LOTS 38, 81, 148, 149 AND 150)
SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

SITE LOCATION MAP

FIGURE NO.
1-1
PROJECT NO.
130451

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0 100 200

SCALE IN FEET

CORNERSTONE
Environmental Group, LLC

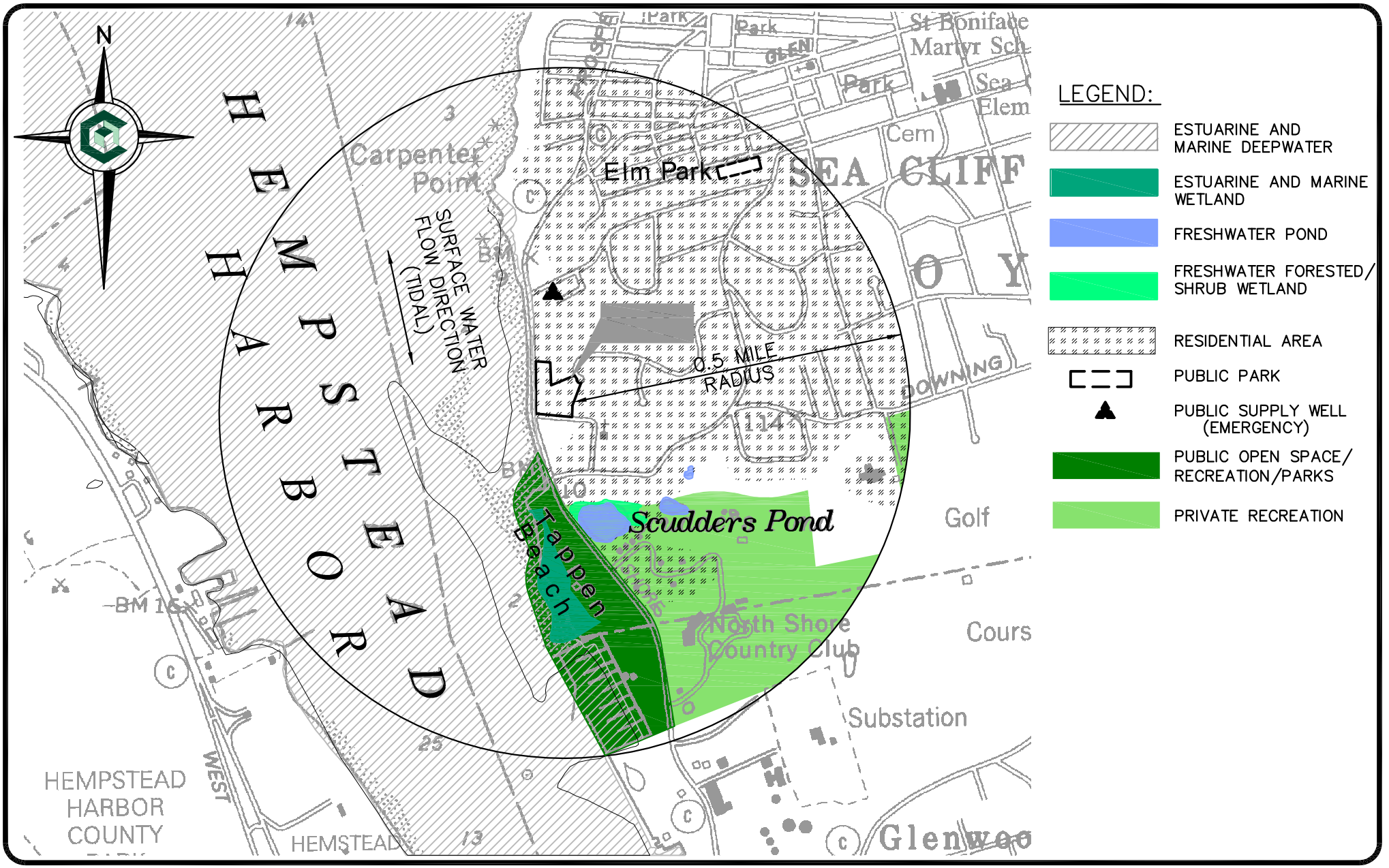
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SAEID JALAYER / KNAUF SHAW
34 WOODRIDGE LANE (LOTS 38, 81, 148, 149 AND 150)
SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

SITE MAP

FIGURE NO.
1-2
PROJECT NO.
130451

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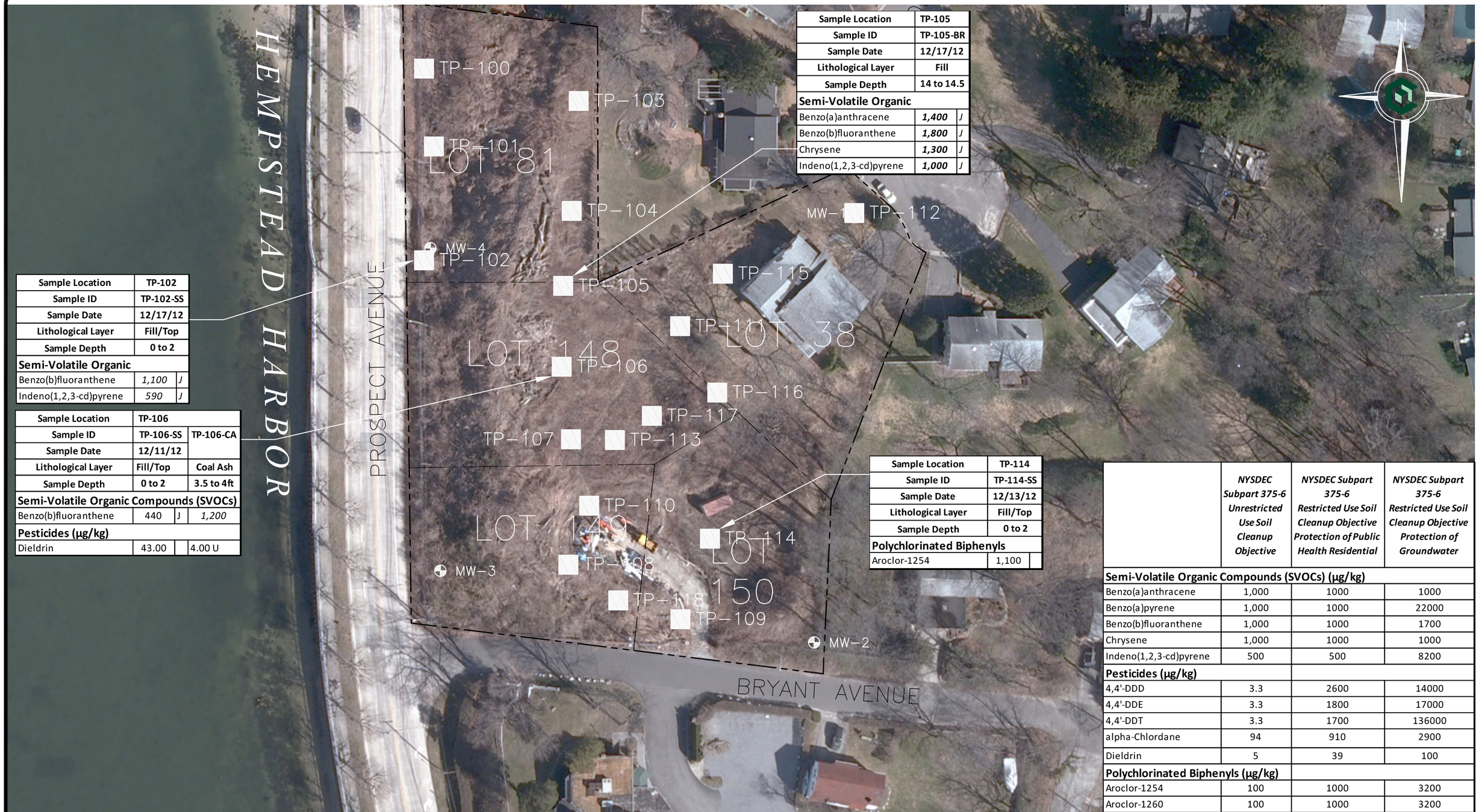
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SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

LAND USE

FIGURE NO.
2-1
PROJECT NO.
130451



Sample Location	TP-102	
Sample ID	TP-102-SS	
Sample Date	12/17/12	
Lithological Layer	Fill/Top	
Sample Depth	0 to 2	
Semi-Volatile Organic		
Benzo(b)fluoranthene	*1,100*	J
Indeno(1,2,3-cd)pyrene	*590*	J

Sample Location	TP-106	
Sample ID	TP-106-SS	TP-106-CA
Sample Date	12/11/12	
Lithological Layer	Fill/Top	Coal Ash
Sample Depth	0 to 2	3.5 to 4ft
Semi-Volatile Organic Compounds (SVOCs)		
Benzo(b)fluoranthene	440 J	*1,200*
Pesticides (µg/kg)		
Dieldrin	43.00	4.00 U

Sample Location	TP-105	
Sample ID	TP-105-BR	
Sample Date	12/17/12	
Lithological Layer	Fill	
Sample Depth	14 to 14.5	
Semi-Volatile Organic		
Benzo(a)anthracene	***1,400***	J
Benzo(b)fluoranthene	***1,800***	J
Chrysene	***1,300***	J
Indeno(1,2,3-cd)pyrene	***1,000***	J

Sample Location	TP-114	
Sample ID	TP-114-SS	
Sample Date	12/13/12	
Lithological Layer	Fill/Top	
Sample Depth	0 to 2	
Polychlorinated Biphenyls		
Aroclor-1254	1,100	

	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	*NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential*	*NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater*
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)			
Benzo(a)anthracene	1,000	1000	1000
Benzo(a)pyrene	1,000	1000	22000
Benzo(b)fluoranthene	1,000	1000	1700
Chrysene	1,000	1000	1000
Indeno(1,2,3-cd)pyrene	500	500	8200
Pesticides (µg/kg)			
4,4'-DDD	3.3	2600	14000
4,4'-DDE	3.3	1800	17000
4,4'-DDT	3.3	1700	136000
alpha-Chlordane	94	910	2900
Dieldrin	5	39	100
Polychlorinated Biphenyls (µg/kg)			
Aroclor-1254	100	1000	3200
Aroclor-1260	100	1000	3200

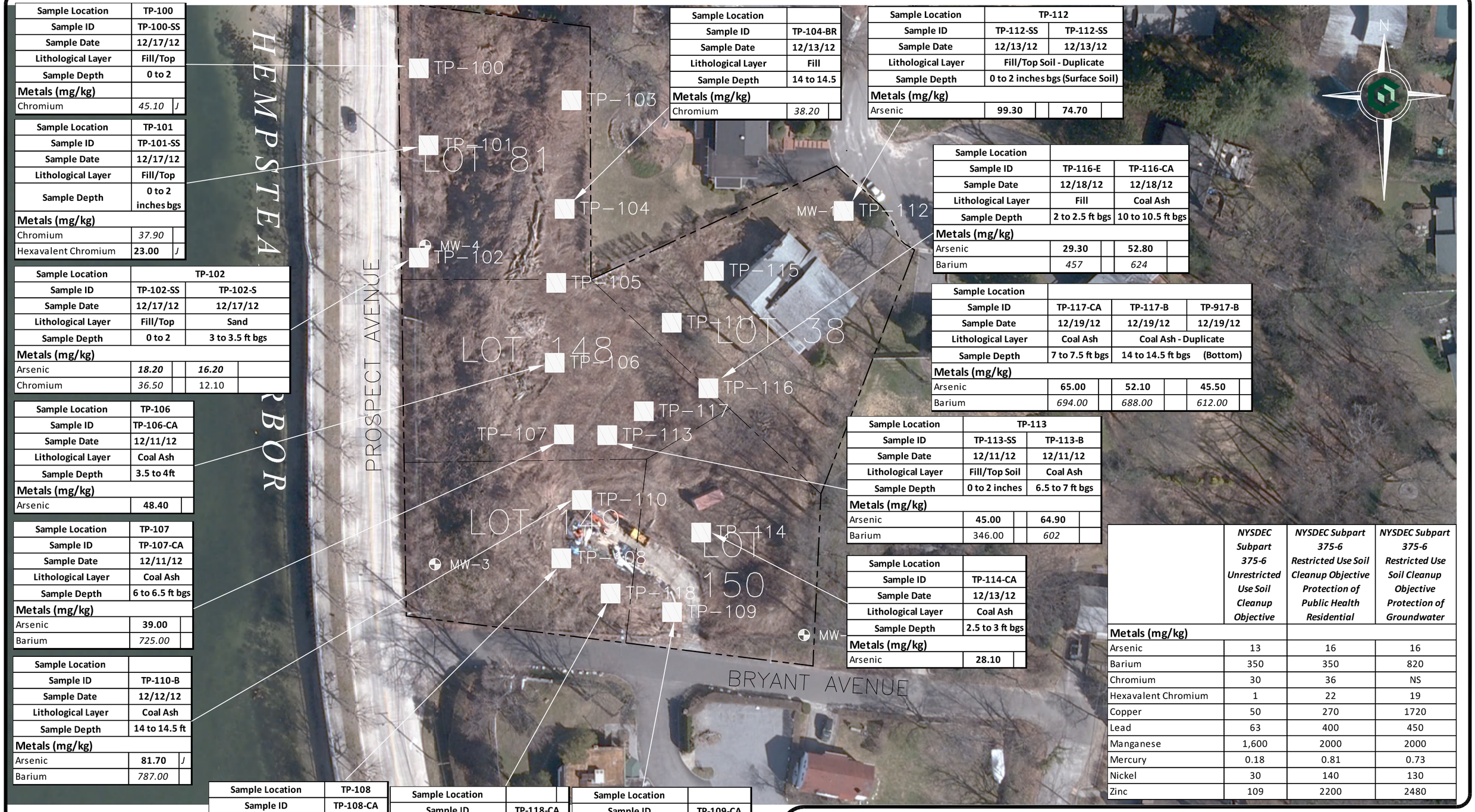
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SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

SVOC'S, PESTICIDES AND PCBS DETECTED ABOVE RESIDENTIAL SCOs

FIGURE NO.
3-1
PROJECT NO.
130451



Sample Location	TP-100	
Sample ID	TP-100-SS	
Sample Date	12/17/12	
Lithological Layer	Fill/Top	
Sample Depth	0 to 2	
Metals (mg/kg)		
Chromium	*45.10*	J

Sample Location	TP-101	
Sample ID	TP-101-SS	
Sample Date	12/17/12	
Lithological Layer	Fill/Top	
Sample Depth	0 to 2 inches bgs	
Metals (mg/kg)		
Chromium	*37.90*	
Hexavalent Chromium	**23.00**	J

Sample Location	TP-102	
Sample ID	TP-102-SS	TP-102-S
Sample Date	12/17/12	12/17/12
Lithological Layer	Fill/Top	Sand
Sample Depth	0 to 2	3 to 3.5 ft bgs
Metals (mg/kg)		
Arsenic	***18.20***	***16.20***
Chromium	*36.50*	12.10

Sample Location	TP-106
Sample ID	TP-106-CA
Sample Date	12/11/12
Lithological Layer	Coal Ash
Sample Depth	3.5 to 4ft
Metals (mg/kg)	
Arsenic	**48.40**

Sample Location	TP-107
Sample ID	TP-107-CA
Sample Date	12/11/12
Lithological Layer	Coal Ash
Sample Depth	6 to 6.5 ft bgs
Metals (mg/kg)	
Arsenic	**39.00**
Barium	*725.00*

Sample Location	
Sample ID	TP-110-B
Sample Date	12/12/12
Lithological Layer	Coal Ash
Sample Depth	14 to 14.5 ft
Metals (mg/kg)	
Arsenic	**81.70** J
Barium	*787.00*

Sample Location	TP-108
Sample ID	TP-108-CA
Sample Date	12/12/12
Lithological Layer	Coal Ash
Sample Depth	14 to 14.5 ft
Metals (mg/kg)	
Arsenic	**178.00**
Barium	*627.00*

Sample Location	
Sample ID	TP-118-CA
Sample Date	12/19/12
Lithological Layer	Coal Ash
Sample Depth	5 to 5.5 ft bgs
Metals (mg/kg)	
Arsenic	**31.10**

Sample Location	
Sample ID	TP-109-CA
Sample Date	12/12/12
Lithological Layer	Coal Ash
Sample Depth	1.5 to 2.5 ft
Metals (mg/kg)	
Arsenic	**25.20**

Sample Location		
Sample ID	TP-104-BR	
Sample Date	12/13/12	
Lithological Layer	Fill	
Sample Depth	14 to 14.5	
Metals (mg/kg)		
Chromium	*38.20*	

Sample Location	TP-112	
Sample ID	TP-112-SS	TP-112-SS
Sample Date	12/13/12	12/13/12
Lithological Layer	Fill/Top Soil - Duplicate	
Sample Depth	0 to 2 inches bgs (Surface Soil)	
Metals (mg/kg)		
Arsenic	**99.30**	**74.70**

Sample Location		
Sample ID	TP-116-E	TP-116-CA
Sample Date	12/18/12	12/18/12
Lithological Layer	Fill	Coal Ash
Sample Depth	2 to 2.5 ft bgs	10 to 10.5 ft bgs
Metals (mg/kg)		
Arsenic	**29.30**	**52.80**
Barium	*457*	*624*

Sample Location			
Sample ID	TP-117-CA	TP-117-B	TP-917-B
Sample Date	12/19/12	12/19/12	12/19/12
Lithological Layer	Coal Ash	Coal Ash - Duplicate	
Sample Depth	7 to 7.5 ft bgs	14 to 14.5 ft bgs	(Bottom)
Metals (mg/kg)			
Arsenic	**65.00**	**52.10**	**45.50**
Barium	*694.00*	*688.00*	*612.00*

Sample Location	TP-113	
Sample ID	TP-113-SS	TP-113-B
Sample Date	12/11/12	12/11/12
Lithological Layer	Fill/Top Soil	Coal Ash
Sample Depth	0 to 2 inches	6.5 to 7 ft bgs
Metals (mg/kg)		
Arsenic	**45.00**	**64.90**
Barium	346.00	*602*

Sample Location	
Sample ID	TP-114-CA
Sample Date	12/13/12
Lithological Layer	Coal Ash
Sample Depth	2.5 to 3 ft bgs
Metals (mg/kg)	
Arsenic	**28.10**

	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	*NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential*	*NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater*
Metals (mg/kg)			
Arsenic	13	16	16
Barium	350	350	820
Chromium	30	36	NS
Hexavalent Chromium	1	22	19
Copper	50	270	1720
Lead	63	400	450
Manganese	1,600	2000	2000
Mercury	0.18	0.81	0.73
Nickel	30	140	130
Zinc	109	2200	2480

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REMEDIAL INVESTIGATION REPORT

METALS DETECTED ABOVE RESIDENTIAL SCOs

FIGURE NO.
3-2
PROJECT NO.
130451

LEGEND

- WPD-6 — DEEP WELL POINT
- WP-6 — SHALLOW WELL POINT
- MW-1 — MONITORING WELL LOCATION



0 100 200

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SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

LOCATIONS OF WELLS AND WELL POINTS

FIGURE NO. **3-3**

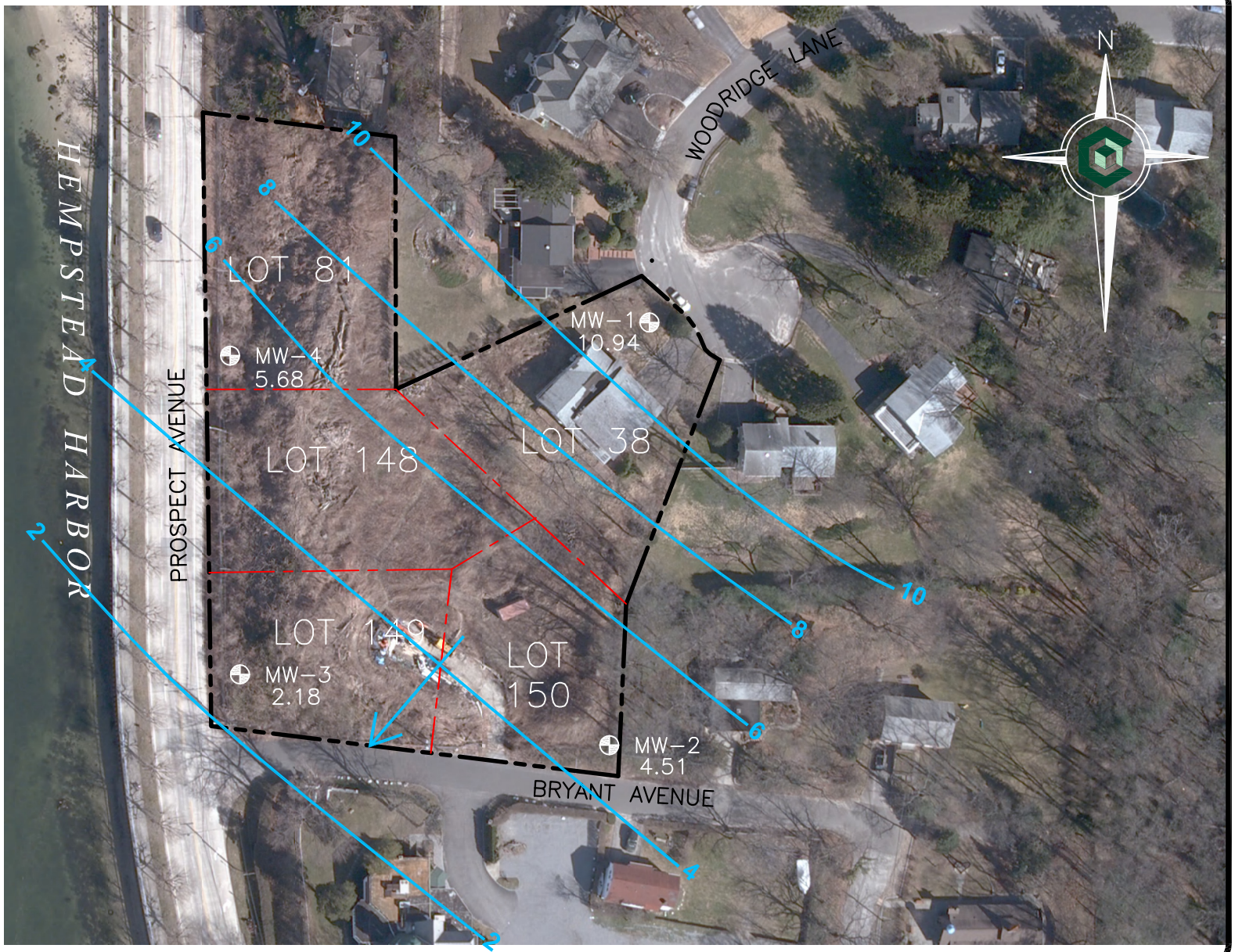
PROJECT NO. 130451

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LEGEND

MW-2 MONITORING WELL LOCATION

DIRECTION OF GROUNDWATER FLOW



0 100 200

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SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

GROUNDWATER ELEVATIONS
JUNE 10, 2013

FIGURE NO.
3-4
PROJECT NO.
130451



Sample ID:	GWQS	SWQS-SA		WPD-4 3/19/2013 L1304679-04		RL	MDL
Sample Date:							
Lab ID:							
Pesticides	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Aldrin	0.001			ND		0.02	0.002
Dieldrin	0.004			0.022	J	0.04	0.004
Sum of Aldrin and Dieldrin		0.001	H(FC)	**0.022**	J		

Sample ID:	GWQS	SWQS-SA		WP-3 3/19/2013 L1304679-03		RL	MDL
Sample Date:							
Lab ID:							
Pesticides	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)
4,4'-DDD	0.3			ND		0.04	0.005
4,4'-DDE	0.2			ND		0.04	0.004
4,4'-DDT	0.2			0.009	J	0.04	0.004
Sum of DDD, DDE, DDT		1E-05	W	**0.009**	J		

Sample ID:	GWQS	SWQS-SA		MW-2 3/22/2013 L1304892-05		RL	MDL
Sample Date:							
Lab ID:							
Pesticides	(ug/l)	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Aldrin	0.001			ND		0.02	0.002
Dieldrin	0.004			0.014	J	0.04	0.004
Sum of Aldrin and Dieldrin		0.001	H(FC)	**0.014**	J		

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REMEDIAL INVESTIGATION REPORT

PESTICIDES AND PCBS DETECTED ABOVE GWQS AND SWQS-SA

FIGURE NO.
3-5
PROJECT NO.
130451

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Sample ID:	GWQS	SWQS-SA	WPD-4		RL	MDL
Sample Date:			3/19/2013			
Lab ID:			L1304679-04			
Total Metals	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Iron, Total	300		1460		100	26
Sodium, Total	20000		29100		200	30
General Chemistry	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**2**	J	5	1

Sample ID:	GWQS	SWQS-SA	MW-4		RL	MDL	MW-4 DUP		RL	MDL
Sample Date:			3/22/2013				3/22/2013			
Lab ID:			L1304892-03				L1304892-07			
Total Metals	(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Iron, Total	300		1360		100	26	1440		50	13
Sodium, Total	20000		37800		200	30	37300		100	15
General Chemistry	(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**2**	J		1	**2**	J	5	1

Sample ID:	GWQS	SWQS-SA	WPD-5		RL	MDL
Sample Date:			3/19/2013			
Lab ID:			L1304679-05			
Total Metals	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Barium, Total	1000		1376	D	100	20
Chromium, Total	50	A(A)	185.1		2	0.4
Copper, Total	200	4.8 A(A)	**101**		2	0.2
Iron, Total	300		155000	D	10000	2600
Lead, Total	25	204 A(A)	137.3		2	0.4
Manganese, Total	300		15660	D	100	20
Nickel, Total	100	74 A(A)	**189.8**		1	0.2
Selenium, Total	10		18.1		10	1
Zinc, Total		95 A(A)	**342**		20	2.4
General Chemistry	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**2**	J	5	1

Sample ID:	GWQS	SWQS-SA	WPD-6		RL	MDL
Sample Date:			3/19/2013			
Lab ID:			L1304679-06			
Total Metals	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Chromium, Total	50	A(A)	122.9		2	0.4
Copper, Total	200	4.8 A(A)	**60.16**		2	0.2
Iron, Total	300		65400	D	10000	2600
Lead, Total	25	204 A(A)	25.04		2	0.4
Manganese, Total	300		5614		1	0.2
Nickel, Total	100	74 A(A)	**168.7**		1	0.2
Sodium, Total	20000		33100		200	30
Zinc, Total		95 A(A)	**98.46**		20	2.4
General Chemistry	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**3**	J	5	1

Sample ID:	GWQS	SWQS-SA	WP-1		RL	MDL
Sample Date:			3/19/2013			
Lab ID:			L1304679-01			
Total Metals	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Chromium, Total	50	A(A)	57.84		1	0.2
Copper, Total	200	4.8 A(A)	**22.27**		1	0.1
Iron, Total	300		12800		50	13
Lead, Total	25	204 A(A)	49.77		1	0.2
Manganese, Total	300		904.4	D	100	20
Sodium, Total	20000		20600		100	15
General Chemistry	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**16**		5	1

Sample ID:	GWQS	SWQS-SA	MW-1		RL	MDL
Sample Date:			3/22/2013			
Lab ID:			L1304892-06			
Total Metals	(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Arsenic, Total	25	63 A(C)	31.54		0.5	0.2
Chromium, Total	50	A(A)	74.65		1	0.2
Copper, Total	200	4.8 A(A)	**59.04**		1	0.1
Iron, Total	300		21800		50	13
Lead, Total	25	204 A(A)	117.4		0.5	0.2
Manganese, Total	300		601.4		5	1
Selenium, Total	10		11.4		5	0.3
Zinc, Total		95 A(A)	**163.2**		10	1.2
General Chemistry	(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Chromium, Trivaler	50		83		10	10
Cyanide, Total	200	1 A(A)	**3**	J	5	1

Sample ID:	GWQS	SWQS-SA	WP-2		RL	MDL
Sample Date:			3/19/2013			
Lab ID:			L1304679-02			
Total Metals	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Chromium, Total	50	A(A)	101.4		1	0.2
Copper, Total	200	4.8 A(A)	**58.88**		1	0.1
Iron, Total	300		30100		50	13
Lead, Total	25	204 A(A)	32.11		1	0.2
Manganese, Total	300		1496	D	100	20
Sodium, Total	20000		27000		100	15
General Chemistry	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**4**	J	5	1

Sample ID:	GWQS	SWQS-SA	WP-3		RL	MDL
Sample Date:			3/19/2013			
Lab ID:			L1304679-03			
Total Metals	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Chromium, Total	50	A(A)	75.79		1	0.2
Copper, Total	200	4.8 A(A)	**36.46**		1	0.1
Iron, Total	300		15200		50	13
Lead, Total	25	204 A(A)	36.3		1	0.2
Sodium, Total	20000		25200		100	15
General Chemistry	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**2**	J	5	1

Sample ID:	GWQS	SWQS-SA	MW-3		RL	MDL
Sample Date:			3/22/2013			
Lab ID:			L1304892-04			
Total Metals	(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Copper, Total	200	4.8 A(A)	**6.27**		1	0.1
Iron, Total	300		6350		50	13
Selenium, Total	10		17.8		5	0.3
Sodium, Total	20000		38100		100	15
General Chemistry	(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**2**	J	5	1

Sample ID:	GWQS	SWQS-SA	MW-2		RL	MDL
Sample Date:			3/22/2013			
Lab ID:			L1304892-05			
Total Metals	(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Iron, Total	300		473		50	13
Sodium, Total	20000		36000		100	15
General Chemistry	(ug/l)	(ug/l)	(ug/l)		(ug/l)	(ug/l)
Cyanide, Total	200	1 A(A)	**2**	J	5	1



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SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

TOTAL METALS DETECTED ABOVE GWQS AND SWQS-SA

FIGURE NO. **3-6**

PROJECT NO. 130451

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Sample ID:			WPD-4		
Sample Date:	GWQS	SWQS-SA	3/19/2013	RL	MDL
Lab ID:			L1304679-04		
Dissolved Metals	(ug/l)		(ug/l)	(ug/l)	(ug/l)
Sodium, Dissolved	20000		27300	5000	750

Sample ID:			WP-1		
Sample Date:	GWQS	SWQS-SA	3/19/2013	RL	MDL
Lab ID:			L1304679-01		
Dissolved Metals	(ug/l)		(ug/l)	(ug/l)	(ug/l)
Manganese, Disso	300		406	25	5
Sodium, Dissolved	20000		23600	5000	750

Sample ID:			WPD-5		
Sample Date:	GWQS	SWQS-SA	3/19/2013	RL	MDL
Lab ID:			L1304679-05		
Dissolved Metals	(ug/l)		(ug/l)	(ug/l)	(ug/l)
Manganese, Disso	300		3160	25	5
Sodium, Dissolved	20000		23600	5000	750

Sample ID:			WP-2			
Sample Date:	GWQS	SWQS-SA	3/19/2013		RL	MDL
Lab ID:			L1304679-02			
Dissolved Metals	(ug/l)		(ug/l)		(ug/l)	(ug/l)
Iron, Dissolved	300		1300	J	2500	650
Manganese, Disso	300		887		25	5
Sodium, Dissolved	20000		29000		5000	750

Sample ID:			WPD-6		
Sample Date:	GWQS	SWQS-SA	3/19/2013	RL	MDL
Lab ID:			L1304679-06		
Dissolved Metals	(ug/l)		(ug/l)	(ug/l)	(ug/l)
Manganese, Disso	300		1714	25	5
Sodium, Dissolved	20000		33200	5000	750

Sample ID:			MW-3		
Sample Date:	GWQS	SWQS-SA	3/22/2013	RL	MDL
Lab ID:			L1304892-10		
Dissolved Metals	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Iron, Dissolved	300		725	50	13
Selenium, Dissolve	10		18	5	0.3
Sodium, Dissolved	20000		33700	100	15

Sample ID:			MW-4			MW-4 DUP		
Sample Date:	GWQS	SWQS-SA	3/22/2013			3/22/2013		
Lab ID:			L1304892-09	RL	MDL	L1304892-13	RL	MDL
Dissolved Metals	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Sodium, Dissolved	20000		36900	100	15	35800	100	15

Sample ID:			WP-3		
Sample Date:	GWQS	SWQS-SA	3/19/2013	RL	MDL
Lab ID:			L1304679-03		
Dissolved Metals	(ug/l)		(ug/l)	(ug/l)	(ug/l)
Iron, Dissolved	300		9060	2500	650
Manganese, Disso	300		417.1	25	5
Sodium, Dissolved	20000		30800	5000	750

Sample ID:			MW-2		
Sample Date:	GWQS	SWQS-SA	3/22/2013	RL	MDL
Lab ID:			L1304892-11		
Dissolved Metals	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Sodium, Dissolved	20000		33600	100	15

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34 WOODRIDGE LANE (LOTS 38, 81, 148, 149 AND 150
SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

DISSOLVED METALS DETECTED ABOVE SWQS AND SWQS-SA

FIGURE NO.
3-7
PROJECT NO.
130451

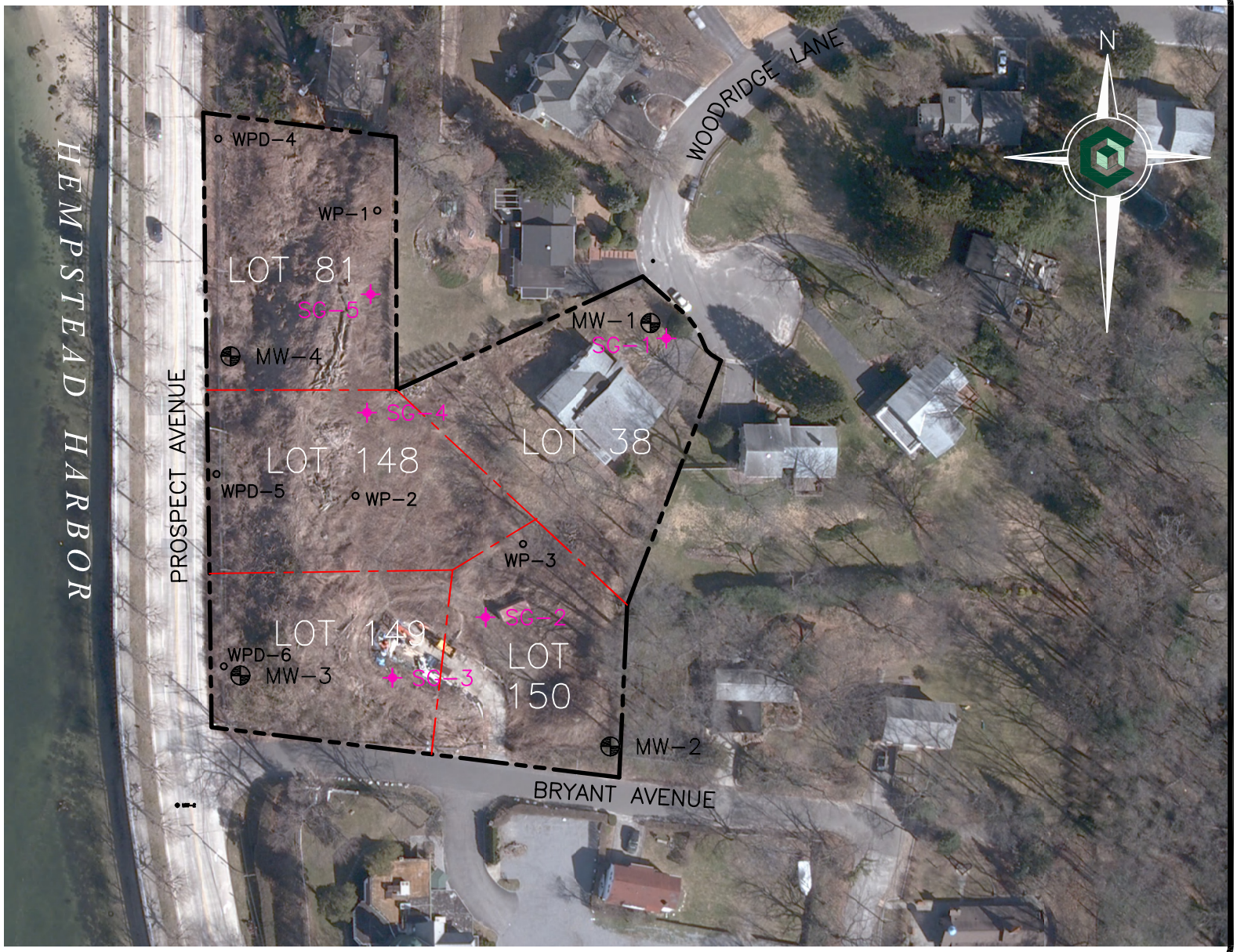
File: X:\PROJECTS\KNAUF SHAW\100498-130451\Project Drawings\MIKNSSSP-11-3-8.dwg Layout: Layout1 User: Blayne.Gibbons Aug 05, 2013 - 4:29pm

WPD-6 DEEP WELL POINT

WP-6 SHALLOW WELL POINT

SG-1 SOIL GAS SAMPLE LOCATION

MW-1 MONITORING WELL LOCATION



0 100 200

SCALE IN FEET

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REMEDIAL INVESTIGATION REPORT

LOCATION OF SOIL GAS SAMPLES

FIGURE NO.
3-8
PROJECT NO.
130451



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VIEW OF SITE FROM BRYANT AVENUE LOOKING NORTH

FIGURE NO.
5-1
PROJECT NO.
130451



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REMEDIAL INVESTIGATION REPORT

VIEW OF SITE FROM PROSPECT AVENUE (FOREGROUND) AT CORNER WITH BRYANT AVENUE (RIGHT) LOOKING SOUTH

FIGURE NO.
5-2
PROJECT NO.
130451



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SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

VIEW OF SITE (ON LEFT) FROM PROSPECT AVENUE LOOKING SOUTH

FIGURE NO.
5-3
PROJECT NO.
130451



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SEA CLIFF, NEW YORK
REMEDIAL INVESTIGATION REPORT

VIEW OF SITE (ON RIGHT) FROM FROM PROSPECT AVENUE AT CORNER LOOKING NORTH

FIGURE NO.
5-4
PROJECT NO.
130451

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APPENDIX A

FINAL PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT - TARGETED BROWNFIELDS ASSESSMENT, 34 WOODRIDGE LANE, VILLAGE OF SEA CLIFF, NEW YORK, MAY 14, 2013, CDM SMITH

Contract No.: EP-W-09-002
WA #: 029-SION-0200

Region 2 RAC2
Remedial Action Contract

Final Phase II Environmental Site Assessment Report

Targeted Brownfields Assessment

34 Woodridge Lane

Village of Sea Cliff, New York

May 14, 2013

CDM Smith

CDM Smith

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New York, New York 10005
tel: +1 212 785-9123
fax: +1 212 227-1692
cdmsmith.com

May 14, 2013

Ms. Alison Devine
Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway - 18th Floor
New York, NY 10007-1866

PROJECT:	EPA Region 2 RAC 2, Contract No.: EP-W-09-002 Work Assignment No.: 029-SION-0200
DOC CONTROL NO.:	3320-029-01846
SUBJECT:	Final Phase II Environmental Site Assessment Report Targeted Brownfields Assessment 34 Woodridge Lane Village of Sea Cliff, New York

Dear Ms. Devine:

CDM Federal Programs Corporation (CDM Smith) is pleased to submit the Final Phase II Environmental Site Assessment Report for the Targeted Brownfields Assessment for the subject property located in the Village of Sea Cliff, New York.

If you have any questions regarding this submittal, please contact me at (212) 377-4527.

Very truly yours,

CDM FEDERAL PROGRAMS CORPORATION

Brendan MacDonald, P.E., BCEE, LEED® AP
Site Manager

PSO: 58

Enclosure

cc: F. Rosado, EPA Region 2 (letter only)
P. Clappin, EPA Region 2
M. Harclerode, CDM Smith
J. Litwin, CDM Smith (letter only)
RAC 2 Document Control

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Acronyms

%RSD	percent relative standard deviation
%D	percent difference
BCP	Brownfields Cleanup Program
bgs	below ground surface
CCVs	continuing calibration verifications
CDM Smith	CDM Federal Programs Corporation
CLP	Contract Laboratory Program
CRQLs	contract required quantitation limits
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DMCs	deuterated monitoring compounds
Delta	Delta Geophysics Inc.
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
GC	gas chromatograph
GIS	geographic information system
GPR	ground penetrating radar
GPS	global positioning system
HASP	health and safety plan
ID	identification
IDW	investigative derived waste
J	estimated value
LLC	limited liability company
mg/kg	milligram per kilogram
MS	mass spectroscopy
MS/MSD	matrix spike/matrix spike duplicate
NYSDEC	New York State Department of Environmental Conservation
PAH	polycyclic aromatic hydrocarbon
PAL	Project Action Limit
PCB	polychlorinated biphenyl
PID	photoionization detector
ppm	parts per million
QAPP	Quality Assurance Project Plan
QC	quality control
R	rejected
RI	remedial investigation
RAC	Remedial Action Contract
RECs	recognized environmental conditions
RSL	Regional Screening Level
SCO	Soil Cleanup Objective
SOW	scope of work
SVOC	semi-volatile organic compound
TAGM	Technical and Administrative Guidance Memorandums
TAL	Target Analyte List

TBA	Targeted Brownfields Assessment
TCL	Target Compound List
TP	test pit
µg/kg	microgram per kilogram
U	non-detect
VOC	volatile organic compound
WP	work plan

Executive Summary

CDM Federal Programs Corporation (CDM Smith) is submitting this Phase II Environmental Site Assessment (ESA) Report for the Targeted Brownfields Assessment (TBA) performed at 34 Woodridge Lane, herein referred to as the "Site", located in Sea Cliff, Nassau County, New York (Figure 1-1). The Site is currently in the Remedial Investigation (RI) stage of the New York State Brownfield Cleanup Program (BCP). Cornerstone Environmental Group, LLC submitted a Work Plan (WP) to the New York State Department of Environmental Conservation (NYSDEC) in May 2011. The RI WP was approved by NYSDEC in July 2011. Specifically the TBA includes implementation of the test pit soil investigation portion of the scope of work (SOW) outlined in the NYSDEC approved RI WP.

Under Work Assignment Number 029-SION-0200, this ESA Report was prepared in accordance with the United States Environmental Protection Agency (EPA) Remedial Action Contract (RAC) 2, Contract Number EP-W-09-002. CDM Smith has been tasked by EPA Region 2 to perform the test pit soil investigation as a TBA.

The Site is identified on tax maps as Section 21, Block L, Lots 38, 81, 148, 149 and 150, in the Village of Sea Cliff, Town of Oyster Bay, Nassau County, New York. The Site is located on the corner of Bryant Avenue and Prospect Avenue, with access on Bryant Avenue (shown on Figure 1-2). The topography throughout the Site is uneven, due to the history of fill placement. A 30 foot drop off, referred to as the cliff, runs north-south along Lots 81, 148, and 149, with Prospect Avenue at the bottom of the cliff. An unstable waste pile straddles Lots 148 and 149 at the top of the cliff. A previously excavated area, located along the eastern boundary of the concrete entranceway on Lot 150, is approximately 40 feet wide, 60 feet long, and 8 feet deep. During the test pit investigation fine, gray coal ash was observed throughout the walls of the northern half of the previously excavated area. A vacated single-family residential home occupies Lot 38, also identified as 34 Woodridge Lane. The Site can also be accessed from the driveway for the vacated home at the rear of the property where Lot 38 joins with Woodridge Lane. The surrounding neighborhood is predominantly suburban residential.

Interviews conducted with neighbors during a 2004 Phase I ESA indicated that fill material was placed on the Site throughout the 1970s. Letters sent to the property owner, provided by the Village Building Inspector, indicate that illegal dumping occurred on Lots 38 and 81 during that time. In December 2010, eight test pits (TP-1A through TP-6A, TP-7 and TP-8) were collected at adjacent Site parcels, Lots 38, 81, 148, and 149 (shown on Figure 1-3). Asphalt and coal ash were identified. Arsenic and semi-volatile organic compounds (SVOCs) exceeded Unrestricted Use Site Cleanup Objectives (SCOs). The test pit investigation performed by CDM Smith for this Phase II ESA focused on delineating the extent of this fill material and buried waste material.

The following activities were performed as part of this Phase II ESA:

- Preparation of a Site-Specific Quality Assurance Project Plan (QAPP).
- Preparation of a Site-Specific Health and Safety Plan (HASP).
- Site reconnaissance conducted on September 10, 2012.

- Held field planning meeting among the CDM Smith TBA team via conference call on November 27, 2012.
- Cleared Site of vegetation/debris by owner, from November 26 through December 14, 2012, prior to the geophysical survey and test pit investigation.
- Conducted geophysical survey on December 3 and December 13, 2012 to determine the presence of subsurface utilities and anomalies that may hinder the investigation and potential future remedial activities.
- Excavation of 19 test pits, from December 10 through December 20, 2012 to delineate the extent of fill and buried waste material onsite and to collect soil samples.
- Collection of surface and subsurface soil samples from the test pits to characterize the fill and waste materials. See Figure 2-1 for test pit and sample locations.
- Global Positioning System (GPS) survey of test pit locations conducted on December 19, 2012.

All soil samples, including fill/waste samples, were submitted to an EPA Contract Laboratory Program (CLP) certified laboratory for analysis. Analytical results were compared to Project Action Limits (PALs) identified in the QAPP; the PALs include both federal and state screening criteria. The PALs for soil are listed below.

- EPA Regional Screening Limits (RSLs) for Chemical Contaminants at Superfund Sites (November 2012) for residential soils, adjusted for a cancer risk of 0.000001 and a hazard quotient 0.1
- NYSDEC Subpart 375-6(a) Unrestricted Use SCOs
- NYSDEC Subpart 375-6(b) Restricted Residential Use SCOs

CDM Smith Phase II ESA Findings

The Site is composed of a variety of materials, including non-native surface soil, a heterogeneous construction debris fill, and coal ash; the native soil is a silty sand with gravel. A thin layer (6 to 12 inches) of dark brown, organic, silty-sandy soil was encountered at the surface at all test pit locations and is assumed to be present throughout the site. At three test pits (TP-100, TP-101, and TP-102), the native silty sand material was encountered directly below the surface soil. Fill material was encountered at the remaining test pits. The bottom of the fill was observed in these remaining test pits, with the exception of TP-104, TP-105, TP-110, TP-113, and TP-117, where fill material extended deeper than the depth of the test pits.

A variety of organic and inorganic contaminants in soil samples exceeded PALs relatively consistently across the Site at the surface and with depth. Those which exceeded with the highest concentrations and greatest frequency include: SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene), pesticides (4,4'-DDE and 4,4'-DDT), and metals (aluminum, arsenic, chromium, cobalt, iron, lead, and manganese).

CDM Smith's findings, based on analytical results, are summarized below.

Surface Soil:

- SVOCs, pesticides, and metals are present at elevated concentrations throughout the Site.
- Two SVOCs (benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene) and two PCBs (Aroclor-1254 and Aroclor-1260) exceeded the NYSDEC Restricted Residential Use SCO.
- Most surface soil samples exceeded the EPA RSL for arsenic, total chromium, lead, and manganese. Arsenic was the only metal that exceeded the NYSDEC Restricted Residential Use SCO in surface soil.
- The surface soil fill at the site is a 6-to 12-inch thick, non-native, was consistently dark brown, highly organic silty-sand. It was consistently observed at all test pit locations, and is assumed to extend throughout the Site.

Coal Ash:

- Analytical results confirm the presence of SVOCs, pesticides, and metals at elevated concentrations within coal ash samples. Two SVOCs (benzo(a)anthracene and benzo(b)fluoranthene) and two metals (arsenic and barium) exceeded the NYSDEC Restricted Residential Use SCOs. The presence of pesticides in the coal ash is likely due to the migration of contamination from an unknown source since pesticides are not common constituents of coal ash.
- Arsenic, barium, cobalt, and iron concentrations were the highest among the metals in comparison with non-coal ash samples.
- The horizontal extent of the coal ash, estimated with GIS as approximately 0.4 acre, was defined within Site boundaries, with the exception of the northern boundary of the coal ash, where there was no test pit to define its extent. The vertical extent was not determined at some test pit locations.

Construction Debris Fill:

- Analytical results confirm the presence of SVOCs, pesticides, and metals at elevated concentrations in the construction debris fill with the highest levels located at the northern end of the Site (TP-100 through TP-106).
- Three SVOCs (benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene) and arsenic exceeded the NYSDEC Restricted Residential Use SCOs.
- Arsenic, copper, total chromium, hexavalent chromium, lead, mercury, and zinc exceeded the NYSDEC Unrestricted Use SCOs.
- Construction debris fill was present at all locations except at the bottom of the drop-off (TP-100 through TP-102) and near the driveway (TP-112). The fill with the highest concentration of debris was excavated at TP-103 through TP-105. The vertical extent of this fill material ranged from 7 to

greater than 14.5 feet below ground surface (bgs). The greatest depth of construction debris fill was observed at TP-104 and TP-105 where the fill extended deeper than the 14.5 feet bgs reach of the backhoe.

CDM Smith Phase II ESA Recommendations

- If additional investigation activities are performed, volatile organic compound (VOC) analysis should be included to confirm that concentrations are not above PALs. Many VOC results were rejected due to instrument calibration outliers. However, VOCs were not identified as a primary concern in previous investigations.
- There is a large (approximately 30 feet) cliff that runs north-south parallel to Prospect Avenue on the Site. A shallow municipal gas line also runs along Prospect Avenue which prevented sampling in the southwestern corner of the Site. To further characterize the nature and extent of contamination in this area, sampling with proper shoring techniques is recommended.
- The approximate horizontal and vertical extent of coal ash and construction debris fill was determined in several areas. However, a large portion of the Site, outlined by test pits TP-111 and TP-116 to the east and TP-105 and TP-106 to the west, was covered with brush piles. Further vertical and horizontal delineation of contamination in this area is recommended. Deeper test pits or soil borings are also recommended for areas where the bottom of the fill was not encountered due to the vertical limitations of the backhoe.
- The mounds located adjacent to, and north of, the previously excavated area may be comprised of coal ash; sampling of this material is recommended to confirm the presence or lack of coal ash.
- Gaps in the perimeter fence should be fixed and secured to prevent public access to onsite contamination and coal ash mounds.
- Groundwater monitoring is recommended to determine if onsite groundwater is impacted by contamination present onsite.

Section 1
Introduction

CDM Federal Programs Corporation (CDM Smith) is submitting this Phase II Environmental Site Assessment (ESA) Report for the Targeted Brownfields Assessment (TBA) performed at 34 Woodridge Lane, herein referred to as the "Site", located in Sea Cliff, Nassau County, New York (Figure 1-1). The Site is currently in the Remedial Investigation (RI) stage of the New York State Brownfield Cleanup Program (BCP). Cornerstone Environmental Group, LLC submitted a Work Plan (WP) to the New York State Department of Environmental Conservation (NYSDEC) in May 2011. The RI WP was approved by NYSDEC in July 2011. Specifically the TBA includes implementation of the test pit soil investigation portion of the scope of work (SOW) outlined in the NYSDEC approved RI WP.

Under Work Assignment Number 029-SION-0200, this ESA Report was prepared in accordance with the United States Environmental Protection Agency (EPA) Remedial Action Contract (RAC) 2, Contract Number EP-W-09-002. CDM Smith has been tasked by EPA Region 2 to perform the test pit soil investigation as a TBA.

1.1 Site Description and Historic Use

The Site is identified on tax maps as Section 21, Block L, Lots 38, 81, 148, 149 and 150 in the Village of Sea Cliff, Town of Oyster Bay, Nassau County, New York. The Site encompasses approximately 2.3 acres on the corner of Bryant Avenue and Prospect Avenue, approximately 80 feet east of Hempstead Harbor. The Site is accessed from Bryant Avenue and from the rear of the property where Lot 38 joins with Woodridge Lane. The surrounding neighborhood is predominantly suburban residential. A vacated single-family residential home occupies Lot 38, also identified as 34 Woodridge Lane.

Interviews conducted with neighbors during a 2004 Phase I ESA indicated that fill material was placed on the Site throughout the 1970s. Letters sent to the property owner, provided by the Village Building Inspector, indicate that illegal dumping occurred on Lots 38 and 81 during that time.

The topography throughout the Site is uneven, due to the history of fill placement. Starting from the southern edge of the property at the Bryant Avenue entranceway, the property slopes gently upward to the north. The western half of the property drops down approximately 30 feet from the top of the cliff about 15 feet east of Prospect Avenue. At the northern boundary of the Site, the property drops off sharply to the north toward the adjacent property's fenceline. Several soil and debris piles are present at the top of the cliff. Debris and storage containers are staged along the concrete entranceway at Bryant Avenue. A previously excavated area is situated along the eastern boundary of the concrete entranceway on Lot 150. The previously excavated area is approximately 40 feet wide, 60 feet long, and 8 feet deep. During the test pit investigation, fine, gray coal ash was observed throughout the walls of the northern half of the previously excavated area.

A fence runs north/south in the middle of Lot 38. The western and southern perimeter of the Site is also fenced. The remainder of the perimeter is lined with tall trees. A green stake marks the intersection of Lots, 81, 148, and 38. Figure 1-2 displays site features.

1.2 Previous Assessments

A Phase I ESA was performed on Lot 150 by Dru Associates, Inc. of Glen Cove, New York in April 2004. The conclusions of the Phase I ESA identified the following recognized environmental conditions (RECs):

- Fill of unknown origin or composition
- Surface debris (undefined)

In April 2006, excavation activities were conducted on Lot 150 to lay the foundation for a proposed residential building, in which stained soils were observed. On April 12, 2006, a composite soil sample was collected from dark stained soils along the north sidewall of the excavation. Arsenic, iron, and zinc were detected at levels above NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Recommended Soil Cleanup Objectives (SCOs). Arsenic and manganese exceed the NYSDEC Part 375-6(a) Unrestricted Use SCOs. Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, and pesticides were not detected.

In April 2006, Applemon Corporation conducted a subsurface investigation at Lot 150. Five soil/waste samples (TP-1 through TP-5) were collected from test pits excavated on April 24, 2006. Samples TP-1 and TP-2 were collected from adjacent soil layers not impacted by waste, to represent background conditions. Sample TP-3 was collected from a stockpile described as coal ash. Sample TP-4 was collected from soils mixed with coal ash. Sample TP-5 was collected from an exposed deposit of waste/coal ash. Arsenic was detected above TAGM 4046 Recommended SCOs and NYSDEC Part 375-6(a) Unrestricted Use SCOs in samples TP-3 and TP-5. A figure displaying the 2006 test pit locations was not included in the documentation made available to CDM Smith.

Based on the results of the Phase I ESA and subsequent sampling, Lot 150 was approved by NYSDEC to be included in the BCP on August 31, 2010. Adjacent Lots 38, 81, 148 and 149 were not approved by NYSDEC to be included in the BCP due to insufficient data at the time of the application.

In December 2010, eight test pits (TP-1A through TP-6A, TP-7 and TP-8) were collected at adjacent Site parcels, Lots 38, 81, 148, and 149 (shown on Figure 1-3). A sample collected from test pit TP-3A was described as asphalt, and the remaining test pit samples were described as coal ash. Arsenic concentrations exceeded Subpart 375-6(a) Unrestricted Use SCOs in all seven coal ash samples. Six out of seven coal ash samples exceeded Restricted Residential SCOs. SVOCs exceeded both Unrestricted and Restricted Residential Use SCOs in the asphalt sample, TP-3A. Based on the results of the December 2010 sampling event, Lots 38, 81, 148, and 149 were incorporated into the NYSDEC BCP (Cornerstone 2011).

1.3 Objectives

CDM Smith conducted this Phase II ESA on behalf of the EPA as part of a TBA performed for the NYSDEC BCP recipient. The objectives of this Phase II ESA were to implement the test pit soil investigation outlined in the RI WP prepared by Cornerstone Environmental Group, LLC, in order to characterize and delineate the onsite fill material.

1.4 Limitations and Exceptions of Investigation

The results for this TBA Phase II ESA are based on a review of available information obtained through an on-site reconnaissance, a geophysical survey, field sampling and analysis results, and review of historic records and previous environmental investigations.

The conclusions, therefore, represent CDM Smith's professional opinions based on these aforementioned sources of information. A Phase II ESA is not a comprehensive site characterization or regulatory compliance audit, and should not be construed as such. CDM Smith cannot represent that the Site contains no hazardous or toxic materials, products, or other latent conditions beyond that observed by CDM Smith during this ESA. Further, the services herein shall not be construed, designed or intended to be relied upon as legal interpretation or advice. This report was prepared for the exclusive use by EPA. It is not intended for use by any other parties. Use of this report by any other party is at their sole risk without liability to CDM Smith.

1.5 Limiting Conditions and Methodology Used

The Phase II ESA was completed to identify, locate, and characterize soil contamination present at the Site. To meet this objective, sample locations were chosen based on the RI WP provided to CDM Smith. The results of the Phase II ESA only characterize the nature of soil contamination at the Site; the ESA has not characterized the extent of contamination. This Phase II ESA did not include a characterization of groundwater quality at the Site.

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Section 2

Phase II Activities

2.1 Scope

Previous investigations identified the presence of coal ash, fill material, and elevated arsenic concentrations at the Site. Based on the results of these investigations, the Site was entered into the NYSDEC BCP. In May 2011, Cornerstone Environmental Group, LLC submitted a RI WP to investigate the nature and extent of contamination identified onsite. CDM Smith has been tasked by EPA Region 2 to implement the test pit soil investigation SOW outlined in the RI WP.

The following activities were performed as part of this Phase II ESA:

- Preparation of a Site-Specific Quality Assurance Project Plan (QAPP).
- Preparation of a Site-Specific Health and Safety Plan (HASP).
- Site reconnaissance conducted on September 10, 2012.
- Held field planning meeting among the CDM Smith TBA team via a conference call on November 27, 2012.
- Cleared site of vegetation/debris by owner, from November 26 through December 14, 2012, prior to the geophysical survey and test pit investigation.
- Conducted geophysical survey on December 3 and December 13, 2012 to determine the presence of subsurface utilities and anomalies that may hinder the investigation and potential future remedial activities.
- Excavation of 19 test pits, from December 10 through December 20, 2012 to delineate the extent of fill and buried waste material onsite and to collect soil samples.
- Collection of surface and subsurface soil samples from the test pits to characterize the fill and waste materials. See Figure 2-1 for test pit and sample locations.
- Global Positioning System (GPS) survey of test pit locations conducted on December 19, 2012.

Refer to Figure 2-1 for sample and test pit locations.

2.2 Site Reconnaissance

CDM Smith conducted a site reconnaissance on September 10, 2012 prior to Phase II activities to assess overall conditions and to identify potential logistical issues and physical access constraints.

At the time of the site reconnaissance, the majority of the Site was densely vegetated with tall trees, vines, and shrubs. None of the vegetation appeared stressed. CDM Smith informed the property owner that the vegetation would need to be cleared prior to the commencement of test pit activities.

A cleared rectangular area, situated north/south, extended from the Bryant Avenue entrance to the north. The general area around the vacated residence on Lot 38 was manicured.

Additional features observed during the Site Reconnaissance were described in Section 1.1.

2.3 Geophysical Survey

A multi-phase geophysical survey was performed by Delta Geophysics Inc. (Delta) to identify and delineate any subsurface utilities and anomalies. The survey was conducted on December 3, 2012 and December 13, 2012 due to access to vegetated areas. The property owner cleared the majority of vegetation and debris so that the survey could be performed, although the vegetation located on the top of the cliff was not cleared to prevent destabilization of the slope. Most of the cleared vegetation was stored as piles throughout the Site. Delta returned, after the Site was cleared, to survey previously inaccessible areas. The geophysical survey included the following:

- A ground-penetrating radar (GPR) survey using a Geophysical Survey System Inc. SIR-3000 cart-mounted GPR unit with a 270 megahertz antenna. The GPR unit was configured to transmit to a depth of approximately 10 feet below ground surface (bgs), but actual signal penetration was approximately 3 feet bgs. The limiting factor was signal attenuation near surface soils.
- A utility locator survey using a Radiodetection RD7000 precision utility detector and Fisher M-Scope TW-6 pipe and cable locator. The TW-6 and RD7000 were used in conjunction and are designed to find pipes, cables and other metallic objects such as underground storage tanks. The TW-6 operates by generating a magnetic field at the transmitter which causes metallic objects in the subsurface to generate a secondary magnetic field. The induced secondary field is detected by the receiver, the RD7000, which generates an audible tone. The audible tone results when the instrument passes over an underground metallic object causing a change in balance between the primary and secondary electromagnetic fields.

The geophysical survey was conducted by carrying the TW-6 and RD7000 instruments over accessible areas of the Site. The cart-mounted GPR survey was conducted by passing the unit over the accessible areas.

Two anomalous locations were marked with spray paint; test pits TP-116 and TP-117 were excavated at these locations.

The results of the geophysical survey are summarized in Section 3.1; the geophysical survey report is presented as Appendix A.

2.4 Test Pit Excavation and Sampling

On December 10th, 2013, test pit sampling commenced. Fifteen proposed test pit locations were chosen to best describe the horizontal extent of fill on the Site, as described in the Site-Specific QAPP. The final locations were determined after the site reconnaissance, geophysical survey, and initial site clearing. The test pits along Prospect Avenue (TP-100 through TP-102) were moved to the north due to unstable slope conditions south of TP-102. The slope in this area prevented the advancement of test pits north of TP-103. Access north of TP-106 and TP-107 was limited due to a pile of cut vegetation during the majority of the investigation and the presence of a fence along the northern

perimeter of the Site. In addition to the original 15 test pits, TP-116 and TP-117 were added to investigate the two anomalies identified during the geophysical survey, and TP-118 was added to delineate the vertical extent of coal ash observed between TP-108 and TP-109. Figure 2-1 presents the locations of the test pits and soil samples.

Test pits were excavated by Zebra Environmental, using a CAT 430E backhoe. The test pits were excavated to a depth where native material was encountered or to the extent of the backhoe (14.5 feet bgs), whichever was deeper.

A surface soil sample was collected at each test pit location prior to excavation. Coal ash and unique fill material samples were collected during excavation when observed. Upon completion of each test pit, subsurface soil samples were collected from the bottom and from the four sidewalls (see Section 2.5.1 for a sample identification summary). Lithologic logs of test pits were completed and can be found in Appendix B.

Each soil sample was screened for VOCs with a photoionization detector (PID). VOCs were not detected in most samples; the highest VOC reading was 2.1 parts per million (ppm) at TP-103-SS. Table 2-1 provides a summary of the samples, analyses, and PID readings. Surface soil and bottom of test pit samples were shipped while the other samples were held on ice for one to three days until the project team decided which would be submitted for analysis. For sample analysis rationale see section 2.5.3 below.

2.4.1 Lithology

The lithology is defined as surface soil, coal ash, construction debris fill, and native silty sand. Test pit cross-sections depicting soils descriptions, stratigraphy, test pit dimensions, and sample depths are provided in Appendix B.

- **Surface soil** - The upper two to six inches of material on the Site consist of a layer of organic soil. The surface soil is a medium to dark brown silty-sandy soil with organic material, roots, and some cobbles.

- **Construction debris fill** - Fill material consisting of a brown medium to coarse silty sand with gravel extends from approximately six inches to three feet bgs in the southern half of the Site (TP-106 through TP-111, TP-113 and TP-116 through TP-118) where it overlies coal ash. The vertical and horizontal extent of the fill material is estimated on Figure 2-2. In the northern part of the Site (TP-103, TP-104, TP-105), this fill material extends from 1.5 feet bgs to between 7 to 14.5 feet bgs and includes abundant construction debris consisting of concrete, asphalt, plastic, metal, brick, and tires.

- **Coal Ash** - In the south central part of the Site, a homogeneous, medium to dark grey fine powder or ash, identified as coal ash, was encountered at approximately 1.5 to 3 feet bgs and extended to at least 14.5 feet bgs as shown on Figure 2-2. The coal ash unit extended deeper than 14.5 feet bgs at TP-110, TP-113, and TP-117. A 6 to 12 inch coal ash lense was observed in four test pits located on the south and west periphery of the coal ash area (TP-106, TP-107, TP-109, and TP-118). The vertical extent of the coal ash ranges from a thin lens along its southern and western boundaries to deeper than 14.5 feet bgs in its center. TP-111 and TP-116, along the eastern

boundary, documented the extent at which the coal ash was 8 to 9 feet thick. TP-114, which is situated in the center of the previously excavated area, had traces of coal ash, but not as a definable unit. The north and west walls of the previously excavated area were composed of a material resembling coal ash, but no samples were taken. Figure 2-3 shows the estimated extent of coal ash fill material.

- **Native silty sand** - Native material consists of brown to yellow coarse sand with rounded quartz pebbles and cobbles, trace to some silt, and iron staining. It is present directly below the deepest fill material at each location. There is little to no fill material located below the surface soil in the northeastern part of the Site at the top of the cliff (Lot 38; TP-112 and TP-115) as well as the northwestern part of the Site along Prospect Avenue at the bottom of the cliff (TP-100, TP-101, TP-102).

2.5 Sampling Activities and Sample Analysis

The following sections summarize the sampling activities and laboratory analyses. Field activities were documented in the Site logbook (Appendix C).

2.5.1 Sample Identification

A sample identification system was used to assign a unique identifier to each sample and to provide a tracking record to allow retrieval of information pertaining to a particular sample. The following schemes were used to identify the types of samples collected during the Phase II investigation:

Test Pit Soil Samples: The test pits were designated TP-100 through TP-118, where "TP" denotes test pit and "100" denotes the test pit number. The samples at each test pit were identified as follows:

- Surface soil samples were taken from the 0 to 2 inch interval at each location and designated with an "SS" (for example TP-100-SS).
- Bottom samples were collected from the bottom of each pit and designated with a "B" (for example TP-100-B) or "BR" for test pits TP-104 and TP-105. At these two test pits, further delineation was required and additional bottom samples were collected.
- Sidewall samples were collected from each of the four side walls of each pit, at a depth just below the top of the fill and were designated either "N", "E", "S", or "W" depending on the cardinal direction of the sidewall (for example TP-100-N, TP-100-E, TP-100-S, TP-100-W).
- A total of three representative fill samples were collected in addition to those samples above, and were designated with a "FL" (for example TP-100-FL).
- A total of five coal ash samples were collected in addition to those samples above, and were designated with a "CA" (for example TP-100-CA).

Field Blanks: One field blank was collected to identify any contamination present on the sample equipment. The field blank was designated "FB" followed by the date of collection (for example FB-12132012)

Quality Control (QC) Samples: Duplicate and matrix spike/matrix spike duplicate (MS/MSD) soil samples were collected to evaluate sampling procedures and analytical precision. The duplicate samples were identified with a "9" instead of a "1" as the first number denoting the location. For example, the duplicate sample for TP-100-SS would be TP-900-SS. A total of three duplicate samples and three MS/MSD samples were collected.

2.5.2 Sample Locations

Test pit locations were recorded in the field using a Trimble GPS Pathfinder Pro XRS unit, with a horizontal accuracy of two feet. Coordinates were collected using the New York State Plane – Long Island coordinate system in meters, and the North American Datum of 1983.

2.5.3 Sample Analysis

All surface and bottom soil samples were collected, shipped the same day, and analyzed for Target Compound List (TCL) VOCs, SVOCs, pesticides, polychlorinated biphenyls (PCBs), soil moisture, Target Analyte List (TAL) metals including mercury and cyanide, and hexavalent chromium. The sidewall, fill, and coal ash samples were collected for VOCs plus additional volume for the remaining analyses. These samples were held on ice until the project team determined which samples to send. The decision was based on field observations, lithologic logs, and field photographs, with a bias toward impacted areas.

2.5.4 Investigation Derived Waste

Investigation derived waste (IDW) was limited to soil, disposable sampling equipment, and personnel protective equipment. Excavated soil was used to backfill test pits. The backhoe subcontractor (Zebra) was responsible for removing all IDW during the field activities.

2.6 Deviations from the QAPP

Due to the instability of the slope along Prospect Avenue on Lots 148 and 149 and the presence of a shallow gas line that runs along Prospect Avenue, the proposed locations for test pits TP-100, TP-101, and TP-102 were moved north to Lot 81. In addition to the original 15 test pits, TP-116 and TP-117 were added to investigate the two anomalies identified during the geophysical survey, and TP-118 was added to delineate the vertical extent of coal ash observed between TP-108 and TP-109.

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Section 3

Summary and Evaluation of Results

This section summarizes the analytical results of the Phase II ESA samples and describes the selection of evaluation criteria. The results of this Phase II ESA will assist the funding recipient in delineating the limits of existing fill, characterizing the level of contamination in the fill, confirming previously collected data, and identifying the appropriate options for redevelopment and future use.

3.1 Selection of Evaluation Criteria

In accordance with the Site-Specific QAPP, analytical results are compared to Project Action Limits (PALs) identified in site-specific QAPP Worksheet #15. The PALs include both federal and state screening criteria, as presented below.

Organics and Inorganics

- EPA Regional Screening Limits (RSLs) for Chemical Contaminants at Superfund Sites (November 2012) for residential soils, adjusted to cancer risk of 1E-6 and hazard quotient 0.1.
- NYSDEC Subpart 375-6(a) Unrestricted Use SCOs
- NYSDEC Subpart 375-6(b) Restricted Residential Use SCOs

The soil organic and inorganic PALs and analytical results are presented in Table 3-1.

3.2 Geophysical Survey Results

Two anomalous locations and several subsurface utility lines were identified from the geophysical survey results. The identified subsurface utility lines included water and sewer lines running north to south on the eastern side of the property line and continue running east to west along Bryant Avenue, and a shallow gas line running along Prospect Avenue. All utilities and anomalies identified via GPR and RD7000 are shown on site map 1212104 of the geophysical survey (Appendix A).

3.3 Soil Sample Results

3.3.1 Data Usability

All data were validated by EPA and have been reviewed to assess whether data quality is sufficient to support the project objectives. In general, all laboratory analyses were method compliant. Some QC parameters were outside criteria; associated sample results were qualified accordingly. Data qualified as estimated (J/UJ) are usable for project decisions. However, many VOC results were rejected, including all 1,4-dioxane results; rejected data (R) are not considered usable for project purposes because comparisons cannot be made due to a lack of existing data. Data validation reports are included in Appendix E. Deficiencies noted within the EPA validation reports are described below.

Analytical Blank - Laboratory method blanks had detections of VOCs, SVOCs, pesticides, metals and mercury. Associated sample results were appropriately qualified as estimated or non-detect. All environmental sample data are appropriately qualified based on associated blank contaminations.

Field/Rinsate Blanks – Several blanks have contaminant concentrations less than the contract required quantitation limits (CRQLs). Associated VOC, SVOCs and pesticide results were qualified as estimated.

Deuterated Monitoring Compounds (DMCs) and Surrogate Recoveries – Several DMCs exceeded their QC criteria; affected VOC results were estimated and several surrogates exceeded their QC criteria. Affected SVOC results were estimated.

Percent Relative Standard Deviation (%RSD) and Percent Difference (%D) - %RSD and %D were outside control limits for VOCs and SVOCs. Some of these results were estimated. In addition, non-detected VOC sample results associated with opening and closing continuing calibration verifications (CCVs) were rejected.

Internal Standards - Some samples had VOC internal standard results outside criteria and were estimated. Additionally, 42 samples had 539 VOC results rejected due to poor recovery.

Response Factors – Some VOC results did not achieve the response factor criterion and were rejected if the result was non-detect. Seventy-five VOC (1, 4-Dioxane) results were rejected due to poor instrument signal response.

MS/MSD or Laboratory Duplicate – Several MS/MSDs or laboratory duplicates did not meet quality control (QC) criteria. Some PCBs, metals, and hexavalent chromium sample results were qualified as estimated. The laboratory duplicate metals results were qualified as estimated.

Post Digestion Spike - Several hexavalent chromium sample results were flagged as estimated low "UL" or estimated non-detect "UJ" when recoveries were below the QC limit, demonstrating matrix interference, or the QC was performed on non-site related samples.

Holding Time – The SVOC technical holding times were exceeded in some samples. These results were estimated.

Compound Identification/PCB Fraction - One PCB result and several pesticides results were estimated due to failure of the compound identification criteria. In addition, pesticide results (heptachlor epoxide in TP-106-S and TP-114-SS and dieldrin and endosulfan II in sample TP-114-SS) were rejected due to poor confirmation results.

Continuing Calibration Blanks – Hexavalent chromium samples were estimated due to continuing calibration blanks contaminants.

Inductively Coupled Plasma Serial Dilution (Inorganics) - Several serial dilutions did not yield acceptable percent different results. The affected metal results were estimated.

Percent Solids – Metal and cyanide sample results were estimated.

Negative Results (hexavalent chromium) – Several samples had negative raw sample results (prior to calculations to milligram per kilogram (mg/kg)). These negative values resulted in negative calculated concentrations in excess of the detection limit. These results were estimated or rejected, due to apparent problems with color blank correction. Four hexavalent chromium samples were rejected (TP-100-SS, TP-102-SS, TP-111-SS and TP-911-SS).

Total chromium versus hexavalent chromium comparison - The hexavalent chromium result for sample TP-109-SS exceeded the total chromium result by 40 percent, requiring estimation of the data.

3.3.2 Soil Analytical Results

Table 3-1 and Figure 3-1 present the results of the organic and inorganic compounds detected in the soil samples. A total of 74 soil samples were analyzed; Appendix D presents the full analytical data tables.

VOCs

As noted in the previous section, many VOC results were rejected. Of the usable results, eight VOCs were detected, however none were detected above PALs.

SVOCs

A total of 21 SVOCs were detected. Six SVOCs exceeded PALs, including: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. These compounds are polyaromatic hydrocarbons (PAHs), which persist in the environment as a result of the incomplete burning of carbon-containing materials such as oil, wood, garbage or coal. The highest concentrations of PAHs are located at sample locations TP-105, and TP-106, which are located in the area with the greatest amount of construction debris fill material.

The cleanup up goal for the Site is the NYSDEC Restricted Residential Use SCOs. Benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene were the only SVOCs that exceeded the NYSDEC Restricted Residential Use SCOs. The remainder of the compounds exceeded the EPA RSLs with the exception of chrysene, which only exceeded the NYSDEC Unrestricted Use SCO.

A summary of the exceedances is presented below.

- *Benzo(a)anthracene* – Concentrations ranged from 1,000 microgram per kilogram (µg/kg) to 1,400 µg/kg, and exceeded PALs in the following samples: TP-101-SS, TP-102-SS, TP-103-SS, TP-103-N, TP-104-N, TP-104-B, TP-105-SS, TP-105-B, TP-105-BR, TP-106-SS, TP-906-SS, TP-106-S, TP-106-CA, TP-107-SS, TP-107-W, TP-107-B, TP-118-SS, TP-118-FL, TP-118-W, TP-118-CA, TP-118-B. These concentrations exceed EPA's RSL of 150 µg/kg. TP-105-BR and TP-106-CA also exceeded NYSDEC Restricted Residential and Unrestricted Use SCOs of 1,000 µg/kg.
- *Benzo(a)pyrene* - Exceeded PALs in the following samples: TP-101-SS, TP-101-W, TP-102-SS, TP-102-S, TP-102-B, TP-103-SS, TP-103-N, TP-104-SS, TP-104-N, TP-104-B, TP-104-BR, TP-105-SS, TP-105-B, TP-105-BR, TP-106-SS, TP-906-SS, TP-106-S, TP-106-CA, TP-107-SS, TP-107-W, TP-107-CA, TP-107-B, TP-108-SS, TP-108-B, TP-109-CA, TP-110-SS, TP-111-SS, TP-911-SS, TP-112-SS, TP-912-SS, TP-113-SS, TP-113-E, TP-114-FL, TP-114-CA, TP-114-S, TP-115-SS, TP-115-FL, TP-116-SS, TP-116-E, TP-116-B, TP-117-SS, TP-118-SS, TP-118-FL, TP-118-W, TP-118-CA, TP-

118-B. The reported concentrations exceed EPA's RSL of 15 µg/kg. These elevated concentrations ranged from 15 J µg/kg to 830 J µg/kg.

- *Benzo(b)fluoranthene* - Exceeded PALs in the following samples: TP-100-SS, TP-101-SS, TP-102-SS, TP-103-SS, TP-103-N, TP-104-SS, TP-104-N, TP-104-B, TP-104-BR, TP-105-SS, TP-105-B, TP-105-BR, TP-106-SS, TP-906-SS, TP-106-S, TP-106-CA, TP-107-SS, TP-107-W, TP-107-B, TP-109-SS, TP-114-CA, TP-118-SS, TP-118-FL, TP-118-W, TP-118-CA, TP-118-B. The reported concentrations exceed EPA's RSL of 150 µg/kg. TP-102-SS, TP-105-BR, and TP-106-CA also exceeded NYSDEC Restricted Residential and Unrestricted Use SCOs of 1,000 µg/kg. These elevated concentrations ranged from 1,100 J µg/kg to 1,800 µg/kg.

- *Chrysene* - Exceeded the NYSDEC Unrestricted Use SCO of 800 µg/kg in the soil sample TP-105-BR at a concentration of 1,300 J µg/kg.

- *Dibenzo(a,h)anthracene* - Exceeded PALs in the following samples:TP-103-SS, TP-103-N, TP-105-BR, TP-106-SS, TP-106-S, TP-106-CA, TP-107-W, TP-107-B, TP-108-B, TP-114-CA, TP-118-SS, TP-118-FL, TP-118-CA, and TP-118-B. The reported concentrations exceed EPA's RSL of 15 µg/kg. These elevated concentrations ranged from 15 J µg/kg to280 J µg/kg.

- *Indeno(1,2,3-cd)pyrene* - Exceeded PALs in the following samples:TP-101-SS, TP-102-SS, TP-103-SS, TP-104-B, TP-104-BR, TP-105-SS, TP-105-B, TP-105-BR, TP-106-SS, TP-906-SS, TP-106-S, TP-106-CA, TP-107-B, TP-118-SS, TP-118-FL, and TP-118-B. The reported concentrations exceed EPA's RSL of 150 µg/kg. The concentrations reported at TP-102-SS and TP-105-BR also exceed the NYSDEC Restricted Residential and Unrestricted Use SCOs of 500 µg/kg. Elevated concentrations ranged from 590 J µg/kg to 1,000 J µg/kg.

Pesticides and PCBs

A total of 16 pesticides and two PCBs were detected in soil samples. Of those, six pesticides (4,4'-dichlorodiphenyldichloroethane (DDD), 4,4'-dichlorodiphenyldichloroethylene (DDE), 4,4'-dichlorodiphenyltrichloroethane (DDT), alpha-chlordane, dieldrin, and heptachlor epoxide) and two PCBs (Aroclor 1254 and Aroclor 1260) were detected at concentrations exceeding PALs. The highest concentrations of pesticides are in TP-104, and TP-106, which are located in the area with the greatest amount of construction debris fill material. The highest concentrations of PCBs are located at sample location TP-114, which is located in the previously excavated area at the southern end of the Site.

The cleanup up goal for the Site is the NYSDEC Restricted Residential Use SCOs. There were no pesticides and only one PCB (Aroclor-1254) that exceeded the NYSDEC Restricted Residential Use SCOs. The remainder of the compounds listed above exceeded the EPA RSLs and/or the NYSDEC Unrestricted Use SCOs.

A summary of the exceedances is presented below.

- *4,4'-DDD* - Exceeded NYSDEC Unrestricted Use SCO (3.3 µg/kg) in the following samples:TP-102-S, TP-104-N, TP-105-B, TP-106-S, TP-106-CA, TP-106-B, TP-107-B, and TP-109-S. Elevated concentrations ranged from 4.9 µg/kg to 320 µg/kg.

- *4,4'-DDE* - Exceeded NYSDEC Unrestricted Use SCO (3.3 µg/kg) in the following samples: TP-100-SS, TP-101-SS, TP-102-S, TP-104-SS, TP-104-N, TP-105-SS, TP-105-B, TP-105-BR, TP-106-SS, TP-906-SS, TP-106-S, TP-106-CA, TP-107-SS, TP-107-W, TP-107-B, TP-108-SS, TP-108-B, TP-109-S, TP-109-CA, TP-111-SS, TP-911-SS, TP-112-SS, TP-912-SS, TP-114-SS, TP-116-SS, TP-118-SS, TP-118-FL, TP-118-B. Elevated concentrations ranged from 4.4 µg/kg to 110 µg/kg.
- *4,4'-DDT* - Exceeded NYSDEC Unrestricted Use SCO (3.3 µg/kg) in the following samples: TP-100-SS, TP-102-S, TP-103-N, TP-104-SS, TP-104-N, TP-104-BR, TP-105-SS, TP-105-B, TP-106-SS, TP-906-SS, TP-106-S, TP-106-CA, TP-106-B, TP-107-SS, TP-107-W, TP-107-CA, TP-107-B, TP-108-SS, TP-108-B, TP-109-SS, TP-109-S, TP-109-CA, TP-111-SS, TP-911-SS, TP-112-SS, TP-116-SS, TP-118-SS, TP-118-FL, TP-118-CA, and TP-118-B. Elevated concentrations ranged from 3.3 J µg/kg to 93 NJ µg/kg.
- *Alpha Chlordane* - Exceeded NYSDEC Unrestricted Use SCO (94 µg/kg) in the following samples: TP-104-BR, TP-105-SS, TP-106-SS, TP-906-SS, and TP-118-FL. Elevated concentrations ranged from 100 J µg/kg to 640 NJ µg/kg.
- *Dieldrin* - Exceeded NYSDEC Unrestricted Use SCO of (5 µg/kg) in the following samples: TP-104-SS, TP-104-N, TP-104-BR, TP-105-SS, TP-105-B, TP-106-SS, TP-906-SS, and TP-108-SS. Of these samples, TP-104-BR and TP-106-SS also exceed the EPA RSL (30 µg/kg). The dieldrin concentrations of TP-104-BR and TP-106-SS were 34 J µg/kg and 43 µg/kg, respectively.
- *Heptachlor Epoxide* - Exceeded EPA RSL (53 µg/kg) in the following samples: TP-106-SS, TP-906-SS, and TP-118-FL. Elevated concentrations ranged from 53 J µg/kg and 150 µg/kg.
- *Aroclor 1254* – Exceeded PALs in one sample, TP-114-SS, at a concentration of 1,100 µg/kg. This detection exceeds the NYSDEC Unrestricted Use SCO of 100 µg/kg, the EPA's RSL of 110 µg/kg and the NYSDEC Restricted Residential Use SCO of 1,000 µg/kg.
- *Aroclor 1260* - Exceeded PALs in one sample, TP-114-SS, at a concentration of 410 µg/kg. This detection exceeds the NYSDEC Unrestricted Use SCO of 100 µg/kg and the EPA's RSL of 220 µg/kg.

Metals

A total of 25 metals were detected in soil samples collected during the Phase II ESA. Inorganic analytes are present in surface and subsurface soil collected from across the Site. The highest exceedances of lead, manganese, hexavalent chromium, total chromium, and zinc are mostly associated with surface soil samples, while the highest exceedances of arsenic, barium, cobalt, and iron are mostly associated with coal ash samples.

Arsenic and barium exceeded the NYSDEC Restricted Residential Use SCO. The remainder of the analytes listed above exceeded the EPA RSLs and/or the NYSDEC Unrestricted Use SCOs.

Metal exceedances are detailed below.

- *Aluminum* - Exceeded EPA RSL (7,700 mg/kg) at all test pit locations, except for TP-100 through TP-102. Elevated concentrations ranged from 8,060 mg/kg to 20,500 mg/kg.

- *Antimony* - Exceeded EPA RSL (3.1 mg/kg) at concentrations ranging from 5.2 J mg/kg to 6.9 J mg/kg. The EPA RSL was exceeded in the following soil samples: TP-100-B, TP-101-SS, TP-101-B, TP-102-SS, TP-102-B, TP-104-BR, TP-105-BR, TP-108-CA, TP-111-SS, TP-911-SS, TP-113-E, TP-115-SS, TP-115-FL, TP-115-B, TP-116-SS, and TP-116-B.

- *Arsenic* - Exceeded EPA RSL (0.39 mg/kg) at all test pit locations at concentrations ranging from 0.97 J mg/kg to 178 mg/kg. Of those that exceeded the EPA RSL, TP-102-SS, TP-102-S, TP-106-CA, TP-107-CA, TP-108-CA, TP-109-CA, TP-110-B, TP-112-SS, TP-912-SS, TP-113-SS, TP-113-B, TP-114-CA, TP-116-E, TP-116-CA, TP117-CA, TP-117-B, TP-917-B, and TP-118-CA also exceeded the NYSDEC Unrestricted Use (16 mg/kg) and Restricted Residential Use (13 mg/kg) SCOs. With the exception of TP-102-SS, TP-102-S, TP-112-SS, TP-912-SS, TP-113-SS and TP-116-E, all samples that exceeded the NYSDEC Restricted Residential Use SCO of 16 mg/kg were composed of coal ash. Fill material samples collected from TP-104-N and TP-118-SS exceeded the NYSDEC Unrestricted Use SCO for arsenic, and not the Restricted Residential Use SCO.

- *Barium* - Exceeded NYSDEC Restricted Residential Use SCO (400 mg/kg) and Unrestricted Use SCO (350 mg/kg) at TP-107-CA, TP-108-CA, TP-110-B, TP-113-B, TP-116-E, TP-116-CA, TP-117-CA, TP-117-B, and TP-917-B. Elevated concentrations ranged from 457 mg/kg to 787 mg/kg. With the exception of TP-116-E, all exceedances occurred in coal ash samples.

- *Total Chromium* - Exceeded EPA RSL (0.29 mg/kg) in all soil samples with the exception of TP-100-B. Concentrations ranged from 3.9 mg/kg to 45.1 J mg/kg. Total chromium concentrations also exceeded the NYSDEC Unrestricted Use SCO (30 mg/kg) in the following samples: TP-100-SS, TP-101-SS, TP-102-SS, TP-104-BR, TP-106-SS, TP-108-CA, and TP-110-B.

- *Hexavalent Chromium* - Exceeded EPA RSL (0.29 mg/kg) at all test pit locations, except for TP-108 and TP-110. Elevated concentrations ranged from 0.3 J- mg/kg to 23 J mg/kg. Hexavalent chromium concentrations also exceeded the NYSDEC Unrestricted Use SCO (1 mg/kg) in the following samples: TP-100-N, TP-100-B, TP-101-SS, TP-101-W, TP-102-S, TP-103-SS, TP-103-N, TP-103-B, TP-104-SS, TP-104-N,TP-105-SS, TP-106-SS, TP-906-SS, TP-106-B, TP-107-SS, TP-107-B, TP-109-SS, TP-109-B, TP-112-SS, TP-113-SS, TP-113-B, TP-115-SS, TP-115-W, TP-116-SS, TP-116-E, TP-116-B, TP-117-SS, TP-117-CA, TP-917-B, TP-118-SS, TP-118-FL, TP-118-W, TP-118-CA, and TP-118-B.

- *Cobalt* - Exceeded EPA RSL (2.3 mg/kg) at all test pit locations, except for TP-100 and TP-101. Elevated concentrations ranged between 2.7 mg/kg to 11.9 mg/kg. The highest exceedances of cobalt occurred primarily in coal ash samples.

- *Copper* - Exceeded NYSDEC Unrestricted Use SCO (50 mg/kg) in one sample, TP-104-BR, with a concentration of 50.1 mg/kg.

- *Iron* - Exceeded EPA RSL (5,500 mg/kg) in most soil samples, with elevated concentrations between 5,760 mg/kg and 60,300 mg/kg. The highest exceedances of iron occurred primarily in coal ash samples.

- *Lead* - Exceeded EPA RSL (40 mg/kg) at all test pit locations, except for TP-107, TP-110, TP-113 through TP-116. Elevated concentrations ranged from 3.9 mg/kg to 316 mg/kg. Lead concentrations also exceeded the NYSDEC Unrestricted Use SCO (63 mg/kg) in the following samples: TP-100-SS, TP-101-SS, TP-102-SS, TP-104-SS, TP-104-N, TP-104-B, TP-104-BR, TP-105-SS, TP-105-B, TP-106-SS, TP-906-SS, TP-106-CA, TP-112-SS, TP-912-SS, and TP-117-SS. With the exception of TP-100-B, TP-112-E, TP-112-B, and TP-114-E, lead was detected in all soil samples.
- *Manganese* - Exceeded the EPA RSL (180 mg/kg) at all test pit locations, except for TP-110 and TP-114. Elevated concentrations ranged from 182 mg/kg to 562 J mg/kg.
- *Mercury* - Exceeded NYSDEC Unrestricted Use SCOs (0.18 mg/kg) in the following samples: TP-104-BR, TP-106-SS, TP-906-SS, TP-106-CA, TP-108-CA, TP-110-B, TP-112-SS, TP-912-SS, TP-113-B, and TP-117-CA. Elevated concentrations ranged from 0.18 to 0.38 mg/kg.
- *Nickel* - Exceeded NYSDEC Unrestricted Use SCO (30 mg/kg) in the following samples: TP-108-CA, TP-110-B, TP-113-B, TP-116-CA, TP-117-B, and TP-917-B, all of which were composed of coal ash. Elevated concentrations of nickel ranged from 2.3 mg/kg to 38.1 mg/kg. Nickel was detected in all soil samples.
- *Thallium* - Exceeded the EPA RSL (0.078 mg/kg) in one sample, TP-108-CA, with a concentration of 5 mg/kg.
- *Vanadium* - Exceeded the EPA RSL (39 mg/kg) in the following samples: TP-102-S, TP-106-SS, TP-106-CA, TP-107-CA, TP-108-CA, TP-109-CA, TP-110-B, TP-113-SS, TP-113-B, TP-114-CA, TP-116-E, TP-116-CA, TP-117-CA, TP-117-B, and TP-917-B. Elevated concentrations ranged from 42.7 mg/kg to 194 mg/kg.
- *Zinc* – Exceeded the NYSDEC Unrestricted Use SCO (109 mg/kg) in the following samples: TP-100-SS, TP-102-SS, TP-104-BR, TP-105-SS, TP-106-SS, and TP-906-SS. Elevated concentrations ranged from 125 mg/kg to 324 mg/kg. Zinc was detected in all soil samples with the exception of TP-112-B.

3.4 Quality Assurance/Quality Control

Duplicate samples and a field blank were collected for quality assurance purposes. All duplicate samples had similar concentrations to their parent samples. One equipment field blank was collected during the Phase II ESA, on December 13, 2012. The field blank was collected by pouring deionized water over the disposable sampling bowls and spoons and into a laboratory-supplied sample bottle. The field blank was submitted with, and analyzed for, the same parameters as the environmental samples. Low levels of several compounds were detected below laboratory reporting limits in the field blank. See Table 3-2 for full analytical results of the field blank. The results were also below EPA National Primary Drinking Water Standards and NYSDEC Standards and Guidance Values for Class GA Groundwater. The compounds detected in the field blank do not suggest sampling equipment was contaminated prior to use onsite or laboratory cross contamination.

3.5 Evaluation of Results

The native silty sand underlies surface soil in the three test pits in the northeastern portion of the Site, along Prospect Avenue. It was observed to underlie fill material in all test pits in which it was encountered. A variety of fill materials, including non-native surface soil, a heterogeneous construction debris fill, and coal ash fill, were observed, delineated, and characterized. The following sections discuss the evaluation of the three types of fill at the Site.

A variety of organic and inorganic contaminants exceeded PALs relatively consistently across the Site at the surface and with depth. Those which exceeded with the highest concentrations and greatest frequency include: SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene), pesticides (4,4'-DDE and 4,4'-DDT), and metals (aluminum, arsenic, chromium, cobalt, iron, lead, and manganese).

3.5.1 Evaluation of Surface Soil Fill

The surface soil fill at the Site is a 6-to 12-inch thick, non-native, dark brown, and highly organic (containing roots, plant material, and twigs) silty-sand. It was consistently observed at all test pit locations, and is assumed to extend throughout the Site.

The surface soil fill was characterized using surface soil samples. These samples had elevated concentrations of SVOCs, pesticides, PCBs, and metals. One SVOC (benzo(b)fluoranthene) and one PCB (Aroclor-1254) exceeded the NYSDEC Restricted Residential Use SCO. Most surface soil results exceeded the EPA RSL for arsenic, total chromium, lead, and manganese. Of those, total chromium and lead also exceeded the NYSDEC Unrestricted Use SCO in some surface soil samples.

3.5.2 Evaluation of the Coal Ash Fill

The coal ash fill was observed as a definable unit of medium to dark gray powder. It is concentrated in the south-central portion of the Site (see Figure 2-3). The vertical extent ranges from a few feet bgs to over 14.5 feet bgs in the center of the coal ash area. The western edges of the coal ash area are characterized by a one-foot thick lens.

The coal ash fill is assumed to be absent in the previously excavated area other than its northern most portion in which a ramp descends into the excavated area (which is indicated by the orange line on Figure 2-3). This assumption is based on the fact that it was not observed in the test pit located in the previously-excavated area, and the coal ash appears to have been removed during the previous excavation, as evidenced by several large mounds of material resembling coal ash located north of and adjacent to the previously excavated area.

The results from the subsurface soil samples containing coal ash confirm the presence of arsenic, barium, cobalt, and iron at elevated concentrations. The high levels of these four metals were characteristic of the coal ash samples. Arsenic, total chromium, cobalt, and iron were detected above the EPA RSLs in every coal ash sample, and vanadium was detected above its EPA RSL in most coal ash samples. Most coal ash samples also exceeded the NYSDEC Unrestricted Use and Restricted Use SCOs for arsenic, barium, total chromium, cobalt, and iron. The SVOCs benzo(a)anthracene,

benzo(a)pyrene, and benzo(b)fluoranthene also exceeded EPA RSLs in coal ash samples collected from the Site.

3.5.3 Evaluation of the Construction Debris Fill

The construction debris fill consists of a brown silty sand with varying amounts of gravel, wood pieces, roots and construction debris. The construction debris fill was found underlying the surface soil in the majority of test pits located outside of the coal ash area. Below the surface soil, fill material extended down to native silty sand containing gravel, with the exception of TP-100, TP-101, and TP-102 where native material was encountered directly below the surface soil, and TP-104, TP-105, TP-110, TP-113, and TP-117, where fill material extended deeper than the extent of the backhoe used during the field investigation. Figure 2-2 shows the estimated thickness of the fill material across the site. The coal ash fill is generally concentrated in the south-center of the Site as shown on Figure 2-2.

The types of contaminants with elevated concentrations varied among the construction debris fill samples; the test pits with the greatest amount of construction debris (TP-103, TP-104, TP-105) and test pits adjacent to them (TP-100, TP-101, TP-102, TP-106), are generally characterized by the highest levels of SVOCs and pesticides. TP-100 through TP-102 do not contain construction debris fill but are adjacent to, and downhill from, those with the greatest amount of debris. The test pits with the highest concentrations of these contaminants are highlighted in Figure 3-1 with the highest concentrations called out for each contaminant that exceeds the PALs.

Five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected consistently in samples from TP-100 through TP-106. Of those, benzo(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene, and indeno(1,2,3-cd)pyrene exceeded EPA RSLs in many samples and exceeded NYSDEC Restricted Use and Unrestricted Use SCOs as well. The highest SVOC concentrations were found in TP-105-BR and TP-106-CA, located just north of the coal ash area. Five pesticides (4,4’-DDD, 4-4’-DDE, 4-4’-DDT, alpha-chlordane, and dieldrin) were detected consistently in TP-104 through TP-109 and TP-118. All five pesticides exceeded NYSDEC Unrestricted Use SCOs in many samples around the construction debris area, with dieldrin also exceeding the EPA RSL (30 µg/kg) in TP-104-BR and TP-106-SS. These two samples contained the highest overall pesticides concentrations as well. Seven metals (aluminum, arsenic, total chromium, hexavalent chromium, iron, lead, and manganese) were detected consistently above the EPA RSLs in subsurface soils in tests pits TP-100 throughTP-106. Of these, arsenic, total chromium, hexavalent chromium, and lead also exceeded the NYSDEC Unrestricted Use SCOs. Arsenic exceeded the NYSDEC Restricted Residential Use SCO as well.

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Section 4
Findings and Recommendations

4.1 Findings

The findings of the Phase II ESA are summarized below.

Surface Soil:

- SVOCs, pesticides, and metals are present at elevated concentrations throughout the Site.
- Two SVOCs (benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene) and two PCBs (Aroclor-1254 and Aroclor-1260) exceeded the NYSDEC Restricted Residential Use SCO.
- Most surface soil samples exceeded the EPA RSL for arsenic, total chromium, lead, and manganese. Arsenic was the only metal that exceeded the NYSDEC Restricted Residential Use SCO in surface soil.
- The surface soil fill at the site is a 6-to 12-inch thick, non-native, was consistently dark brown, highly organic silty-sand. It was consistently observed at all test pit locations, and is assumed to extend throughout the Site.

Coal Ash:

- Analytical results confirm the presence of SVOCs, pesticides, and metals at elevated concentrations within coal ash samples. Two SVOCs (benzo(a)anthracene and benzo(b)fluoranthene) and two metals (arsenic and barium) exceeded the NYSDEC Restricted Residential Use SCOs. Presence of pesticides in coal is likely due to the migration of contamination from an unknown source since such contaminants are not normally constituents of coal ash.
- Arsenic, barium, cobalt, and iron concentrations were the highest among the metals in comparison with non-coal ash samples.
- The horizontal extent of the coal ash, estimated with GIS as approximately 0.4 acre, was defined within Site boundaries, with the exception of the northern boundary of the coal ash, where there was no test pit to define its extent. The vertical extent was not determined at some test pit locations.

Construction Debris Fill:

- Analytical results confirm the presence of SVOCs, pesticides, and metals at elevated concentrations in the construction debris fill with the highest levels located at the northern end of the Site (TP-100 through TP-106).
- Three SVOCs (benzo(a)anthracene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene), and arsenic exceeded the NYSDEC Restricted Residential Use SCOs.

- Arsenic, copper, total chromium, hexavalent chromium, lead, mercury, and zinc exceeded the NYSDEC Unrestricted Use SCOs.
- Construction debris fill was present at all locations except at the bottom of the drop-off (TP-100 through TP-102) and near the driveway (TP-112). The fill with the highest concentration of debris was excavated at TP-103 through TP-105. The vertical extent of this fill material ranged from 7 to greater than 14.5 feet bgs. The greatest depth of construction debris fill was observed at TP-104 and TP-105 where the fill extended deeper than the 14.5 feet bgs reach of the backhoe.

4.2 Recommendations

- If additional investigation activities are performed, VOC analysis should be included to confirm that concentrations are not above PALs. Many VOC results were rejected due to instrument calibration outliers. However, VOCs were not identified as a primary concern in previous investigations.
- There is a large (approximately 30 feet) cliff that runs north-south parallel to Prospect Avenue on the Site. A shallow municipal gas line also runs along Prospect Avenue which prevented sampling in the southwestern corner of the Site. To further characterize the nature and extent of contamination in this area, sampling with proper shoring techniques is recommended.
- The approximate horizontal and vertical extent of coal ash and construction debris fill was determined in several areas. However, a large portion of the Site, outlined by test pits TP-111 and TP-116 to the east and TP-105 and TP-106 to the west, was covered with brush piles. Further vertical and horizontal delineation of contamination in this area is recommended. Deeper test pits or soil borings are also recommended for areas where the bottom of the fill was not encountered due to the vertical limitations of the backhoe.
- The mounds located adjacent to, and north of, the previously excavated area may be comprised of coal ash; sampling of this material is recommended to confirm the presence or lack of coal ash.
- Gaps in the perimeter fence should be fixed and secured to prevent public access to onsite contamination and coal ash mounds.

Groundwater monitoring is recommended to determine if groundwater is impacted by contamination present onsite.

Section 5
References

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Tables

Table 2-1
Sample Summary
Sea Cliff Site
Targeted Brownfield Assessment
Village of Sea Cliff, New York

Test Pit Location	Soil Sample ID	Collection Date	Collection Time	Depth inchesterval (bgs)	PID Response (ppm)	QA/QC	Anaylses
TP-100	TP-100-SS	12/17/2012	8:45 AM	0 - 2 inches	0		VOCS, SVOCS, pesticides, PCBs, soil moisture, TAL Metals including mercury and cyanide, hexavalent chromium
TP-100	TP-100-B	12/17/2012	8:50 AM	1.5 - 2 ft	0		
TP-100	TP-100-N	12/17/2012	8:55 AM	0.5 - 1 ft	0		
TP-101	TP-101-SS	12/17/2012	9:35 AM	0 - 2 inches	0		
TP-101	TP-101-B	12/17/2012	9:45 AM	2 - 2.5 ft	0		
TP-101	TP-101-W	12/17/2012	10:05 AM	0.5 - 1 ft	0		
TP-102	TP-102-SS	12/17/2012	10:45 AM	0 - 2 inches	0		
TP-102	TP-102-B	12/17/2012	10:55 AM	4.5 - 5 ft	0		
TP-102	TP-102-S	12/17/2012	11:10 AM	3 - 3.5 ft	0		
TP-103	TP-103-SS	12/10/2012	10:55 AM	0 - 2 inches	2.1		
TP-103	TP-103-B	12/10/2012	11:20 AM	6 - 6.5 ft	1.3		
TP-103	TP-103-N	12/10/2012	11:30 AM	3 - 3.5 ft	0		
TP-104	TP-104-SS	12/10/2012	2:55 PM	0 - 2 inches	1.5		
TP-104	TP-104-B*	12/10/2012	3:05 PM	5.5 - 6 ft	0		
TP-104	TP-104-BR	12/13/2012	2:00 PM	14 - 14.5 ft	0		
TP-104	TP-104-N	12/10/2012	3:45 PM	2.5 - 3 ft	0		
TP-105	TP-105-SS	12/10/2012	1:40 PM	0 - 2 inches	0		
TP-105	TP-105-B*	12/10/2012	1:55 PM	6 - 6.5 ft	1.1		
TP-105	TP-105-BR	12/17/2012	2:00 PM	14 - 14.5 ft	0		
TP-106	TP-106-SS	12/11/2012	8:45 AM	0 - 2 inches	0		
TP-106	TP-906-SS	12/11/2012	8:45 AM	0 - 2 inches	0	Duplicate of TP-106-SS	
TP-106	TP-106-B	12/11/2012	9:05 AM	5.5 - 6 ft	0	MS/MSD	
TP-106	TP-106-CA	12/11/2012	9:00 AM	3.5 - 4 ft	0		
TP-106	TP-106-S	12/11/2012	9:25 AM	1.5 - 2 ft	0		
TP-107	TP-107-SS	12/11/2012	10:45 AM	0 - 2 inches	0		
TP-107	TP-107-B	12/11/2012	11:25 AM	6.5 - 7 ft	0		
TP-107	TP-107-CA	12/11/2012	11:35 AM	6 - 6.5 ft	0		
TP-107	TP-107-W	12/11/2012	12:00 PM	2 - 2.5 ft	0		
TP-108	TP-108-SS	12/12/2012	11:00 AM	0 - 2 inches	0		
TP-108	TP-108-B	12/12/2012	11:45 AM	14 - 14.5 ft	0		
TP-108	TP-108-CA	12/12/2012	11:35 AM	14 - 14.5 ft	0		
TP-109	TP-109-SS	12/12/2012	1:30 PM	0 - 2 inches	0		
TP-109	TP-109-B	12/12/2012	2:00 PM	6.5 - 7 ft	0		
TP-109	TP-109-CA	12/12/2012	1:45 PM	1.5 - 2.5 ft	0		
TP-109	TP-109-S	12/12/2012	2:30 PM	0.5 - 1.5 ft	0		
TP-110	TP-110-SS	12/12/2012	8:30 AM	0 - 2 inches	0.1		
TP-110	TP-110-B	12/12/2012	8:45 AM	14 - 14.5 ft	0	MS/MSD	
TP-111	TP-111-SS	12/18/2012	8:50 AM	0 - 2 inches	0		
TP-111	TP-911-SS	12/18/2012	8:50 AM	0 - 2 inches	0	Duplicate of TP-111-SS	
TP-111	TP-111-B	12/18/2012	9:00 AM	12.5 - 13 ft	0.1	MS/MSD	
TP-111	TP-111-CA	12/18/2012	9:25 AM	12.5 - 13 ft	0.1		
TP-111	TP-111-N	12/18/2012	9:15 AM	1.5 - 2 ft	0.2		
TP-112	TP-112-B	12/13/2012	8:50 AM	5.5 - 6 ft	0		
TP-112	TP-112-E	12/13/2012	9:10 AM	1 - 1.5 ft	0		
TP-112	TP-112-S	12/13/2012	9:20 AM	1 - 1.5 ft	0		
TP-112	TP-112-SS	12/13/2012	8:30 AM	0 - 2 inches	0		
TP-112	TP-912-SS	12/13/2012	8:30 AM	0 - 2 inches	0	Duplicate of TP-112-SS	
TP-113	TP-113-SS	12/11/2012	1:45 PM	0 - 2 inches	0.7		
TP-113	TP-113-B	12/11/2012	1:55 PM	14 - 14.5 ft	0		
TP-113	TP-113-E	12/11/2012	3:00 PM	1 - 1.5 ft	0		
TP-114	TP-114-B	12/13/2012	11:40 AM	6 - 6.5 ft	0		
TP-114	TP-114-CA	12/13/2012	12:30 PM	2.5 - 3 ft	0		
TP-114	TP-114-E	12/13/2012	12:00 PM	2.5 - 3 ft	0		
TP-114	TP-114-FL	12/13/2012	11:10 AM	0.5 - 1 ft	0		
TP-114	TP-114-S	12/13/2012	12:10 PM	2.5 - 3 ft	0		
TP-114	TP-114-SS	12/13/2012	11:00 AM	0 - 2 inches	0		
TP-115	TP-115-SS	12/18/2012	11:30 AM	0 - 2 inches	0		
TP-115	TP-115-FL	12/18/2012	12:10 PM	0.5 - 1 ft	0		
TP-115	TP-115-B	12/18/2012	12:00 PM	8 - 8.5 ft	0		
TP-115	TP-115-W	12/18/2012	12:15 PM	1 - 1.5 ft	0		
TP-116	TP-116-SS	12/18/2012	1:30 PM	0 - 2 inches	0		
TP-116	TP-116-B	12/18/2012	2:00 PM	11 - 11.5 ft	0		
TP-116	TP-116-CA	12/18/2012	2:10 PM	10 - 10.5 ft	0		
TP-116	TP-116-E	12/18/2012	2:15 PM	2 - 2.5 ft	0		
TP-117	TP-117-SS	12/19/2012	8:00 AM	0 - 2 inches	0	MS/MSD	
TP-117	TP-117-B	12/19/2012	8:35 AM	14 - 14.5 ft	0		
TP-117	TP-917-B	12/19/2012	8:35 AM	14 - 14.5 ft	0	Duplicate of TP-117-B	
TP-117	TP-117-CA	12/19/2012	8:40 AM	7 - 7.5 ft	0		
TP-118	TP-118-SS	12/19/2012	3:10 PM	0 - 2 inches	0		
TP-118	TP-118-FL	12/19/2012	3:30 PM	0.5 - 1 ft	0		
TP-118	TP-118-B	12/19/2012	3:40 PM	8 - 8.5 ft	0		
TP-118	TP-118-CA	12/19/2012	3:45 PM	5 - 5.5 ft	0		
TP-118	TP-118-S	12/19/2012	3:50 PM	1 - 1.5 ft	0		
TP-118	TP-118-W	12/19/2012	3:55 PM	1 - 1.5 ft	0		
Field Blank							
NA	FB-12132012	12/13/2012	4:00 PM	NA	NA	Field Blank	VOCS, SVOCS, pesticides, PCBs, TAL Metals including mercury and cyanide, hexavalent chromium

Acronyms:

bgs - below ground surface
N,E,S,W - sidewall designation (direction)
CA - coal ash
SS - surface soil
B - bottom sample
BR - bottom sample (returned to pit)
FL - Fill/Trash samples
NA - not applicable
QC - quality control
VOC - volatile organic compound
SVOC - semi-volatile organic compound
ID - identification
PCB - polychlorinated biphenyl
TP - test pit
FB - field blank
ppm - parts per million
ft - feet
TAL - target analyte list
MS/MSD - matrix spike/matrix spike duplicate
QA - quality assurance
* - Fill/Trash samples

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-100		
Sample ID				TP-100-SS	TP-100-N	TP-100-B
Sample Date				12/17/12	12/17/12	12/17/12
Lithological Layer				Fill/Top Soil	Sand	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (North Wall)	1.5 to 2 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
Benzo(a)anthracene	150	**1,000**	*1,000*	8,000 U	13 J	180 U
Benzo(a)pyrene	15	1,000	1,000	8,000 U	11 J	180 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	460 J	20 J	180 U
Chrysene	15,000	3,900	*1,000*	330 J	14 J	180 U
Dibenzo(a,h)anthracene	15	330	330	8,000 U	210 UJ	180 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	8,000 U	11 J	180 U
Pesticides (µg/kg)						
4,4'-DDD	2,000	13,000	*3.3*	7.80 U	4.20 U	3.60 U
4,4'-DDE	1,400	8,900	*3.3*	*5.30 J*	1.30 J	3.60 U
4,4'-DDT	1,700	900	*3.3*	*11.00*	4.20 U	3.60 U
alpha-Chlordane	1,600	4,200	*94*	4.00 U	2.10 U	1.80 U
Dieldrin	30	200	*5*	7.80 U	4.20 U	3.60 U
Heptachlor epoxide	53	NL	NL	4.00 U	2.10 U	1.80 U
Polychlorinated Biphenyls (µg/kg)						
Aroclor-1254	110	**1,000**	*100*	78 U	42 U	36 U
Aroclor-1260	220	1,000	*100*	78 U	42 U	36 U
Metals (mg/kg)						
Aluminum	7,700	NL	NL	2,120 J	1,990	1,300
Antimony	3.1	NL	NL	10.90 UJ	6.00 U	5.20 J
Arsenic	0.39	**16**	*13*	4.50 J	3.00 U	0.97 J
Barium	1,500	**400**	*350*	55.00 J	30.10 U	25.90 U
Chromium	0.29	180	*30*	*45.10 J*	5.10 J	5.20 U
Hexavalent Chromium	0.29	110	*1*	2.50 R	*2.40 J-*	*0.64 J*
Cobalt	2.3	NL	NL	5.40 UJ	3.00 U	2.60 U
Copper	310	270	*50*	23.90 J	3.60 J	5.20 U
Iron	5,500	NL	NL	4,920 J	11,000	3,090
Lead	40	400	*63*	*149.00 J*	18.30	2.60 U
Manganese	180	2,000	1,600	562.00 J	67.60	159.00
Mercury	2.3	0.81	*0.18*	0.13 J	0.00 J	0.10 U
Nickel	150	310	*30*	24.10 J	3.30	3.30
Thallium	0.078	NL	NL	5.40 UJ	3.00 U	2.60 U
Vanadium	39	NL	NL	16.20 J	8.10 J	6.10 J
Zinc	2,300	10,000	*109*	*132.00 J*	15.70	8.10

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-101		
Sample ID				TP-101-SS	TP-101-W	TP-101-B
Sample Date				12/17/12	12/17/12	12/17/12
Lithological Layer				Fill/Top Soil	Silty Sand	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (West Wall)	2 to 2.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
Benzo(a)anthracene	150	**1,000**	*1,000*	570 J	75 J	210 U
Benzo(a)pyrene	15	1,000	1,000	390 J	78 J	210 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	960 J	120 J	210 U
Chrysene	15,000	3,900	*1,000*	660 J	80 J	210 U
Dibenzo(a,h)anthracene	15	330	330	5,600 U	14 J	210 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	490 J	67 J	210 U
Pesticides (µg/kg)						
4,4'-DDD	2,000	13,000	*3.3*	54.00 U	4.20 U	4.10 U
4,4'-DDE	1,400	8,900	*3.3*	*5.40 J*	4.20 U	0.03 J
4,4'-DDT	1,700	900	*3.3*	54.00 U	4.20 U	4.10 U
alpha-Chlordane	1,600	4,200	*94*	28.00 U	2.20 U	2.10 U
Dieldrin	30	200	*5*	54.00 U	4.20 U	4.10 UJ
Heptachlor epoxide	53	NL	NL	28.00 U	2.20 U	2.10 UJ
Polychlorinated Biphenyls (µg/kg)						
Aroclor-1254	110	**1,000**	*100*	540 U	42 U	41 U
Aroclor-1260	220	1,000	*100*	540 U	42 U	41 U
Metals (mg/kg)						
Aluminum	7,700	NL	NL	3,830	3,260	1,750
Antimony	3.1	NL	NL	6.60 J	6.00 U	5.60 J
Arsenic	0.39	**16**	*13*	4.20	3.00 U	1.30 J
Barium	1,500	**400**	*350*	49.60	30.00 U	28.20 U
Chromium	0.29	180	*30*	*37.90*	9.30	6.40
Hexavalent Chromium	0.29	110	*1*	*23.00 J*	*1.60 J-*	1.20 UJ
Cobalt	2.3	NL	NL	3.30 U	3.00 U	2.80 U
Copper	310	270	*50*	21.60	5.70 J	5.60 U
Iron	5,500	NL	NL	8,430	8,400	10,100
Lead	40	400	*63*	*296.00*	36.00	4.00
Manganese	180	2,000	1,600	272.00	136.00	120.00
Mercury	2.3	0.81	*0.18*	0.13	0.08 J	0.10 U
Nickel	150	310	*30*	10.20	6.70	5.80
Thallium	0.078	NL	NL	3.30 U	3.00 U	2.80 U
Vanadium	39	NL	NL	18.20	9.60 J	6.80 J
Zinc	2,300	10,000	*109*	102.00	26.40	12.80

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-102		
Sample ID				TP-102-SS	TP-102-S	TP-102-B
Sample Date				12/17/12	12/17/12	12/17/12
Lithological Layer				Fill/Top Soil	Sand	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (West Wall)	4 to 4.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
Benzo(a)anthracene	150	**1,000**	*1,000*	740 J	98 J	67 J
Benzo(a)pyrene	15	1,000	1,000	360 J	82 J	39 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	***1,100*** ***J***	110 J	87 J
Chrysene	15,000	3,900	*1,000*	800 J	94 J	65 J
Dibenzo(a,h)anthracene	15	330	330	7,300 U	410 UJ	970 UJ
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	***590*** ***J***	59 J	45 J
Pesticides (µg/kg)						
4,4'-DDD	2,000	13,000	*3.3*	47.00 U	*4.90*	3.80 U
4,4'-DDE	1,400	8,900	*3.3*	47.00 U	*5.70*	0.87 J
4,4'-DDT	1,700	900	*3.3*	47.00 UJ	*6.20*	3.80 U
alpha-Chlordane	1,600	4,200	*94*	24.00 U	5.00 NJ	1.90 U
Dieldrin	30	200	*5*	47.00 U	3.90 U	3.80 U
Heptachlor epoxide	53	NL	NL	24.00 U	2.00 U	1.90 U
Polychlorinated Biphenyls (µg/kg)						
Aroclor-1254	110	**1,000**	*100*	470 U	39 U	38 U
Aroclor-1260	220	1,000	*100*	470 U	39 U	38 U
Metals (mg/kg)						
Aluminum	7,700	NL	NL	5,530	7,110	3,060
Antimony	3.1	NL	NL	6.90 J	5.90 U	5.80 J
Arsenic	0.39	**16**	*13*	***18.20***	***16.20***	8.80
Barium	1,500	**400**	*350*	134.00	126.00	63.80
Chromium	0.29	180	*30*	*36.50*	12.10	8.40
Hexavalent Chromium	0.29	110	*1*	1.40 R	*2.20* *J-*	0.90 J
Cobalt	2.3	NL	NL	4.70	3.80	2.90 U
Copper	310	270	*50*	29.40	14.30	10.60
Iron	5,500	NL	NL	11,800	18,700	9,790
Lead	40	400	*63*	*253.00*	44.90	44.30
Manganese	180	2,000	1,600	183.00	133.00	105.00
Mercury	2.3	0.81	*0.18*	0.14	0.06 J	0.05 J
Nickel	150	310	*30*	16.20	12.00	7.80
Thallium	0.078	NL	NL	3.50 U	2.90 U	2.90 U
Vanadium	39	NL	NL	34.20	42.70	20.10
Zinc	2,300	10,000	*109*	*175.00*	53.90	43.20

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-103		
Sample ID				TP-103-SS	TP-103-N	TP-103-B
Sample Date				12/10/12	12/10/12	12/10/12
Lithological Layer				Fill/Top Soil	Fill	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (North Wall)	6 to 6.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
Benzo(a)anthracene	150	**1,000**	*1,000*	810 J	360 J	930 U
Benzo(a)pyrene	15	1,000	1,000	700 J	340 J	930 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	880 J	410 J	930 U
Chrysene	15,000	3,900	*1,000*	760 J	350 J	930 U
Dibenzo(a,h)anthracene	15	330	330	89 J	41 J	930 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	320 J	140 J	930 U
Pesticides (µg/kg)						
4,4'-DDD	2,000	13,000	*3.3*	39.00 U	3.80 U	3.60 U
4,4'-DDE	1,400	8,900	*3.3*	3.10 J	3.80 UJ	3.60 U
4,4'-DDT	1,700	900	*3.3*	39.00 U	*5.60*	3.60 U
alpha-Chlordane	1,600	4,200	*94*	20.00 U	8.70 JN	1.90 U
Dieldrin	30	200	*5*	39.00 U	2.10 J	0.25 J
Heptachlor epoxide	53	NL	NL	20.00 UJ	1.90 U	1.90 U
Polychlorinated Biphenyls (µg/kg)						
Aroclor-1254	110	**1,000**	*100*	390 U	38 U	36 U
Aroclor-1260	220	1,000	*100*	390 U	38 U	36 U
Metals (mg/kg)						
Aluminum	7,700	NL	NL	6,940	9,190	8,060
Antimony	3.1	NL	NL	5.80 U	5.40 U	5.30 U
Arsenic	0.39	**16**	*13*	6.20	3.90	2.10
Barium	1,500	**400**	*350*	33.80	40.70	25.30 J
Chromium	0.29	180	*30*	11.10	15.60	15.70
Hexavalent Chromium	0.29	110	*1*	*2.00 J-*	*2.00 J-*	*1.90 J-*
Cobalt	2.3	NL	NL	4.20	4.50	3.40
Copper	310	270	*50*	21.30	13.60	8.20
Iron	5,500	NL	NL	13,400	14,500	13,600
Lead	40	400	*63*	54.80	40.70	10.70
Manganese	180	2,000	1,600	215.00	215.00	116.00
Mercury	2.3	0.81	*0.18*	0.12	0.12	0.10 U
Nickel	150	310	*30*	9.30	10.80	7.60
Thallium	0.078	NL	NL	2.90 U	2.70 U	2.60 U
Vanadium	39	NL	NL	26.90	27.50	21.60
Zinc	2,300	10,000	*109*	50.30	41.00	22.30

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-104			
Sample ID				TP-104-SS	TP-104-N	TP-104-B	TP-104-BR
Sample Date				12/10/12	12/10/12	12/10/12	12/13/12
Lithological Layer				Fill/Top Soil	Fill	Fill	Fill
Sample Depth				0 to 2 inches bgs (Surface Soil)	2.5 to 3 ft bgs (North Wall)	5.5 to 6 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
Benzo(a)anthracene	150	**1,000**	*1,000*	130 J	*210* J	*270* J	2,200 U
Benzo(a)pyrene	15	1,000	1,000	130 J	200 J	260 J	400 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	190 J	290 J	310 J	550 J
Chrysene	15,000	3,900	*1,000*	130 J	200 J	240 J	360 J
Dibenzo(a,h)anthracene	15	330	330	1,000 U	1,900 U	1,900 U	2,200 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	96 J	110 J	160 J	220 J
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	3.90 U	*44.00*	3.70 U	43.00 U
4,4'-DDE	1,400	8,900	*3.3*	*20.00* J	*27.00*	2.10 J	43.00 U
4,4'-DDT	1,700	900	*3.3*	*15.00* J	*34.00*	3.70 U	*51.00* NJ
alpha-Chlordane	1,600	4,200	*94*	63.00 JN	66.00 J	7.20 NJ	*100.00* J
Dieldrin	30	200	*5*	*7.50* J	*7.70* J	0.80 J	*34.00* J
Heptachlor epoxide	53	NL	NL	12.00	5.00 JN	1.90 U	22.00 U
Polychlorinated Biphenyls (µg/kg)							
Aroclor-1254	110	**1,000**	*100*	39 U	38 U	37 U	430 U
Aroclor-1260	220	1,000	*100*	39 U	38 U	37 U	430 U
Metals (mg/kg)							
Aluminum	7,700	NL	NL	10,300	8,310	7,250	8,540
Antimony	3.1	NL	NL	5.80 U	5.90 U	5.50 U	5.90 J
Arsenic	0.39	**16**	*13*	4.50	*15.00*	5.90	9.00
Barium	1,500	**400**	*350*	53.30	57.40	30.70	142.00
Chromium	0.29	180	*30*	20.20	15.50	9.80	*38.20*
Hexavalent Chromium	0.29	110	*1*	*2.80* J-	*5.70* J-	0.89 J-	1.20 UJ
Cobalt	2.3	NL	NL	5.40	4.90	4.50	5.90
Copper	310	270	*50*	17.70	21.80	13.70	*50.10*
Iron	5,500	NL	NL	14,200	14,000	12,400	20,500
Lead	40	400	*63*	*64.60*	*79.00*	*113.00*	*316.00*
Manganese	180	2,000	1,600	246.00	313.00	186.00	506.00
Mercury	2.3	0.81	*0.18*	0.16	0.10 J	0.10 U	*0.29*
Nickel	150	310	*30*	13.70	11.00	8.70	24.80
Thallium	0.078	NL	NL	2.90 U	3.00 U	2.70 U	2.90 U
Vanadium	39	NL	NL	27.40	26.60	27.30	27.00
Zinc	2,300	10,000	*109*	69.70	72.20	39.20	*324.00*

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-105		
Sample ID				TP-105-SS	TP-105-B	TP-105-BR
Sample Date				12/10/12	12/10/12	12/17/12
Lithological Layer				Fill/Top Soil	Fill	Fill
Sample Depth				0 to 2 inches bgs (Surface Soil)	6 to 6.5 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
Benzo(a)anthracene	150	**1,000**	*1,000*	280 J	280 J	***1,400*** ***J***
Benzo(a)pyrene	15	1,000	1,000	300 J	280 J	740 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	410 J	380 J	***1,800*** ***J***
Chrysene	15,000	3,900	*1,000*	260 J	250 J	*1,300* *J*
Dibenzo(a,h)anthracene	15	330	330	2,000 U	1,900 U	280 J
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	200 J	180 J	***1,000*** ***J***
Pesticides (µg/kg)						
4,4'-DDD	2,000	13,000	*3.3*	3.90 R	*15.00* *NJ*	38.00 U
4,4'-DDE	1,400	8,900	*3.3*	*26.00* *J*	*9.70*	*6.40* *J*
4,4'-DDT	1,700	900	*3.3*	*16.00*	*9.40* *J*	38.00 U
alpha-Chlordane	1,600	4,200	*94*	*170.00* *J*	46.00 J	20.00 U
Dieldrin	30	200	*5*	*28.00*	*7.50*	38.00 U
Heptachlor epoxide	53	NL	NL	27.00	3.00 JN	20.00 U
Polychlorinated Biphenyls (µg/kg)						
Aroclor-1254	110	**1,000**	*100*	39 U	37 U	380 U
Aroclor-1260	220	1,000	*100*	39 U	37 U	380 U
Metals (mg/kg)						
Aluminum	7,700	NL	NL	9,480	6,950	4,080
Antimony	3.1	NL	NL	5.80 U	5.40 U	5.30 J
Arsenic	0.39	**16**	*13*	5.00	4.10	12.30
Barium	1,500	**400**	*350*	88.50	69.00	26.30 U
Chromium	0.29	180	*30*	19.20	12.70	7.40
Hexavalent Chromium	0.29	110	*1*	*4.40* *J-*	0.96 J-	0.32 J
Cobalt	2.3	NL	NL	5.30	3.90	2.90
Copper	310	270	*50*	26.00	12.20	12.20
Iron	5,500	NL	NL	15,200	12,700	8,620
Lead	40	400	*63*	*174.00*	*134.00*	35.90
Manganese	180	2,000	1,600	232.00	193.00	121.00
Mercury	2.3	0.81	*0.18*	0.14	0.14	0.04 J
Nickel	150	310	*30*	14.50	8.70	8.50
Thallium	0.078	NL	NL	2.90 U	2.70 U	2.60 U
Vanadium	39	NL	NL	27.80	20.70	17.70
Zinc	2,300	10,000	*109*	*125.00*	65.00	38.10

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-106				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e [3]*	TP-106-SS	TP-906-SS	TP-106-S	TP-106-CA	TP-106-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/11/12
Lithological Layer				Fill/Top Soil - Duplicate		Fill	Coal Ash	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)		2.5 to 3 ft bgs (South Wall)	3.5 to 4ft bgs (Coal Ash Sample)	5.5 to 6 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)								
Benzo(a)anthracene	150	**1,000**	*1,000*	310 J	240 J	370 J	***1,000***	13 J
Benzo(a)pyrene	15	1,000	1,000	300 J	220 J	410 J	830 J	12 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	440 J	320 J	560 J	***1,200***	19 J
Chrysene	15,000	3,900	*1,000*	300 J	240 J	360 J	980 J	15 J
Dibenzo(a,h)anthracene	15	330	330	59 J	1,100 U	49 J	92 J	180 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	220 J	150 J	200 J	340 J	9 J
Pesticides (µg/kg)								
4,4'-DDD	2,000	13,000	*3.3*	4.00 U	4.10 U	*320.00*	*16.00 J*	*6.90*
4,4'-DDE	1,400	8,900	*3.3*	*56.00 J*	*54.00 J*	*48.00*	*8.10 J*	2.90 J
4,4'-DDT	1,700	900	*3.3*	*21.00 NJ*	*19.00 J*	*64.00*	*11.00*	*3.30 J*
alpha-Chlordane	1,600	4,200	*94*	*590.00 J*	*510.00 J*	8.10 NJ	2.50 NJ	7.00 NJ
Dieldrin	30	200	*5*	*43.00*	*24.00 J*	3.60 U	4.00 U	3.60 U
Heptachlor epoxide	53	NL	NL	59.00 J	53.00 J	1.80 R	2.00 U	1.80 U
Polychlorinated Biphenyls (µg/kg)								
Aroclor-1254	110	**1,000**	*100*	40 U	41 U	36 U	40 U	36 U
Aroclor-1260	220	1,000	*100*	40 U	41 U	36 U	40 U	36 U
Metals (mg/kg)								
Aluminum	7,700	NL	NL	14,400	13,100	4,180	4,470	4,710
Antimony	3.1	NL	NL	7.20 U	6.20 U	5.60 U	5.80 U	5.50 UJ
Arsenic	0.39	**16**	*13*	8.00	7.20	2.80 U	***48.40***	2.10 J
Barium	1,500	**400**	*350*	143.00	129.00	28.20 U	51.40	17.00 J
Chromium	0.29	180	*30*	*33.10*	26.00	9.90	21.20	8.10
Hexavalent Chromium	0.29	110	*1*	*5.50 J-*	*8.80 J-*	1.10 UJ	1.20 UJ	*1.40 J-*
Cobalt	2.3	NL	NL	8.50	6.00	3.50	8.20	2.80
Copper	310	270	*50*	40.20	36.60	9.50	29.50	7.80 J
Iron	5,500	NL	NL	20,900	18,700	9,320	19,200	10,400
Lead	40	400	*63*	*300.00*	*242.00*	37.00	*103.00*	10.40 J
Manganese	180	2,000	1,600	370.00	295.00	124.00	96.90	115.00 J
Mercury	2.3	0.81	*0.18*	*0.35*	*0.35*	0.04 J	*0.19*	0.10 U
Nickel	150	310	*30*	20.70	18.20	9.40	21.10	5.60 J
Thallium	0.078	NL	NL	3.60 U	3.10 U	2.80 U	2.90 U	2.70 U
Vanadium	39	NL	NL	42.60	37.20	14.70	55.50	10.10 J
Zinc	2,300	10,000	*109*	*185.00*	*182.00*	33.30	72.50	13.10 J

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-107			
Sample ID				TP-107-SS	TP-107-W	TP-107-CA	TP-107-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12
Lithological Layer				Fill/Top Soil	Fill	Coal Ash	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (West Wall)	6 to 6.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
Benzo(a)anthracene	150	**1,000**	*1,000*	220 J	190	100 J	560 J
Benzo(a)pyrene	15	1,000	1,000	180 J	200	87 J	530 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	250 J	300	140 J	790 J
Chrysene	15,000	3,900	*1,000*	200 J	220	120 J	600 J
Dibenzo(a,h)anthracene	15	330	330	990 U	31 J	14 J	83 J
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	120 J	130 J	57 J	380 J
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	3.90 U	3.60 UJ	4.10 U	*5.10*
4,4'-DDE	1,400	8,900	*3.3*	*5.70*	*6.80*	4.10 UJ	*11.00*
4,4'-DDT	1,700	900	*3.3*	*4.20 JN*	*6.70*	*5.50*	*13.00*
alpha-Chlordane	1,600	4,200	*94*	26.00 J	2.70 NJ	2.10 U	2.40 J
Dieldrin	30	200	*5*	3.20 J	3.60 U	4.10 U	4.00 U
Heptachlor epoxide	53	NL	NL	4.60	1.80 U	2.10 U	2.10 U
Polychlorinated Biphenyls (µg/kg)							
Aroclor-1254	110	**1,000**	*100*	39 U	36 U	41 U	40 U
Aroclor-1260	220	1,000	*100*	39 U	36 U	41 U	40 U
Metals (mg/kg)							
Aluminum	7,700	NL	NL	5,280	5,900	13,500	9,780
Antimony	3.1	NL	NL	6.00 U	5.30 U	6.10 U	5.80 U
Arsenic	0.39	**16**	*13*	7.30	7.50	***39.00***	12.70
Barium	1,500	**400**	*350*	71.00	41.70	***725.00***	157.00
Chromium	0.29	180	*30*	12.70	10.50	22.00	17.60
Hexavalent Chromium	0.29	110	*1*	*3.70 J-*	0.30 J-	1.20 UJ	*6.30 J-*
Cobalt	2.3	NL	NL	3.90	3.10	8.20	4.60
Copper	310	270	*50*	12.10	8.70	24.60	12.50
Iron	5,500	NL	NL	10,500	9,910	46,200	16,300
Lead	40	400	*63*	25.50	20.70	17.30	25.70
Manganese	180	2,000	1,600	192.00	149.00	128.00	134.00
Mercury	2.3	0.81	*0.18*	0.16	0.06 J	0.13	0.10 U
Nickel	150	310	*30*	11.00	7.60	28.40	12.10
Thallium	0.078	NL	NL	3.00 U	2.70 U	3.10 U	2.90 U
Vanadium	39	NL	NL	21.90	16.90	112.00	26.60
Zinc	2,300	10,000	*109*	34.50	28.70	31.90	46.50

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-108		
Sample ID				TP-108-SS	TP-108-CA	TP-108-B
Sample Date				12/12/12	12/12/12	12/12/12
Lithological Layer				Fill/Top Soil	Coal Ash	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
Benzo(a)anthracene	150	**1,000**	*1,000*	76 J	210 UJ	110 J
Benzo(a)pyrene	15	1,000	1,000	69 J	210 UJ	110 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	97 J	210 UJ	140 J
Chrysene	15,000	3,900	*1,000*	66 J	210 UJ	98 J
Dibenzo(a,h)anthracene	15	330	330	1,100 U	210 UJ	16 J
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	44 J	210 UJ	63 J
Pesticides (µg/kg)						
4,4'-DDD	2,000	13,000	*3.3*	4.30 U	4.10 U	3.50 U
4,4'-DDE	1,400	8,900	*3.3*	*7.60*	4.10 U	*4.40*
4,4'-DDT	1,700	900	*3.3*	*6.80*	0.14 J	*6.90 J*
alpha-Chlordane	1,600	4,200	*94*	20.00 NJ	2.10 U	1.80 U
Dieldrin	30	200	*5*	*5.40*	4.10 U	3.50 U
Heptachlor epoxide	53	NL	NL	4.00	2.10 U	1.80 U
Polychlorinated Biphenyls (µg/kg)						
Aroclor-1254	110	**1,000**	*100*	43 U	41 U	35 U
Aroclor-1260	220	1,000	*100*	43 U	41 U	35 U
Metals (mg/kg)						
Aluminum	7,700	NL	NL	4,280	20,500	6,180
Antimony	3.1	NL	NL	5.80 U	6.60 J	5.20 U
Arsenic	0.39	**16**	*13*	2.90 U	***178.00***	4.00
Barium	1,500	**400**	*350*	28.90 U	***627.00***	41.10
Chromium	0.29	180	*30*	4.90 J	*35.40*	9.20
Hexavalent Chromium	0.29	110	*1*	2.50 UJ	1.30 UJ	2.80 UJ
Cobalt	2.3	NL	NL	2.90 U	11.90	3.90
Copper	310	270	*50*	4.60 J	38.90	7.50
Iron	5,500	NL	NL	7,420	55,900	13,100
Lead	40	400	*63*	8.00	41.20	17.50
Manganese	180	2,000	1,600	71.20	114.00	198.00
Mercury	2.3	0.81	*0.18*	0.11 U	*0.18*	0.11 U
Nickel	150	310	*30*	3.70	*35.80*	7.50
Thallium	0.078	NL	NL	2.90 U	5.00	2.60 U
Vanadium	39	NL	NL	7.00 J	98.90	14.60
Zinc	2,300	10,000	*109*	14.50	97.70	24.20

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-109			
Sample ID				TP-109-SS	TP-109-S	TP-109-CA	TP-109-B
Sample Date				12/12/12	12/12/12	12/12/12	12/12/12
Lithological Layer				Fill/Top Soil	Fill	Coal Ash	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1.5 ft bgs (South Wall)	1.5 to 2.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
Benzo(a)anthracene	150	**1,000**	*1,000*	6,900 U	84 J	79 J	9 J
Benzo(a)pyrene	15	1,000	1,000	6,900 U	2,000 U	58 J	8 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	330 J	110 J	91 J	10 J
Chrysene	15,000	3,900	*1,000*	6,900 U	59 J	72 J	190 U
Dibenzo(a,h)anthracene	15	330	330	6,900 U	2,000 U	10 J	190 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	6,900 U	2,000 U	35 J	190 U
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	45.00 U	*8.90*	4.20 U	3.70 UJ
4,4'-DDE	1,400	8,900	*3.3*	45.00 U	*5.40 J*	*11.00*	3.70 U
4,4'-DDT	1,700	900	*3.3*	*24.00 J*	*8.30*	*5.50 J*	1.70 J
alpha-Chlordane	1,600	4,200	*94*	23.00 U	2.80 JN	2.20 U	1.90 U
Dieldrin	30	200	*5*	45.00 U	2.50 J	4.20 U	3.70 U
Heptachlor epoxide	53	NL	NL	23.00 U	2.00 UJ	2.20 UJ	1.90 U
Polychlorinated Biphenyls (µg/kg)							
Aroclor-1254	110	**1,000**	*100*	440 U	39 U	42 U	37 U
Aroclor-1260	220	1,000	*100*	440 U	39 U	42 U	37 U
Metals (mg/kg)							
Aluminum	7,700	NL	NL	4,200	6,500	11,800	8,720
Antimony	3.1	NL	NL	5.90 U	5.80 U	6.10 U	5.50 U
Arsenic	0.39	**16**	*13*	3.80	6.50	***25.20***	2.90 J
Barium	1,500	**400**	*350*	29.40 U	60.40	189.00	40.50
Chromium	0.29	180	*30*	9.30	11.80	16.20	15.50
Hexavalent Chromium	0.29	110	*1*	*13.00 J-*	1.20 UJ	1.30 UJ	*5.10 J-*
Cobalt	2.3	NL	NL	2.90 U	4.00	5.90	5.20
Copper	310	270	*50*	18.70	18.50	15.40	10.40
Iron	5,500	NL	NL	9,170	13,100	29,000	15,700
Lead	40	400	*63*	59.40	51.10	26.70	10.90
Manganese	180	2,000	1,600	144.00	202.00	269.00	238.00
Mercury	2.3	0.81	*0.18*	0.10 U	0.09 J	0.14	0.10 U
Nickel	150	310	*30*	8.60	12.20	14.50	10.40
Thallium	0.078	NL	NL	2.90 U	2.90 U	3.00 U	2.70 U
Vanadium	39	NL	NL	24.40	29.80	42.80	22.40
Zinc	2,300	10,000	*109*	57.00	56.10	35.10	26.70

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-110	
Sample ID				TP-110-SS	TP-110-B
Sample Date				12/12/12	12/12/12
Lithological Layer				Fill/Top Soil	Coal Ash
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)					
Benzo(a)anthracene	150	**1,000**	*1,000*	39 J	230 UJ
Benzo(a)pyrene	15	1,000	1,000	42 J	230 UJ
Benzo(b)fluoranthene	150	**1,000**	*1,000*	61 J	230 UJ
Chrysene	15,000	3,900	*1,000*	42 J	230 UJ
Dibenzo(a,h)anthracene	15	330	330	190 U	230 UJ
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	29 J	230 UJ
Pesticides (µg/kg)					
4,4'-DDD	2,000	13,000	*3.3*	3.60 U	4.50 U
4,4'-DDE	1,400	8,900	*3.3*	3.60 UJ	4.50 U
4,4'-DDT	1,700	900	*3.3*	3.60 U	4.50 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	2.30 U
Dieldrin	30	200	*5*	2.00 J	0.18 J
Heptachlor epoxide	53	NL	NL	1.90 UJ	2.30 U
Polychlorinated Biphenyls (µg/kg)					
Aroclor-1254	110	**1,000**	*100*	36 U	45 U
Aroclor-1260	220	1,000	*100*	36 U	45 U
Metals (mg/kg)					
Aluminum	7,700	NL	NL	5,480	20,300
Antimony	3.1	NL	NL	5.40 U	6.90 UJ
Arsenic	0.39	**16**	*13*	3.70	***81.70*** *J*
Barium	1,500	**400**	*350*	36.20	***787.00***
Chromium	0.29	180	*30*	13.50	*30.60*
Hexavalent Chromium	0.29	110	*1*	2.60 UJ	3.30 UJ
Cobalt	2.3	NL	NL	3.10	10.80
Copper	310	270	*50*	9.20	31.00
Iron	5,500	NL	NL	10,800	51,500
Lead	40	400	*63*	15.90	23.40
Manganese	180	2,000	1,600	152.00	112.00
Mercury	2.3	0.81	*0.18*	0.10 U	*0.23*
Nickel	150	310	*30*	8.20	*32.40*
Thallium	0.078	NL	NL	2.70 U	3.50 U
Vanadium	39	NL	NL	14.00	135.00
Zinc	2,300	10,000	*109*	25.80	47.20 J

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-111				
Sample ID				TP-111-SS	TP-911-SS	TP-111-N	TP-111-CA	TP-111-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Lithological Layer				Fill/Top Soil - Duplicate		Fill	Coal Ash	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)		1.5 to 2 ft bgs (North Wall)	12.5 to 13 ft bgs (Coal Ash Sample)	12.5 to 13 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)								
Benzo(a)anthracene	150	**1,000**	*1,000*	28 J	50 J	190 UJ	200 UJ	210 U
Benzo(a)pyrene	15	1,000	1,000	31 J	52 J	190 UJ	200 UJ	210 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	49 J	82 J	190 UJ	200 UJ	210 U
Chrysene	15,000	3,900	*1,000*	34 J	65 J	190 UJ	200 UJ	210 U
Dibenzo(a,h)anthracene	15	330	330	190 U	12 J	190 UJ	200 UJ	210 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	26 J	47 J	190 UJ	200 UJ	210 U
Pesticides (µg/kg)								
4,4'-DDD	2,000	13,000	*3.3*	3.60 U	4.60 U	3.60 U	3.90 U	4.10 U
4,4'-DDE	1,400	8,900	*3.3*	*9.60*	*14.00*	0.54 J	0.53 J	4.10 U
4,4'-DDT	1,700	900	*3.3*	*11.00*	*67.00 J*	3.60 U	3.90 UJ	4.10 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	2.40 U	1.90 U	2.00 U	2.10 U
Dieldrin	30	200	*5*	3.60 UJ	4.60 U	3.60 U	3.90 U	4.10 U
Heptachlor epoxide	53	NL	NL	1.90 U	2.40 UJ	1.90 U	2.00 U	2.10 U
Polychlorinated Biphenyls (µg/kg)								
Aroclor-1254	110	**1,000**	*100*	36 U	46 U	36 U	39 U	41 U
Aroclor-1260	220	1,000	*100*	36 U	46 U	36 U	39 U	41 U
Metals (mg/kg)								
Aluminum	7,700	NL	NL	8,730	7,470	6,220	17,100	7,550
Antimony	3.1	NL	NL	6.20 J	6.40 J	5.50 U	6.00 U	5.30 UJ
Arsenic	0.39	**16**	*13*	5.90	6.60	2.70 U	4.80	3.20
Barium	1,500	**400**	*350*	44.90	48.70	34.20	73.00	26.50 U
Chromium	0.29	180	*30*	12.00	12.40	9.70	16.30	12.60
Hexavalent Chromium	0.29	110	*1*	1.20 R	1.20 R	1.10 UJ	0.98 J-	1.10 UJ
Cobalt	2.3	NL	NL	3.60	4.00	3.70	4.30	5.20
Copper	310	270	*50*	13.40	14.70	7.90	9.40	8.30
Iron	5,500	NL	NL	12,200	11,200	11,300	58,200	11,800
Lead	40	400	*63*	40.30	43.40	8.60	20.20	6.30
Manganese	180	2,000	1,600	195.00	220.00	209.00	193.00	200.00 J
Mercury	2.3	0.81	*0.18*	0.17	0.13	0.02 J	0.13	0.01 J
Nickel	150	310	*30*	9.40	10.10	8.80	11.30	8.50
Thallium	0.078	NL	NL	3.10 U	3.20 U	2.70 U	3.00 U	2.60 U
Vanadium	39	NL	NL	22.00	24.00	13.10 J	26.50	22.00
Zinc	2,300	10,000	*109*	39.10	41.00	17.30	31.40	17.70

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-112				
Sample ID				TP-112-SS	TP-912-SS	TP-112-E	TP-112-S	TP-112-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Lithological Layer				Fill/Top Soil - Duplicate		Sand	Sand	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)		1 to 1.5 ft bgs (East Wall)	1 to 1.5 ft bgs (South Wall)	5.5 to 6 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)								
Benzo(a)anthracene	150	**1,000**	*1,000*	33 J	34 J	180 U	190 U	180 U
Benzo(a)pyrene	15	1,000	1,000	39 J	41 J	180 U	190 U	180 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	63 J	63 J	180 U	190 U	180 U
Chrysene	15,000	3,900	*1,000*	42 J	44 J	180 U	190 U	180 U
Dibenzo(a,h)anthracene	15	330	330	210 U	200 U	180 U	190 U	180 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	26 J	26 J	180 U	190 U	180 U
Pesticides (µg/kg)								
4,4'-DDD	2,000	13,000	*3.3*	4.10 U	3.90 U	3.50 U	3.70 U	3.40 U
4,4'-DDE	1,400	8,900	*3.3*	*6.30*	*4.40*	3.50 U	3.70 U	3.40 U
4,4'-DDT	1,700	900	*3.3*	*5.40 J*	3.90 U	3.50 U	3.70 U	3.40 U
alpha-Chlordane	1,600	4,200	*94*	2.10 U	2.00 U	1.80 U	1.90 U	1.80 U
Dieldrin	30	200	*5*	4.10 U	3.90 U	3.50 U	3.70 U	3.40 U
Heptachlor epoxide	53	NL	NL	2.10 U	2.00 U	1.80 U	1.90 U	1.80 U
Polychlorinated Biphenyls (µg/kg)								
Aroclor-1254	110	**1,000**	*100*	41 U	39 U	35 U	37 U	34 U
Aroclor-1260	220	1,000	*100*	41 U	39 U	35 U	37 U	34 U
Metals (mg/kg)								
Aluminum	7,700	NL	NL	10,600	8,940	3,280	8,770	1,750
Antimony	3.1	NL	NL	6.00 U	5.80 U	5.30 U	5.40 U	5.30 U
Arsenic	0.39	**16**	*13*	***99.30***	***74.70***	2.70 U	2.70 U	2.60 U
Barium	1,500	**400**	*350*	38.30	38.60	26.60 U	26.90 U	26.30 U
Chromium	0.29	180	*30*	16.30	14.30	3.90	11.40	4.20
Hexavalent Chromium	0.29	110	*1*	*6.00 J-*	1.20 UJ	1.10 UJ	1.10 UJ	1.00 UJ
Cobalt	2.3	NL	NL	4.00	4.10	2.70 U	4.00	2.60 U
Copper	310	270	*50*	19.80	17.40	2.70 J	5.30 J	2.80 J
Iron	5,500	NL	NL	13,000	11,500	5,010	12,300	5,760
Lead	40	400	*63*	*120.00*	*78.70*	2.70 U	4.90	2.60 U
Manganese	180	2,000	1,600	242.00	239.00	56.90	126.00	47.70
Mercury	2.3	0.81	*0.18*	*0.38*	*0.31*	0.09 U	0.01 J	0.10 U
Nickel	150	310	*30*	10.30	9.60	2.90	7.30	2.30
Thallium	0.078	NL	NL	3.00 U	2.90 U	2.70 U	2.70 U	2.60 U
Vanadium	39	NL	NL	32.20	26.10	6.70	18.20	13.10 U
Zinc	2,300	10,000	*109*	38.30	36.00	9.70	16.50	5.30 U

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-113		
Sample ID				TP-113-SS	TP-113-E	TP-113-B
Sample Date				12/11/12	12/11/12	12/11/12
Lithological Layer				Fill/Top Soil	Coal Ash	Coal Ash
Sample Depth				0 to 2 inches bgs (Surface Soil)	6.5 to 7 ft bgs (East Wall)	6.5 to 7 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
Benzo(a)anthracene	150	**1,000**	*1,000*	53 J	26 J	10 J
Benzo(a)pyrene	15	1,000	1,000	57 J	28 J	210 UJ
Benzo(b)fluoranthene	150	**1,000**	*1,000*	83 J	41 J	210 UJ
Chrysene	15,000	3,900	*1,000*	64 J	32 J	10 J
Dibenzo(a,h)anthracene	15	330	330	9 J	180 U	210 UJ
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	42 J	20 J	210 UJ
Pesticides (µg/kg)						
4,4'-DDD	2,000	13,000	*3.3*	4.40 U	3.60 U	4.10 U
4,4'-DDE	1,400	8,900	*3.3*	4.40 U	3.60 U	4.10 U
4,4'-DDT	1,700	900	*3.3*	4.40 U	3.60 U	4.10 U
alpha-Chlordane	1,600	4,200	*94*	2.30 U	1.80 U	2.10 U
Dieldrin	30	200	*5*	4.40 U	3.60 U	4.10 U
Heptachlor epoxide	53	NL	NL	2.30 U	1.80 U	2.10 U
Polychlorinated Biphenyls (µg/kg)						
Aroclor-1254	110	**1,000**	*100*	44 U	36 U	41 U
Aroclor-1260	220	1,000	*100*	44 U	36 U	41 U
Metals (mg/kg)						
Aluminum	7,700	NL	NL	13,900	7,100	18,900
Antimony	3.1	NL	NL	6.10 U	5.30 J	6.70 U
Arsenic	0.39	**16**	*13*	***45.00***	7.20	***64.90***
Barium	1,500	**400**	*350*	346.00	65.80	***602***
Chromium	0.29	180	*30*	18.40	12.70	27.80
Hexavalent Chromium	0.29	110	*1*	*3.90 J-*	1.10 UJ	*4.70 J-*
Cobalt	2.3	NL	NL	6.60	4.50	9.20
Copper	310	270	*50*	20.00	10.00	27.50
Iron	5,500	NL	NL	35,900	13,500	60,300
Lead	40	400	*63*	20.50	18.80	18.60
Manganese	180	2,000	1,600	91.30	191.00	89.20
Mercury	2.3	0.81	*0.18*	0.13	0.03 J	*0.20*
Nickel	150	310	*30*	18.80	11.40	*31.50*
Thallium	0.078	NL	NL	3.10 U	2.70 U	3.40 U
Vanadium	39	NL	NL	62.90	21.20	137.00
Zinc	2,300	10,000	*109*	32.20	27.70	37.10

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-114					
Sample ID				TP-114-SS	TP-114-FL	TP-114-CA	TP-114-E	TP-114-S	TP-114-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Lithological Layer				Fill/Top Soil	Fill	Coal Ash	Fill	Fill	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	0 to 2 inches bgs (Fill Sample)	2.5 to 3 ft bgs (Coal Ash Sample)	2.5 to 3 feet (East Wall)	2.5 to 3 feet (South Wall)	6 to 6.5 feet (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)									
Benzo(a)anthracene	150	**1,000**	*1,000*	9 J	44 J	120 J	180 U	23 J	180 U
Benzo(a)pyrene	15	1,000	1,000	8 J	39 J	100 J	180 U	23 J	180 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	11 J	54 J	150 J	180 U	31 J	180 U
Chrysene	15,000	3,900	*1,000*	180 U	45 J	120 J	180 U	20 J	180 U
Dibenzo(a,h)anthracene	15	330	330	180 U	190 U	15 J	180 U	180 U	180 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	180 U	22 J	54 J	180 U	17 J	180 U
Pesticides (µg/kg)									
4,4'-DDD	2,000	13,000	*3.3*	3.60 U	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
4,4'-DDE	1,400	8,900	*3.3*	*28.00*	3.60 U	4.10 U	3.50 U	3.50 UJ	3.50 U
4,4'-DDT	1,700	900	*3.3*	3.60 U	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
alpha-Chlordane	1,600	4,200	*94*	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
Dieldrin	30	200	*5*	3.60 R	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
Heptachlor epoxide	53	NL	NL	1.80 R	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
Polychlorinated Biphenyls (µg/kg)									
Aroclor-1254	110	**1,000**	*100*	***1,100***	79	45 J	35 U	27 J	35 U
Aroclor-1260	220	1,000	*100*	*410*	36 U	37 J	35 U	35 U	35 U
Metals (mg/kg)									
Aluminum	7,700	NL	NL	3,150	3,160	9,800	2,140	3,870	3,220
Antimony	3.1	NL	NL	5.40 U	5.40 U	6.10 U	5.20 U	5.10 U	5.30 U
Arsenic	0.39	**16**	*13*	3.70	3.20	***28.10***	2.60 U	2.50 U	3.70
Barium	1,500	**400**	*350*	26.80 U	27.20 U	293	26 U	31.70	26.30 U
Chromium	0.29	180	*30*	7.50	6.70	17.00	4.90	6.20	5.80
Hexavalent Chromium	0.29	110	*1*	1.10 UJ	1.10 UJ	1.20 UJ	1.10 UJ	1.10 UJ	0.30 J-
Cobalt	2.3	NL	NL	2.70	2.70 U	6.30	2.60 U	2.50 U	2.60 U
Copper	310	270	*50*	6.10	5.00 J	18.20	3.20 J	3.50 J	4.00 J
Iron	5,500	NL	NL	5,800	6,360	24,500	5,160	6,660	6,320
Lead	40	400	*63*	14.00	8.10	24.40	2.60 U	3.90	6.30
Manganese	180	2,000	1,600	127	112	151	57.40	96.30	80.90
Mercury	2.3	0.81	*0.18*	0.01 J	0.01 J	0.09 J	0.10 U	0.01 J	0.01 J
Nickel	150	310	*30*	5.80	4.80	18.50	3.50	4.30	3.90
Thallium	0.078	NL	NL	2.70 U	2.70 U	3.10 U	2.60 U	2.50 U	2.60 U
Vanadium	39	NL	NL	13.40 U	13.60 U	67.70	13.00 U	12.70 U	13.10 U
Zinc	2,300	10,000	*109*	17.20	14.50	35.30	5.80	12.50	11.90

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-115			
Sample ID				TP-115-SS	TP-115-FL	TP-115-W	TP-115-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Lithological Layer				Fill/Top Soil	Fill	Sand	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (West Wall)	8 to 8.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
Benzo(a)anthracene	150	**1,000**	*1,000*	22 J	17 J	190 UJ	190 U
Benzo(a)pyrene	15	1,000	1,000	25 J	15 J	190 UJ	190 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	42 J	28 J	190 UJ	190 U
Chrysene	15,000	3,900	*1,000*	28 J	19 J	190 UJ	190 U
Dibenzo(a,h)anthracene	15	330	330	190 U	200 U	190 UJ	190 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	21 J	9 J	190 UJ	190 U
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	3.70 U	3.80 U	3.70 U	3.60 U
4,4'-DDE	1,400	8,900	*3.3*	0.55 J	0.18 J	0.28 J	3.60 U
4,4'-DDT	1,700	900	*3.3*	3.70 U	3.80 U	3.70 UJ	3.60 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	2.00 U	1.90 U	1.90 U
Dieldrin	30	200	*5*	3.70 U	3.80 U	3.70 U	3.60 U
Heptachlor epoxide	53	NL	NL	1.90 U	2.00 U	1.90 U	1.90 U
Polychlorinated Biphenyls (µg/kg)							
Aroclor-1254	110	**1,000**	*100*	37 U	38 U	37 U	36 U
Aroclor-1260	220	1,000	*100*	37 U	38 U	37 U	36 U
Metals (mg/kg)							
Aluminum	7,700	NL	NL	6,520	8,390	4,770	6,960
Antimony	3.1	NL	NL	6.10 J	5.80 J	5.40 U	5.30 J
Arsenic	0.39	**16**	*13*	12.10	3.70	3.20	2.30 J
Barium	1,500	**400**	*350*	32.70	36.20	28.70	26.60 U
Chromium	0.29	180	*30*	11.90	11.30	10.00	10.30
Hexavalent Chromium	0.29	110	*1*	*2.10 J*	0.80 J	*1.50 J-*	0.52 J
Cobalt	2.3	NL	NL	3.70	3.10	3.20	4.70
Copper	310	270	*50*	12.30	9.20	7.30	5.70
Iron	5,500	NL	NL	11,200	10,800	8,090	9,310
Lead	40	400	*63*	29.20	22.50	12.30	6.50
Manganese	180	2,000	1,600	182	219	148	126
Mercury	2.3	0.81	*0.18*	0.05 J	0.08 J	0.02 J	0.01 J
Nickel	150	310	*30*	9.10	7.70	7.10	6.60
Thallium	0.078	NL	NL	3.10 U	2.90 U	2.70 U	2.70 U
Vanadium	39	NL	NL	20.40	16.30	15.80	15.30
Zinc	2,300	10,000	*109*	37.60	21.10	21.20	15.10

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-116			
Sample ID				TP-116-SS	TP-116-E	TP-116-CA	TP-116-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Lithological Layer				Fill/Top Soil	Fill	Coal Ash	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (East Wall)	10 to 10.5 ft bgs (Coal Ash Sample)	11 to 11.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
Benzo(a)anthracene	150	**1,000**	*1,000*	58 J	47 J	210 UJ	21 J
Benzo(a)pyrene	15	1,000	1,000	56 J	47 J	210 UJ	19 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	96 J	65 J	210 UJ	30 J
Chrysene	15,000	3,900	*1,000*	71 J	54 J	210 UJ	22 J
Dibenzo(a,h)anthracene	15	330	330	12 J	10 J	210 UJ	200 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	53 J	38 J	210 UJ	11 J
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	3.80 U	3.60 U	4.00 U	4.00 U
4,4'-DDE	1,400	8,900	*3.3*	*12.00*	0.77 J	0.40 J	2.40 J
4,4'-DDT	1,700	900	*3.3*	*8.80*	3.60 UJ	4.00 UJ	4.00 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	1.90 U	2.10 U	2.00 U
Dieldrin	30	200	*5*	3.80 U	3.60 U	4.00 U	4.00 U
Heptachlor epoxide	53	NL	NL	1.90 U	1.90 U	2.10 U	2.00 U
Polychlorinated Biphenyls (µg/kg)							
Aroclor-1254	110	**1,000**	*100*	38 U	36 U	40 U	40 U
Aroclor-1260	220	1,000	*100*	38 U	36 U	40 U	40 U
Metals (mg/kg)							
Aluminum	7,700	NL	NL	5,510	6,040	15,800	7,430
Antimony	3.1	NL	NL	6.00 J	5.40 U	6.20 U	5.40 J
Arsenic	0.39	**16**	*13*	3.20	***29.30***	***52.80***	1.60 J
Barium	1,500	**400**	*350*	53.60	***457***	***624***	30.40
Chromium	0.29	180	*30*	14.20	17.80	23.10	8.90
Hexavalent Chromium	0.29	110	*1*	*4.10 J*	*2.90 J-*	1.20 UJ	*1.10 J*
Cobalt	2.3	NL	NL	4.20	6.30	9.80	3.10
Copper	310	270	*50*	13.40	19.10	26.50	6.60
Iron	5,500	NL	NL	10,100	10,200	60,200	11,900
Lead	40	400	*63*	36.70	14.60	14.90	7.20
Manganese	180	2,000	1,600	275	141	111	152
Mercury	2.3	0.81	*0.18*	0.05 J	0.02 J	0.16	0.04 J
Nickel	150	310	*30*	11.20	19.20	*31.00*	7.70
Thallium	0.078	NL	NL	3.00 U	2.70 U	3.10 U	2.70 U
Vanadium	39	NL	NL	18.60	70.60	106	12.70 J
Zinc	2,300	10,000	*109*	44.60	23.20	34	20.20

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-117			
Sample ID				TP-117-SS	TP-117-CA	TP-117-B	TP-917-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12
Lithological Layer				Fill/Top Soil	Coal Ash	Coal Ash - Duplicate	
Sample Depth				0 to 2 inches bgs (Surface Soil)	7 to 7.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs	(Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
Benzo(a)anthracene	150	**1,000**	*1,000*	20 J	190 UJ	220 UJ	220 UJ
Benzo(a)pyrene	15	1,000	1,000	20 J	190 UJ	220 UJ	220 UJ
Benzo(b)fluoranthene	150	**1,000**	*1,000*	36 J	190 UJ	220 UJ	220 UJ
Chrysene	15,000	3,900	*1,000*	25 J	190 UJ	220 UJ	220 UJ
Dibenzo(a,h)anthracene	15	330	330	190 U	190 UJ	220 UJ	220 UJ
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	17 J	190 UJ	220 UJ	220 UJ
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	3.80 U	3.80 U	4.20 U	4.30 U
4,4'-DDE	1,400	8,900	*3.3*	1.90 J	3.80 U	4.20 U	4.30 U
4,4'-DDT	1,700	900	*3.3*	3.80 U	3.80 U	4.20 U	4.30 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	1.90 U	2.20 U	2.20 U
Dieldrin	30	200	*5*	3.80 U	3.80 U	4.20 U	4.30 U
Heptachlor epoxide	53	NL	NL	1.90 U	1.90 U	2.20 U	2.20 U
Polychlorinated Biphenyls (µg/kg)							
Aroclor-1254	110	**1,000**	*100*	38 U	38 U	42 U	43 U
Aroclor-1260	220	1,000	*100*	38 U	38 U	42 U	43 U
Metals (mg/kg)							
Aluminum	7,700	NL	NL	8,990	16,800	18,200	13,700
Antimony	3.1	NL	NL	5.70 UJ	5.90 U	6.40 U	5.40 U
Arsenic	0.39	**16**	*13*	4.90 J	***65.00***	***52.10***	***45.50***
Barium	1,500	**400**	*350*	53.40	***694.00***	***688.00***	***612.00***
Chromium	0.29	180	*30*	15.50	22.00	24.60	20.40
Hexavalent Chromium	0.29	110	*1*	*8.10 J-*	*1.00 J-*	1.30 UJ	*1.60 J-*
Cobalt	2.3	NL	NL	4.70	8.70	8.80	7.60
Copper	310	270	*50*	15.30	25.20	25.20	21.20
Iron	5,500	NL	NL	13,200	53,100	53,200	43,000
Lead	40	400	*63*	*73*	16.40	14.80	12.70
Manganese	180	2,000	1,600	295	63.50	95.50	97.30
Mercury	2.3	0.81	*0.18*	0.07 J	*0.22*	0.15	0.12
Nickel	150	310	*30*	11.80	26.20	*38.10*	*30.00*
Thallium	0.078	NL	NL	2.90 U	3.00 U	3.20 U	2.70 U
Vanadium	39	NL	NL	27.00	76.90	194.00	150.00
Zinc	2,300	10,000	*109*	51.80	34.70	32.10	27.40

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-118					
Sample ID				TP-118-SS	TP-118-FL	TP-118-S	TP-118-W	TP-118-CA	TP-118-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12	12/19/12	12/19/12
Lithological Layer				Fill/Top Soil	Fill	Fill	Fill	Coal Ash	Sand
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (South Wall)	1 to 1.5 ft bgs (West Wall)	5 to 5.5 ft bgs (Coal Ash Sample)	8 to 8.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)									
Benzo(a)anthracene	150	**1,000**	*1,000*	280 J	290 J	5,600 U	260 J	310 J	760
Benzo(a)pyrene	15	1,000	1,000	240 J	230 J	5,600 U	200 J	250 J	610 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	360 J	340 J	5,600 U	230 J	380 J	880 J
Chrysene	15,000	3,900	*1,000*	280 J	270 J	5,600 U	280 J	310 J	720
Dibenzo(a,h)anthracene	15	330	330	52 J	48 J	5,600 U	3,700 U	45 J	97 J
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	180 J	150 J	5,600 U	3,700 U	140 J	380 J
Pesticides (µg/kg)									
4,4'-DDD	2,000	13,000	*3.3*	4.40 U	38 U	36 U	36 U	3.90 U	3.70 U
4,4'-DDE	1,400	8,900	*3.3*	*26.00*	*110*	1.20 J	36 U	2.30 J	*8.80*
4,4'-DDT	1,700	900	*3.3*	*15.00 NJ*	*93 NJ*	36 U	36 U	*7.20 J*	*12*
alpha-Chlordane	1,600	4,200	*94*	42.00 NJ	*640 NJ*	19 U	18 U	2 U	4 NJ
Dieldrin	30	200	*5*	4.40 U	38 U	36 U	36 U	4 U	4 U
Heptachlor epoxide	53	NL	NL	14.00	150	19 U	18 U	2 U	2 U
Polychlorinated Biphenyls (µg/kg)									
Aroclor-1254	110	**1,000**	*100*	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1260	220	1,000	*100*	44 U	38 U	360 U	360 U	39 U	37 U
Metals (mg/kg)									
Aluminum	7,700	NL	NL	8,830	8,260	3,290	2,940	10,200	9,180
Antimony	3.1	NL	NL	6.60 U	5.90 U	5.30 U	5.30 U	5.80 U	5.80 U
Arsenic	0.39	**16**	*13*	*14.30*	8.00	2.70 U	2.70 U	***31.10***	10.70
Barium	1,500	**400**	*350*	111.00	41.10	16.50 J	17.90 J	249	106
Chromium	0.29	180	*30*	14.80	14.40	6.80	5.80	16.70	12.90
Hexavalent Chromium	0.29	110	*1*	*13.00 J-*	*3.50 J-*	1.10 UJ	*1.40 J-*	*4.20 J-*	*2.80 J-*
Cobalt	2.3	NL	NL	4.60	5.10	2.70 U	3.40	5.20	3.90
Copper	310	270	*50*	17.30	15.60	9.50	32.60	15.90	9.60
Iron	5,500	NL	NL	20,700	12,300	5,990	7,160	22,100	21,100
Lead	40	400	*63*	34.00	43.30	42.90	23.00	23.40	16.90
Manganese	180	2,000	1,600	180	248	119	115	168	127
Mercury	2.3	0.81	*0.18*	0.08 J	0.11	0.03 J	0.02 J	0.12	0.07 J
Nickel	150	310	*30*	11.70	11.90	6.90	5.90	14.30	9.70
Thallium	0.078	NL	NL	3.30 U	2.90 U	2.70 U	2.70 U	2.90 U	2.90 U
Vanadium	39	NL	NL	28.00	25.20	22.50	21.80	37.80	21.40
Zinc	2,300	10,000	*109*	59.50	64.10	24.10	22.40	36.10	24.70

Table 3-1
Soil Analytical Results - Exceedances
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Notes:

Cells highlighted gray indicate the result value of that sample exceeded EPA Regional Screening Levels for Residential Soils. Result values that are bolded or colored pink indicate that the result value of that sample exceeded NYSDEC Restricted Residential Use and Unrestricted Use Soil Cleanup Objectives, respectively. Multiple formats are used when more than one criterion is exceeded.

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (November 2012) for residential soil, adjusted to cancer risk of 1E-6 and hazard quotient of 0.1.
   Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropropene.
   Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives, http://www.dec.ny.gov/regs/15507.html#15513 (375). December14, 2006.
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil Cleanup Objectives, http://www.dec.ny.gov/regs/15507.html#15513 (375). December14, 2006.
4. Results in shaded cells exceed EPA Regional Screening Levels for Residential Soils.
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that compound.
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Objective for that compound.

** m-xylene and p-xylene reported as one compound under S0M01.2.

*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound

SVOC = semivolatile organic compound

ID = identification

Qualifiers:

U = Analyte was analyzed for but not detected.

J = Estimated data value due to exceeded quality control criteria.

J- = Estimated data value, may be biased low.

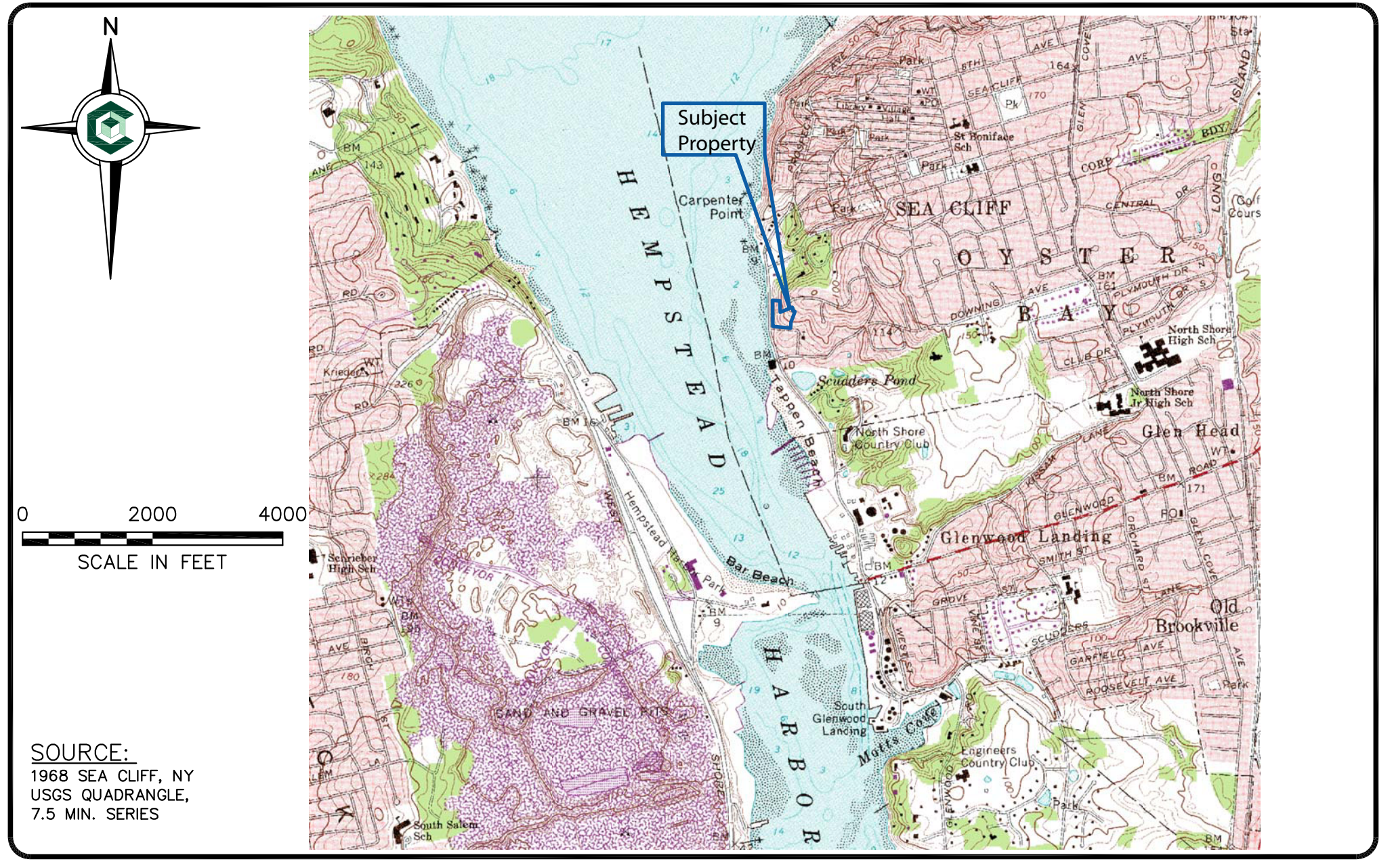
R = Data is rejected.

Table 3-2
Field Blank Analytical Results
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

		Sample Code	FB-12132012
		Sample Date	12/13/12
Analyte	Unit	Result	Qualifier
Toluene	µg/L	0.17	J
Aluminum	µg/L	4.8	J
Antimony	µg/L	0.063	J
Barium	µg/L	0.081	J
Beryllium	µg/L	0.043	J
Calcium	µg/L	44.8	J
Chromium	µg/L	0.44	J
Copper	µg/L	0.28	J
Iron	µg/L	4.3	J
Magnesium	µg/L	2.8	J
Manganese	µg/L	0.048	J
Potassium	µg/L	11.7	J
Silver	µg/L	0.017	J
Sodium	µg/L	84.5	J
Zinc	µg/L	5.2	
Thallium	µg/L	0.068	J

Notes:
µg/L = microgram per liter
J = Estimated value

Figures



Source: Remedial Investigation Work Plan (Cornerstone Environmental Group, LLC 2011).

Figure 1-1
Site Location
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, New York

CDM Smith



Legend

- Previously Excavated Area (8 feet bgs)
- Site Boundary
- Fence
- Top of Cliff
- Lot Boundaries
- Underground Utilities
- Debris Piles
- Unstable Cliff Area
- Geophysical Anomalies

Lot boundaries adapted from Remedial Investigation Work Plan (Cornerstone Environmental Group, LLC 2011)

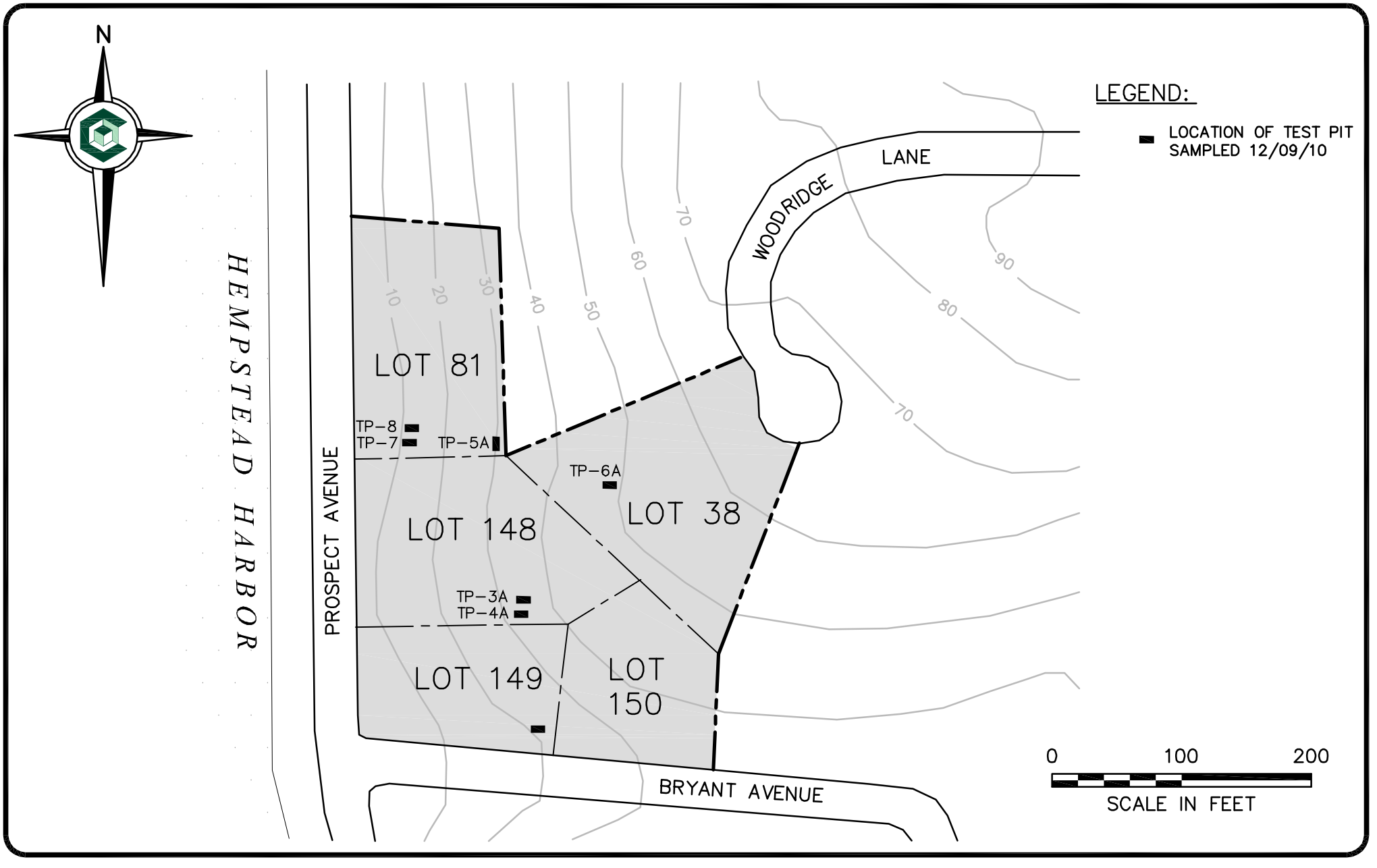
N

0 25 50 100 Feet

1 inch = 50 feet

Figure 1-2
Site Features
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, NY

CDM Smith



Source: Remedial Investigation Work Plan (Cornerstone Environmental Group, LLC 2011).

Note: Site located within the gray highlighted area

Figure 1-3
December 2010 Test Pit Locations
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, New York

CDM Smith



Legend

- Test Pit Locations
- Previously Excavated Area (8 feet bgs)
- Site Boundary

N

0 25 50 100 Feet

1 inch = 50 feet

Figure 2-1
Phase II Test Pit Locations
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, NY

CDM Smith



Legend

- Test Pit Locations
- Estimated Fill Thickness Isocontours (feet)
- Previously Excavated Area (8 feet bgs)
- Estimated Coal Ash extent
- Site Boundary

N

0 25 50 100 Feet

1 inch = 50 feet

Figure 2-2
Estimated Thickness of Fill Material
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, NY

CDM Smith



Legend

- Test Pit Locations
- Previously Excavated Area (8 feet bgs)
- Estimated Coal Ash extent
- Site Boundary

N

0 25 50 100 Feet

1 inch = 50 feet

Figure 2-3
Estimated Extent of Coal Ash Fill
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, NY

CDM Smith

Sample ID / Sample Depth	EPA RSL	NYSDEC Restricted SCO	NYSDEC Unrestricted SCO	TP-102-SS 0 to 2 inches bgs	
Benzo(b)fluoranthene	150	1,000	1,000	1,100	J
Indeno(1,2,3-cd)pyrene	150	500	500	590	J

Sample ID / Sample Depth	EPA RSL	NYSDEC Restricted SCO	NYSDEC Unrestricted SCO	TP-104-BR 14 to 14.5 feet bgs	
Dieldrin	30	200	5	34	J

Sample ID / Sample Depth	EPA RSL	NYSDEC Restricted SCO	NYSDEC Unrestricted SCO	TP-106-SS 0 to 2 inches bgs	
Dieldrin	30	200	5	43	

Sample ID / Sample Depth	EPA RSL	NYSDEC Restricted SCO	NYSDEC Unrestricted SCO	TP-105-BR 14 to 14.5 feet bgs	
Benzo(a)anthracene	150	1,000	1,000	1,400	J
Benzo(b)fluoranthene	150	1,000	1,000	1,800	J
Indeno(1,2,3-cd)pyrene	150	500	500	1,000	J

Sample ID / Sample Depth	EPA RSL	NYSDEC Restricted SCO	NYSDEC Unrestricted SCO	TP-106-CA 3.5 to 4 feet bgs	
Benzo(a)anthracene	150	1,000	1,000	1,000	J
Benzo(b)fluoranthene	150	1,000	1,000	1,200	J

Sample ID / Sample Depth	EPA RSL	NYSDEC Restricted SCO	NYSDEC Unrestricted SCO	TP-114-SS 0 to 2 inches bgs	
Aroclor-1254	110	1,000	100	1,100	
Aroclor-1260	220	1,000	100	410	

TP-100
TP-101
TP-102
TP-103
TP-104
TP-105
TP-106
TP-107
TP-108
TP-109
TP-110
TP-111
TP-112
TP-113
TP-114
TP-115
TP-116
TP-117
TP-118

Prospect Avenue
Woodridge Lane
Bryant Avenue

N

0 25 50 100 Feet

1 inch = 50 feet

Legend

- Test Pit Locations
- Previously Excavated Area (8 feet bgs)
- Estimated Coal Ash extent
- Site Boundary
- SVOCs - surface soil
- SVOCs - subsurface soil
- Pesticides - surface soil
- Pesticides - subsurface soil
- Polychlorinated biphenyls - surface soil

RSL - Regional Screening Level
SCO - Soil Cleanup Objective
PAL - Project Action Limit
NYSDEC - New York State Department of Environmental Conservation
EPA - United States Environmental Protection Agency
bgs - below ground surface
SVOC - semi-volatile organic compound

Figure 3-1
Organic Contaminant Exceedances above PALs
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, NY

CDM Smith

Appendix A
Sea Cliff Geophysical Survey Report

DELTA Geophysics Inc.

GEOPHYSICAL INVESTIGATION REPORT

SITE LOCATION:

34 Woodridge Lane,
Sea Cliff, NY

PREPARED FOR:

CDM Smith
14 Wall Street, Suite 1702
New York, NY

PREPARED BY:

Matthew DiIenno
Delta Geophysics Inc.
738 Front Street
Catasauqua, PA 18032

December 20, 2012

1.0 INTRODUCTION

On December 3rd and December 13th, 2012, Delta Geophysics personnel initiated a limited geophysical investigation at the Sea Cliff, NY property. The Site is an inactive commercial facility and adjacent residential property.

2.0 SCOPE OF WORK

The survey consisted of surface geophysics within client directed areas of the site to detect and delineate any subsurface utilities. The secondary goal was to detect and map any subsurface anomalies within the survey area with a focus on planned soil boring locations.

Surface conditions at the time of survey consisted of concrete and vegetation over soils. Subsurface conditions at the time of the survey were unknown.

Selection of survey equipment is dependent site conditions and project objectives. For the surface part of this investigation the following equipment was used to survey the area of concern:

- Geophysical Survey Systems Inc. SIR-3000 cart-mounted Ground Penetrating Radar (GPR) unit with a 270 Mhz antenna;
- Radiodetection RD4000 precision utility locator;
- Fisher M-Scope TW-6 pipe and cable locator;
- Trimble GPS Pathfinder Pro XRS.

Ground penetrating radar (commonly called GPR) is a geophysical method that has been developed over the past thirty years for shallow, high-resolution, subsurface investigations of the earth. GPR uses high frequency pulsed electromagnetic waves (generally 10 MHz to 1,000 MHz) to acquire subsurface information. Energy is propagated downward into the ground and is reflected back to the surface from boundaries at which there are electrical property contrasts. GPR is a method that is commonly used for environmental, engineering, archeological, and other shallow investigations.

The GSSI SIR-3000 GPR can accept a wide variety of antennas which provide various depths of penetration and levels of resolution. The 270 MHz antenna can achieve depths of penetration up to about 20 feet, but this depth may be greatly reduced due to site-specific conditions. Signal penetration decreases with increased soil conductivity. Conductive materials attenuate or absorb the GPR signal. As depth increases the return signal becomes weaker. Penetration is the greatest in unsaturated sands and fine gravels. Clayey, highly saline or saturated soils, areas covered by steel reinforced concrete, foundry slag, of other highly conductive materials significantly reduces GPR depth of penetration.

At this site, GPR was configured to transmit to a depth of approximately 10 feet below the subsurface, but actual signal penetration was approximately 3 feet below ground surface (bgs). The limiting factor was signal attenuation from near surface soils.

The electromagnetic (EM) method uses the principle of electromagnetic induction to measure the variability of electrical conductivity of subsurface materials. The large EM response to metal makes this technique particularly well suited to identifying buried metal objects such as underground storage tanks,

buried drums, pipelines, reinforced building foundations, or other metal components of buried structures. It is, however, equally sensitive to metal objects on the ground surface, and it is important to take careful field notes that indicate the position of surface metal to avoid misinterpretation. Instruments of this type are more sensitive to near surface features such as reinforced concrete and this fact may sometimes mask features underneath.

The RD7000 precision utility locator uses radio emission to trace the location of metal bearing utilities. This radio emission can be active or passive. Active tracing requires the attachment of a radio transmitter to the utility, passive tracing uses radio emissions that are present on the utility. Underground electrical utilities typically emit radio signals that this device can detect.

Although the TW-6 was designed to be used as a cable and pipe locator it is often used as a metal detector for locating bulk underground metallic objects such as underground storage tanks and buried conductive materials. The TW-6 is an electromagnetic (EM) instrument with a transmitter and a receiver. Used in the inductive configuration with the spacing handle, the transmitter and receiver are held at a fixed distance and oriented at right angles to each other. The transmitter is oriented vertically and the receiver is oriented horizontally.

In operation the transmitter generates an alternating electromagnetic field at a nominal frequency of 81.92 KHz. This induces a secondary electromagnetic field in the ground around the instrument. This induced field causes distortions in the primary field created by the transmitter. Nulling of the instrument orients the receiver parallel to the plane of the combined primary and secondary fields.

Passing the instrument over an underground metallic object will change the balance between the primary and secondary electromagnetic fields. This causes the receiver alignment to change which generates an audible tone and meter response equal to the shift of the combined fields.

The Pathfinder Pro XRS Mapping System is a 12 channel differential beacon GPS receiver. The Pro XRS uses an integrated differential beacon receiver and antenna to receive real-time differential corrections from a subscription-based satellite correction service. This system provides for real-time sub-meter position data collection and is used in a wide range of applications, including utility asset management, environmental monitoring, and natural resource and land management. Feature and attribute data are input with a hand-held Asset Surveyor data logger. The GPS Pathfinder was used to tag each EM-61 reading with geographic coordinate for processing and mapping purposes.

3.0 SURVEY FINDINGS

Residence

All accessible areas within the subject site were examined during this investigation. Each location was examined with the RD7000 for potential subsurface utilities then surveyed with GPR and TW-6 for other potential anomalies.

Delta observed a vent line along the east side of the residence. Delta was able to approximately trace the line from its origin, across front yard, and terminating approximately 15 feet from the building. The TW-6 was utilized over this area and detected a metallic response. GPR transects over this area indicated an anomalous feature consistent with a UST. No other anomalies of concern were identified on the subject property. .

The following utilities: water, electric, gas, storm drains were located during this investigation and marked onsite with appropriate colors. The sanitary sewer could not be verified in the field due to the close proximity to the curb.

A site map (1212104) is included with all located subsurface features.

Former Disposal Area

All accessible areas within the subject site were examined during this investigation. Each location was examined with the RD7000 for potential subsurface utilities then surveyed with GPR and TW-6 for other potential anomalies.

An area of reflection was located on the north portion of the property adjacent to the dividing fence of the residence. The anomalous area was detected with TW-6 and confirmed with the GPR. The reflection was approximately 2-3feet in depth and may be a conductive material buried just below the surface.

Along the west portion of the property adjacent to Prospect avenue an area of metal debris was detected with the TW-6. GPR could only be used in select areas to identify the potential source of the metal response. However, due to high vegetation and surface debris GPR could not be utilized effectively. Additionally in this area a large gas main was positioned along Prospect Road and traversed north along the property. Survey finding were conveyed to the client representative on site.

Along the East portion of the property large water and storm sewer lines were detected and marked on-site. Due to the debris piles within this area only small portions of the pipes could be marked accurately.

5.0 SURVEY LIMITATIONS

GPR depth of penetration was limited to approximately 4-6 feet below ground surface. The primary limiting factor was due to conductive soils. Data from the EM could not be collected due to surface debris. Large debris piles limited the use of several geophysical instruments.

6.0 WARRANTIES AND DISCLAIMER

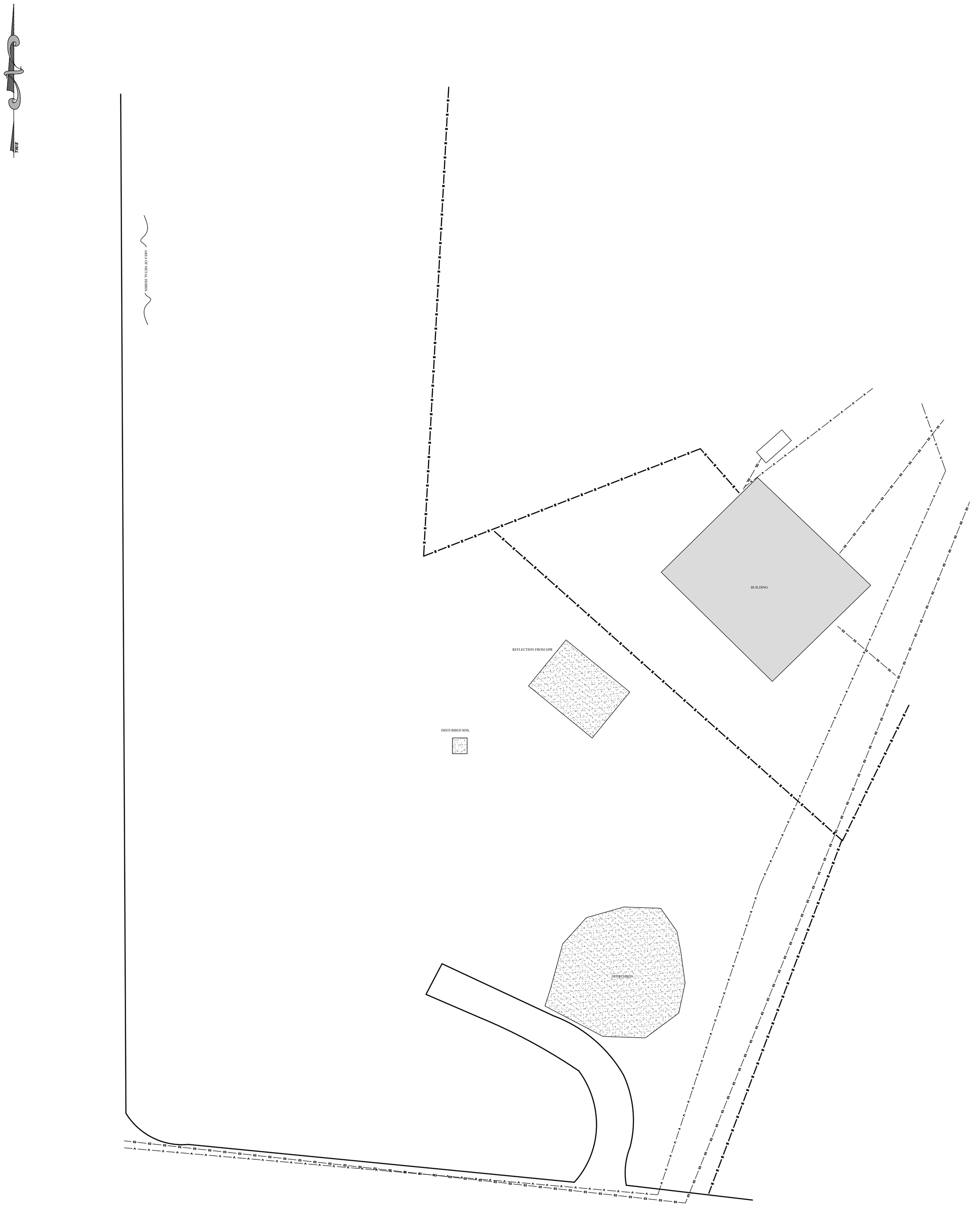
As with any geophysical method, it must be stressed that caution be used during any excavation or intrusive testing in proximity to any anomalies indicated in this report. In addition, the absence of detected signatures does not preclude the possibility that targets may exist. To the extent the client desires more definitive conclusions than are warranted by the currently available facts; it is specifically Delta's intent that the conclusions stated herein will be intended as guidance.

This report is based upon the application of scientific principles and professional judgment to certain facts with resultant subjective interpretations. Professional judgments expressed herein are based on the facts currently available within the limit or scope of work, budget and schedule. Delta represents that the services were performed in a manner consistent with currently accepted professional practices employed by geophysical/geological consultants under similar circumstances. No other representations to Client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any report, document, or otherwise.

This report was prepared pursuant to the contract Delta has with the Client. That contractual relationship included an exchange of information about the property that was unique and between Delta and its client and serves as the basis upon which this report was prepared. Because of the importance of the understandings

between Delta and its client, reliance or any use of this report by anyone other than the Client, for whom it was prepared, is prohibited and therefore not foreseeable to Delta.

Reliance or use by any such third party without explicit authorization in the report does not make said third party a third party beneficiary to Delta's contract with the Client. Any such unauthorized reliance on or use of this report, including any of its information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.



LEGEND

- FIRE HYDRANT
- UTILITY POLE
- STORM DRAIN
- UTILITY VALVE COVER
- MANHOLE COVER
- E — ELECTRIC
- GAS — GAS
- T — TELECOMMUNICATION
- SD — STORM SEWER
- SS — SANITARY SEWER
- W — WATER
- U — UNKNOWN UTILITY

NOTES:

This site plan was produced from data positioned by differential GPS measurments collected in the field. Due to the errors normally present in DGPS data, this document is not intended or represented to be of survey precision. Caution should be used in all field measurments based on this site plan.

As with any geophysical method, it must be stressed that caution be used during any excavation or intrusive testing in proximity of any anomalies indicated in this document The absence of detected signatures does not preclude the possibility that targets exist. The geophysical data and results presented in this site plan are based upon the application of scientific principles and professional judgements to certain facts with resultant subjective interpretations. Professional judgements expressed herein are based on the facts currently available within the limits of the existing data, scope of work, budget, and schedule.

Reliance or use by any such third party without explicit authorization in the document does not make said third party a third party benificiary to Delta's contract with the client. Any such unauthorized reliance on or use of this document, including any of its information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this document, are made to any such third party.

0 10 20 40 60

GRAPHIC SCALE IN FEET

GEOPHYSICAL INVESTIGATION
WOODRIDGE LANE, SEA CLIFF, NY

FOR

CDM SMITH

DRAWN BY MFD
CHECKED BY MYD
DATE 12/20/12
SCALE 1" = 20'
DRAWING NO. 1 OF 1
SHEET NO. 2012104
PROJECT NO.

DELTA Geophysics Inc.
738 Front Street, Catasauqua, PA 18032
Phone: (610) 231-73012

DATE	DESCRIPTION	REV.
	REVISIONS	

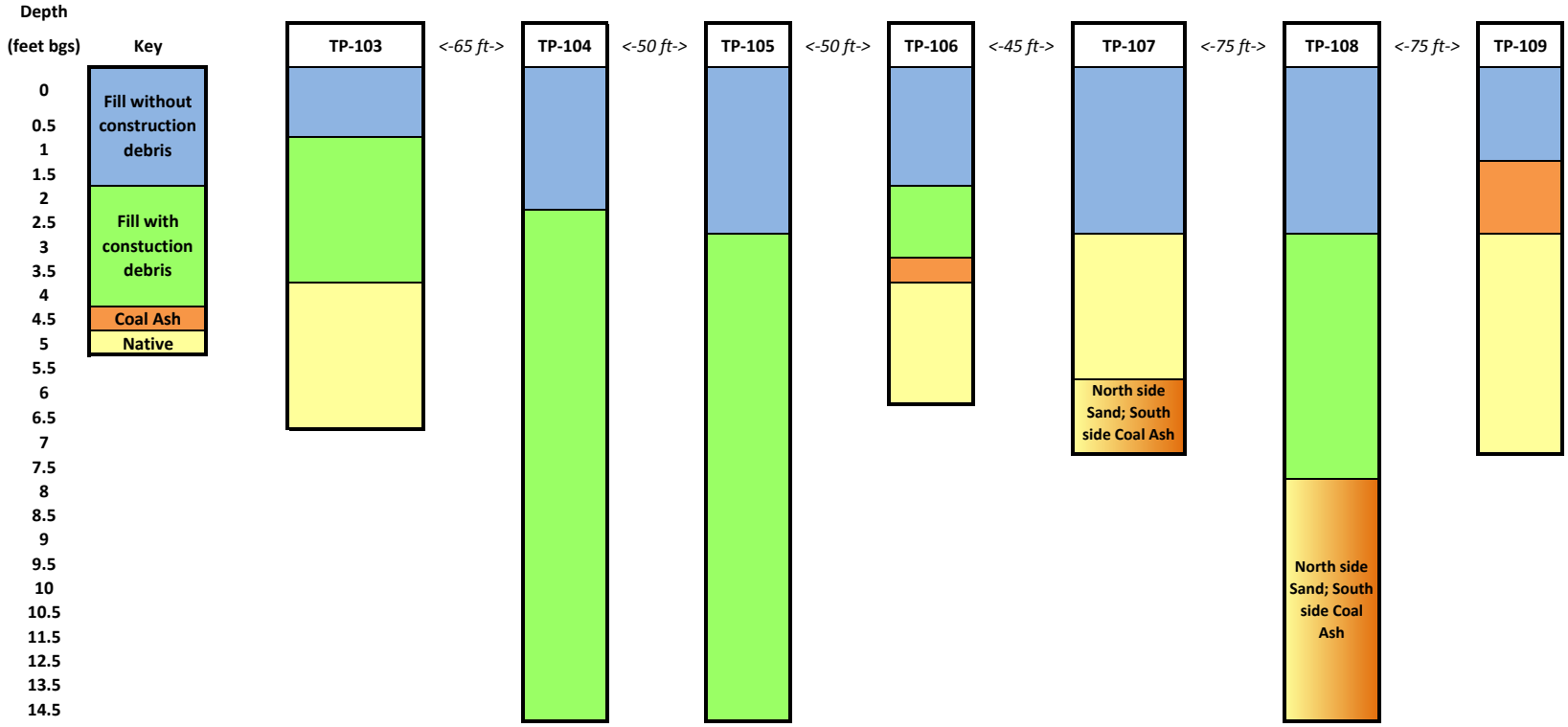
Appendix B
Test Pit Logs



Appendix B
Test Pit Cross Section Transects
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, NY

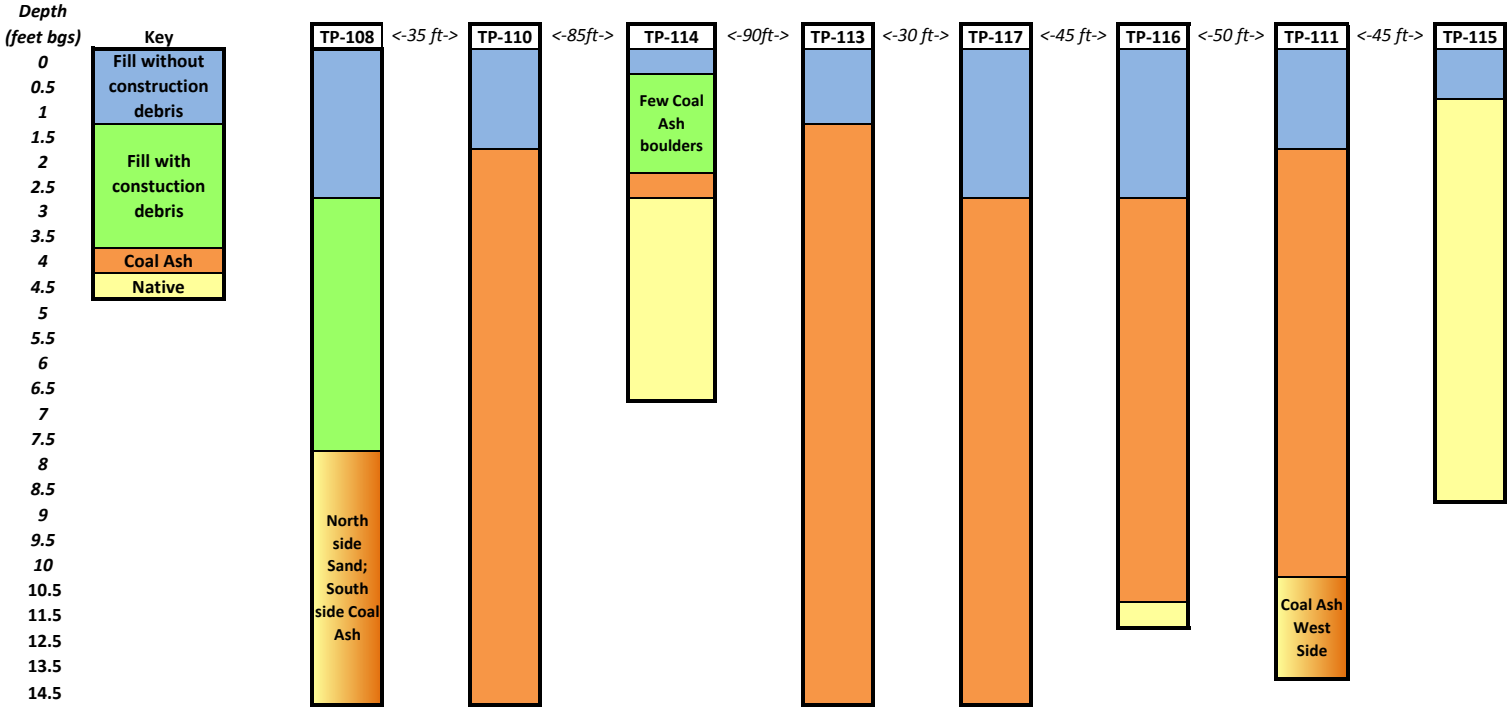
CDM Smith

Appendix B - Test Pit Cross Sections
TP-103 through TP-109 Transect
December 2012



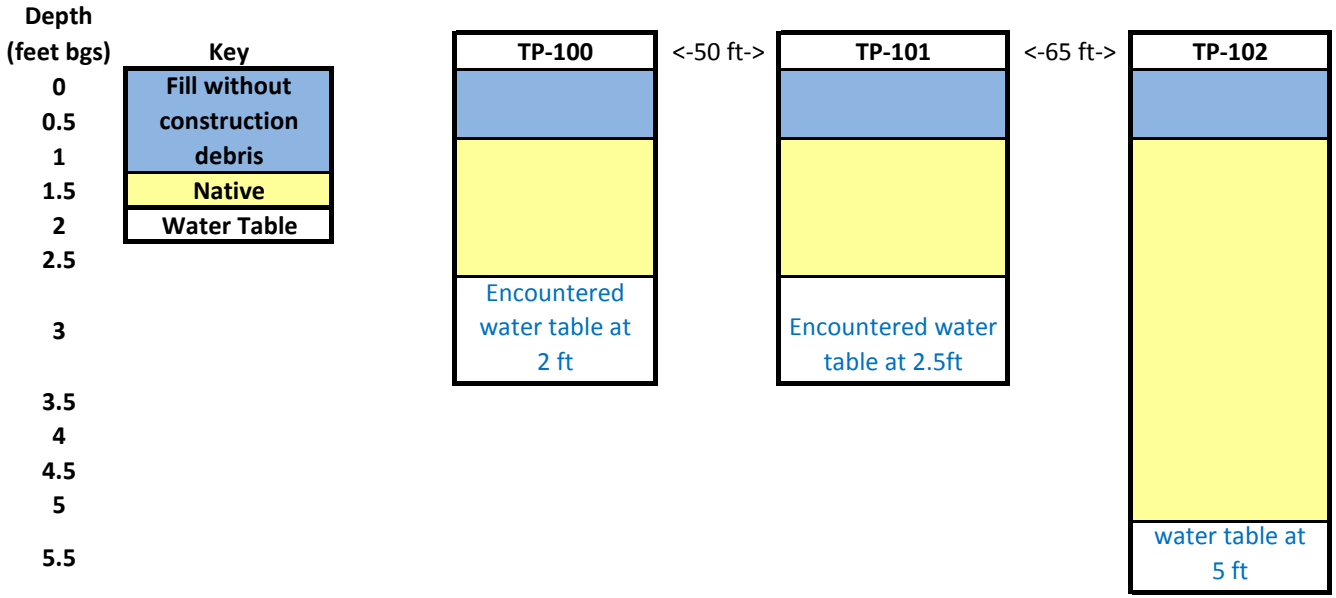
Note - Column widths are approximate width in feet (ft) between test pits.
bgs - below ground surface

Appendix B - Test Pit Cross Sections
TP-108 to TP-115 Transect
December 2012



Note - Column widths are approximate width in feet (ft) between test pits.
bgs - below ground surface

Appendix B - Test Pit Cross Sections
TP-100 to TP-102 Transect
December 2012



Note - Column widths are approximate width in feet (ft) between test pits.
bgs - below ground surface

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

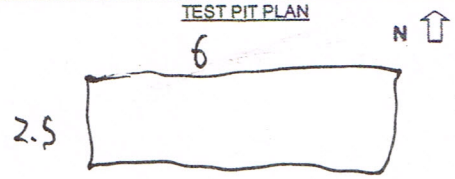
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-100
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	2.0 ft bgs	Date:	12/17/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLES	EXCAV. EFFORT
1	FILL - Dark brown, highly organic, some silt, tr. sand, abundant wood pieces, roots, leaves	SS-0-2'	PID=0.0
2	SP- light tan coarse sand, with little Qtz pebbles, rounded, trace orange staining, tr! seaweed,	N, E, S, W- 0.5-1'	PID=0.0
3			
4	Test pit completed at 2.5 ft bgs, due to hitting water table at 2.0 ft.	B-1.5-2'	
5			
6			
7			
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6
Depth (ft): 2.5
Vol (ft^3):

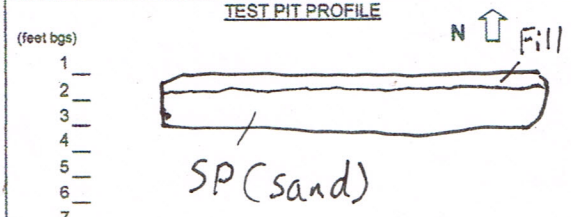
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

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New York, NY 10005
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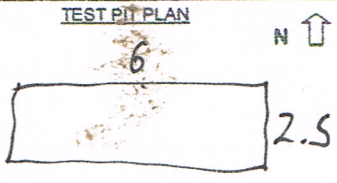
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-101
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	2.5 ft bgs	Date:	12/17/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLE	EXCAV. EFFORT
1	FILL- Dark brown, organic soil, some silt, tr. sand, abundant wood pieces, roots, leaves	SS-0-2"	PID = 0.0
2	SW- brown to brown wet silty sand, tr. pebbles, cobbles. 8 inch boulder at 1.5 ft bgs, roots	N, E, S, W 0.5-1'	
3	SP- coarse, wet sand, tan with orange streaks, few rounded qtz. pebbles	B-2- 2.5 ft	PID = 0.0
4	testpit completed at 2.5 ft bgs due to contacting water table		
5			
6			
7			
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6
Depth (ft): 2.5
Vol (ft³):

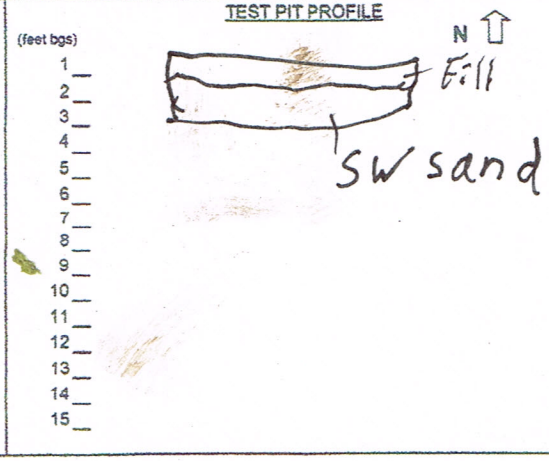
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



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E : Easy
M : Moderate
D : Difficult

Remarks:

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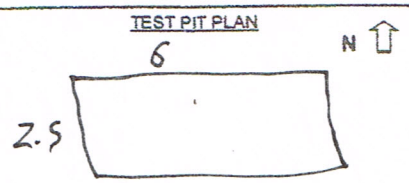
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-102
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	5.0 ft bgs	Date:	12/17/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLE	EXCAV. EFFORT
1	FILL - Dark brown organic soil, some silt PID=0.0	SS-0-2"	
2	tr. sand, tr. boulders, abundant wood pieces, roots		
3	Brown-gray medium silty sand (SW) Trace pebbles and cobbles		
4	Medium Brown to tan coarse sand (SP) with tr. silt and rounded pebbles.		
5	*pinched out 1 foot dark grey, silty CLAY at 3'		
6	Test pit completed at 5 feet due to water table encounter.	N,E,S,W-3-3.5	
7			
8		B-4.5-5'	
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6
Depth (ft): 5
Vol (ft³):

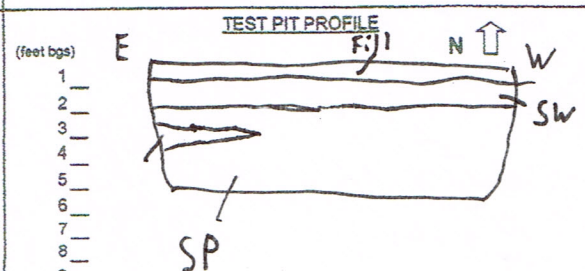
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
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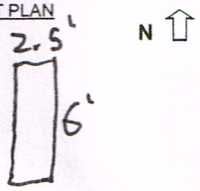
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-103
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomasello
Project Location:	Village of Sea Cliff	Depth to Water:	-	Date:	12/10/12 10:55
Project Number:	3320-029	Ground Surface EL:		Page:	1 of

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / Samples	EXCAV. EFFORT
1	Medium to dark brown FILL - roots plastic, asphalt debris, 2 inch cobbles, tr. silt, sand	PID=2.1 SS-0-2"	
2	1-2' concrete slab pieces		
3	Construction debris - bricks, tiles, concrete blocks, FILL, tr. sand, silt.	N, S, E, W-3-3.5	
4	SAND - SP - medium to fine, light tan, loose		
5			
6	S.A.A - reddish-tan	PID=1.3 B-6.5'	
7	Test Pit end at 6.5'		
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6
Depth (ft): 6.5
Vol (ft^3):

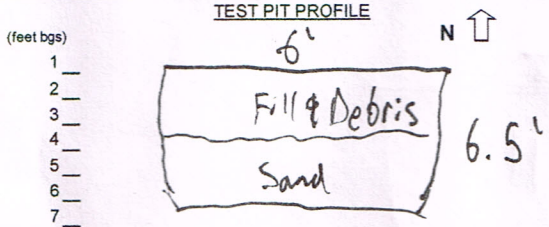
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
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EXCAVATION EFFORT
E : Easy
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Remarks:

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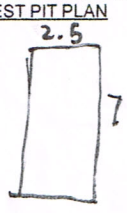
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-104
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomoselli
Project Location:	Village of Sea Cliff	Depth to Water:	—	Date:	
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 3

DEPTH (feet)	SOIL DESCRIPTION	~~STRATA CHANGE~~ Sample	EXCAV. EFFORT
1	FILL- Brown silt and sand, abundant roots, cobbles	PID = 1.5 SS-0-2"	
2			
3	FILL- SAA. Dark Brown to Black. Abundant Boulders, wood pieces, and construction debris	NESW 2.5-3'	
4			
5			
6	Bottom of Test Pit - 6'	B-5.5-6'	
7			
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft):
Vol (ft^3):

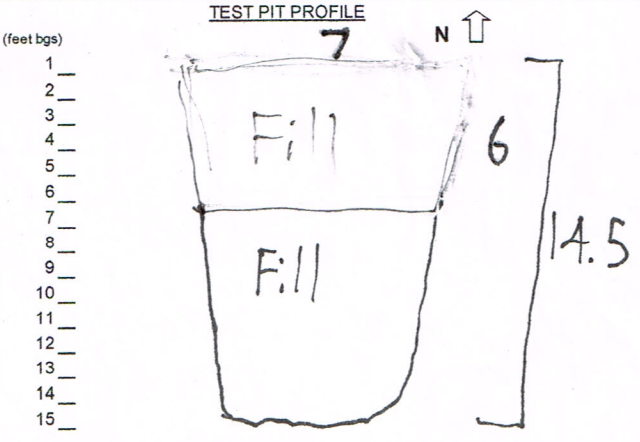
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

Test Pit Log

Client: EPA	Contractor: Zebra	Test Pit No. TP-104	
Project Name: Sea Cliff Site	Equipment: Backhoe	Logged By: J. Tomaselli	
Project Location: Village of Sea Cliff	Depth to Water: -	Date: 12/13/12	
Project Number: 3320-029	Ground Surface EL.:	Page: 2 of 3	

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE	EXCAV. EFFORT
1		SAMPLES	
2			
3		TP-104-TR 3-3.5	
4			
5	Continuation of TP-104 log from 6 feet bgs		
6	FILL - Dark Brown silt, little sand, abundant PID = 0.0		
7	construction debris, concrete, rebar, car tires, 1 foot steel pump, plastic, metal		
8	sheeting, carpet, brick, pebbles, cobbles		
9		TP-104-B 14-14.5	
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft): 14.5
Vol (ft³):

TEST PIT PLAN

N ⇧

See Sheet #1

BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE

N ⇧

(feet bgs)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

See sheet 1

EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-104
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomasetti
Project Location:	Village of Sea Cliff	Depth to Water:	–	Date:	12/13/12
Project Number:	3320-029	Ground Surface EL:		Page:	3 of 3

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE	EXCAV. EFFORT
	continued from above		
13			
14			
15	Test pit completed at 14.5 feet due to extent of backhoe		
4			
5			
6			
7			
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): _____
Length (ft): _____
Depth (ft): _____
Vol (ft³): _____

TEST PIT PLAN

N ⇧

See page 1

BOULDER COUNT
6 in-12 in: _____
12 in-18 in: _____
18 in-24 in: _____
24 in-30 in: _____

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE

N ⇧

(feet bgs)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

See page ~~2~~ 1

EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks: _____

CDM Smith

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Suite 1702
New York, NY 10005
212-785-9123

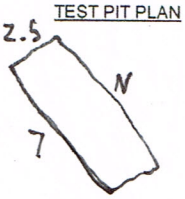
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-105
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:		Date:	12/10/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 2

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE	EXCAV. EFFORT
1	FILL- Dark brown, organic debris, roots, PID=0.5- moist sand and silt. Cobbles	Samples 0-2'	
2			
3	FILL - SAA. with thick asphalt layer (3-3.5')	Trash Sample Collected at ~~3-3.5'~~ at SW wall. B-6-6.5'	3-3.5'
4			
5			
6	FILL- SAA. - with more abundant construction debris, bricks, etc., wood very abundant PID-1.1	N, E, S, W - 3-3.5	
7	Bottom of test pit- 6.5'		
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft):
Vol (ft^3):

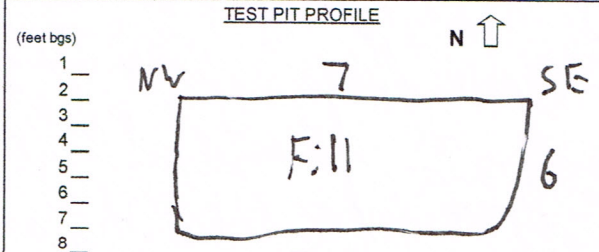
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-105
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	I. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	—	Date:	12/17/12
Project Number:	3320-029	Ground Surface EL:		Page:	2 of 2

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLE	EXCAV. EFFORT
1	FILL - See sheet #1		
2			
3		TP-105-BR -14-14.5'	
4			
5			
6	Dark to medium brown FILL, ~~some~~ tr. silt some sand, some pebbles and fine gravel. Abundant construction debris, concrete, metal wire, plastic		
7			
8	Same down to 14.5		
9			
10			
11			
12			

14.5 TP completed at 14.5 due to extent of bucket

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6
Depth (ft): 14.5
Vol (ft³):

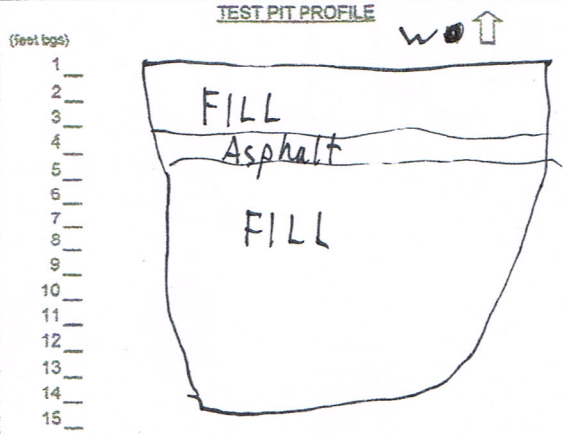
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

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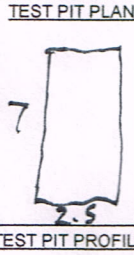
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-106
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	-	Date:	12/11/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE Sample	EXCAV. EFFORT
1	FILL - Brown Silt and Sand, moist, with PID=0.0 few pebbles and some debris, construction some roots	SS-0-2"	CTP-906 dup collected at SS)
2	FILL - Black Asphalt pieces, distinct layer	COAL ASH Sample 3.5-4'	
3			
4	Dark gray FILL, sandy clay COAL ASH-lense Fine tan sand SP, some pebbles PID=0.5	TRASH SAMPLE COLLECTED 2.5-3'	- from asphalt layer
5	SW - Dark brown native, sand and silt, 2 inch cobbles and pebbles abundant		
6	6' end of test pit	-N,E,S,W - 1.5-2'	
7			
8			
9		B - 5.5-6'	
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft): 6
Vol (ft³):

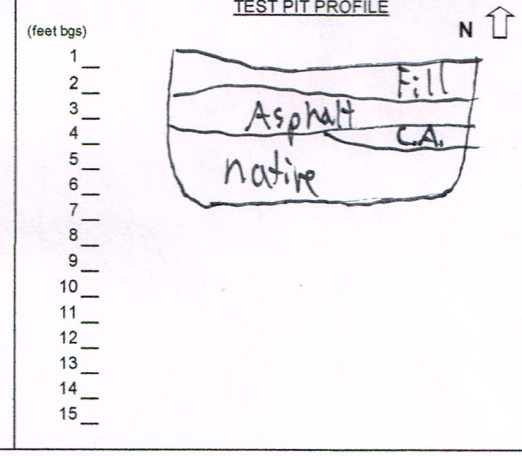
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

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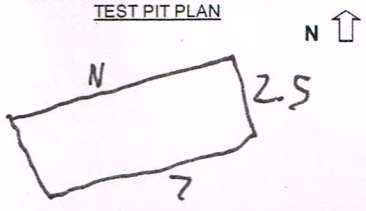
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-107
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	—	Date:	12/11/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE	EXCAV. EFFORT
1	FILL - Dark brown, organic, silt and sand, trace roots, pebbles PID=0.0	SS - 0-2"	
2	- 3" black lense at 2'		
3	FILL - Dark to medium brown sandy fill, abundant pebbles to cobbles.		
4	SW - Brown, Sand with rounded pebble gravel coarse, native	-N, E, S, W sample at 2-2.5	
5			
6	Dark gray sandy, COAL ASH 6'-7'	CA. sample 6-6.5'	
7	also with fine ash/clay - only on south PID=0.0	B - sample 6.5-7	
8	Test Pit completed at 7' BGS side ↓		
9	6'-7' north side native sand described above		
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft): 7
Vol (ft³):

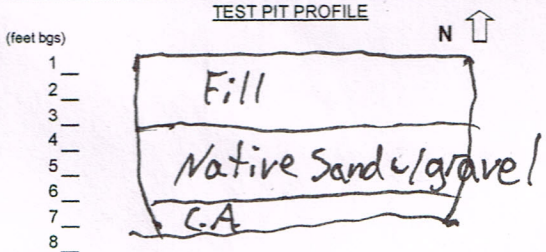
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

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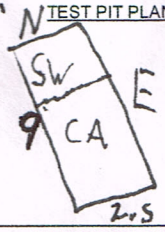
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-108
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomascelli
Project Location:	Village of Sea Cliff	Depth to Water:	–	Date:	12/12/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLES	EXCAV. EFFORT
1	FILL - Dark brown silt and light brown sand, abundant roots, few pebbles PID=0.0	SS-0-2"	
2			
3	S.A.A. – with abundant pebble to cobble gravel, some sand		
4	FILL - Dark brown, silt and sand with some gravel and abundant construction debris, – concrete, asphalt.		
5			
6		N, E, S, W 6-7'	
7	PID:0.0		
8	SW - Light tan, native sand, medium in north abundant rounded pebbles corner	CA-14-14.5	
9	Also starting at 7-8 ft, COAL ASH in south corner	~~9-10~~ 12/12/12 - south corner	
10		B- ~~9-10~~ 14-14.5 - north corner	
11	X south corner & dug down to 14.5' to delineate COAL ASH. COAL ASH down to extent of backhoe.	decided to go deeper before sampling	
12	Test pit ended at 14.5'		

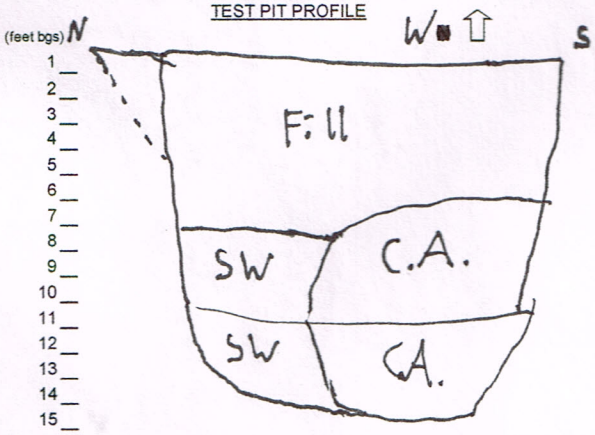
T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 9
Depth (ft): 14.5
Vol (ft³):

TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

TEST PIT PROFILE



DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

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New York, NY 10005
212-785-9123

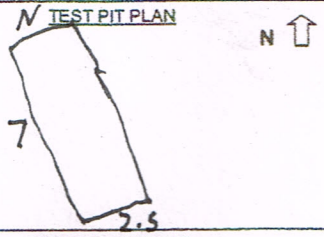
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-109
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	—	Date:	12/12/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE	EXCAV. EFFORT
1	FILL - Dark brown, silt with pebbles and cobbles, some roots, wood fragments PID = 0.0	SS-0-2'	
2	FILL - 1 inch strata of gray pebbles and orange sand, TR. Boulders and cobbles		
3	COAL ASH - more compacted than in other areas, pebbles in matrix	C.A. - 1.5-2.5'	
4			
5	Light tan to dark orange silty sand SW Tr. clay, Tr. roots, native	N, E, S, W - 0.5-1.5	
6			
7	End of Test Pit at 7'	B - 6.5-7'	
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft): 7
Vol (ft^3):

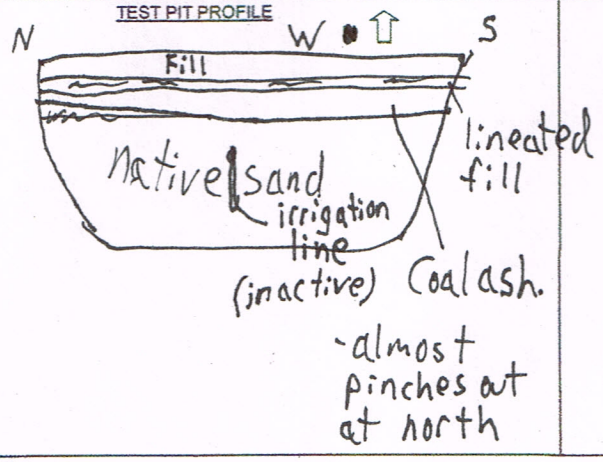
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

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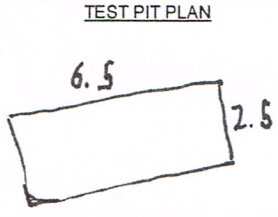
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-110
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	–	Date:	12/12/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 2

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / samples	EXCAV. EFFORT
1	FILL- Medium brown sandy gravel, some cobbles, Tr. boulders, tr! silt, roots PID=0.1	SS-0-2"	
2	Dark gray, fine COAL ASH.	N, E, S, W -1-1.5'	
3		CA- 6.5-7'	
4			
5			
6	PID=0.0		
7			
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6.5
Depth (ft): 14.5
Vol (ft^3):

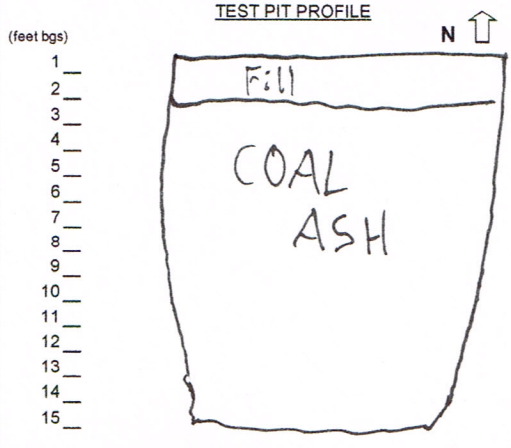
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-110
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	—	Date:	12/12/12
Project Number:	3320-029	Ground Surface EL:		Page:	2 of 2

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGES	SAMPLES	EXCAV. EFFORT
13	COAL ASH continued from above.		B-14-14.5'	
14	PID=0.0			
15	Test Pit completed at 14.5 due to extent of backhoe			
4				
5				
6				
7				
8				
9				
10				
11				
12				

T.P. DIMENSIONS
Width (ft): ____
Length (ft): ____
Depth (ft): ____
Vol (ft^3): ____

TEST PIT PLAN

N ⇧

see page #1

BOULDER COUNT
6 in-12 in: ____
12 in-18 in: ____
18 in-24 in: ____
24 in-30 in: ____

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE

N ⇧

(feet bgs)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

see page #1

EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks: ____

CDM Smith

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Suite 1702
New York, NY 10005
212-785-9123

Test Pit Log

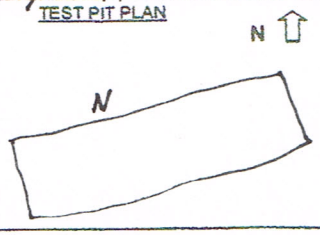
Client: EPA	Contractor: Zebra	Test Pit No. TP-111	
Project Name: Sea Cliff Site	Equipment: Backhoe	Logged By: T. Tomaselli	
Project Location: Village of Sea Cliff	Depth to Water: —	Date: 12/18/12	
Project Number: 3320-029	Ground Surface EL:	Page: 1 of 1	

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLES	EXCAV. EFFORT
1	FILL- Dark brown silty top soil, tr. sand some roots, leaves, organic material PID: 0.0	SS-1 0-2"	PID=0.0
2	Light Brown FILL sandy pebbly gravel, some roots, thin lenses of COAL ASH		
3	COAL ASH, dark grey, fine material few roots, 3foot tree branch at 7 feet bgs	N,E,S,W -1.5-2'	PID=0.2
4			
5			
6			
7			PID=0.1
8		B-12.5 -13'	(past)
9			
10		C.A. -12.5 -13'	(west)
11			
12	TSW- fine sand, orange-brown, abundant rounded pebble gravel, little silt (11-13ft)		

T.P. completed at 13'

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 10
Depth (ft): 13
Vol (ft^3):

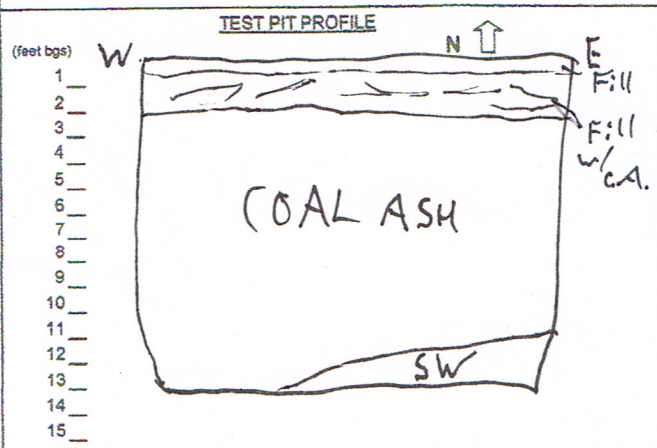
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

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New York, NY 10005
212-785-9123

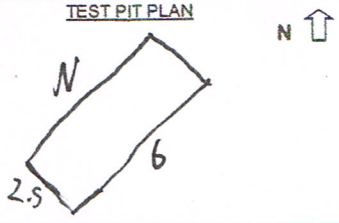
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-1/2
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	~	Date:	12/13/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA SAMPLES	EXCAV. EFFORT
1	FILL - Dark brown top soil, silty, sand, few roots, trace pebbles PID=0.0	0-2'-SS	
2	SW - gray, silty sand with little gravel, tr. clay brown	N,E,S,W	
3			
4	SW - Orange brown silty sand with some rounded, pebble gravel - Qtz. and cobble	1-1.5'	
5	SW/SP - fine, light tan sand PID=0.0		
6	TEST PIT COMPLETED AT 6'	B-5.5-6	
7			
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6
Depth (ft): 6
Vol (ft^3):

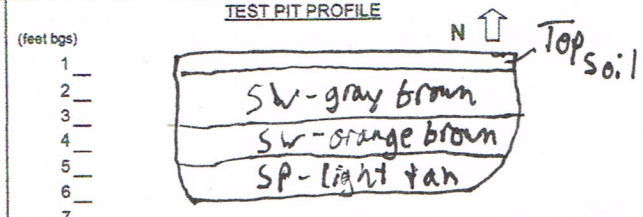
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

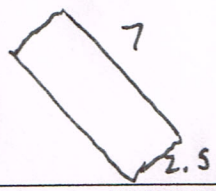
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-113
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	-	Date:	12/11/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 2

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE	SAMPLES	EXCAV. EFFORT
1	FILL- Dark grayish brown PID: 0.7 moist silt, tr. sand, abundant roots, organic material - pebbles present, some		-SS-0-2"	
2	Dark gray, fine clay with some sand		← N, E, S, W	
3	COAL ASH		1-1.5'	
4				
5				
6			-CA.	
7			6.5-7	
8				
9				
10				
11				
12				

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft): 14.5
Vol (ft^3):

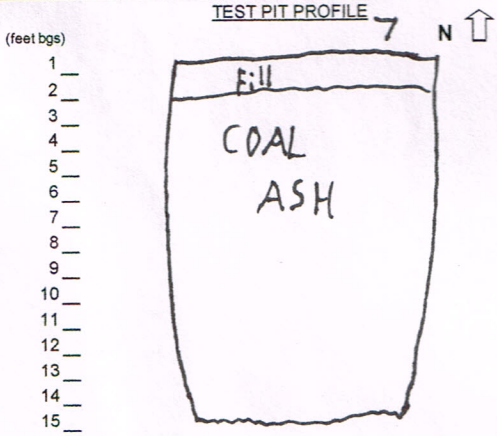
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-113
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	–	Date:	12/11/12
Project Number:	3320-029	Ground Surface EL:		Page:	2 of 2

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE	EXCAV. EFFORT
13	Continued COAL ASH. no changes from above	B-14-14.5	
14			
15	Test pit completed at 14.5' due to limit of backhoe		
4			
5			
6			
7			
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): _____
Length (ft): _____
Depth (ft): _____
Vol (ft^3): _____

TEST PIT PLAN

N ⇧

see sheet #1

BOULDER COUNT
6 in-12 in: _____
12 in-18 in: _____
18 in-24 in: _____
24 in-30 in: _____

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE

N ⇧

(feet bgs)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

see sheet #1

EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks: _____

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

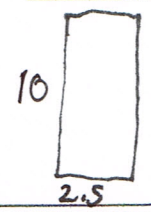
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-114
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	—	Date:	12/13/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLES	EXCAV. EFFORT
1	- FILL - medium brown sand, some silt some roots, little pebbles, ~ rounded. PID=0.0	SS-0-2"	
2	- S.A.A. - 1 foot COAL ASH boulder at 1.5 feet bgs	N, E, S, W	
3	- S.A.A. - some construction debris - concrete at 2 ft bgs. - 3" C.A. lense at 2.5 feet	2.5-3'	
4	SW - medium brown to orange, silty sand. little pebbles to trace pebbles at depth.		
5	- SAA. - light tan, orange streaks	B-6-6.5'	
6	PID: 0.0		
7	- Test pit completed at 6.5 ft		
8			
9			
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 10
Depth (ft): 6.5
Vol (ft^3):

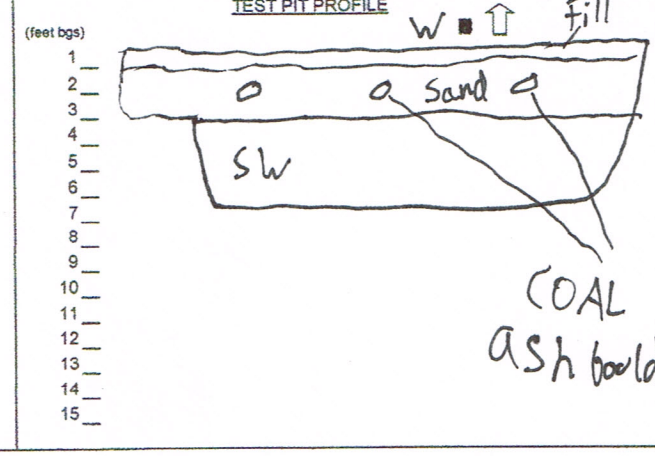
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

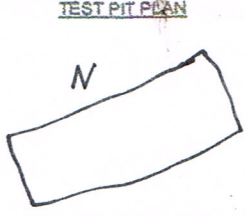
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-115
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomasello
Project Location:	Village of Sea Cliff	Depth to Water:	-	Date:	12/18/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLE	EXCAV. EFFORT
1	FILL- Medium brown sandy, silty topsoil with abundant small roots, tr. pebbles, tr. clay	SS- 0-2"	PID=0.0
2	SW- light brown, tan, silty sand with abundant rounded pebble to cobble gravel. wet	FL-0.5-1'	
3	Large round (2 foot) boulder at 3 ft bgs	N,E,S,W 1-1.5 ft	
4			
5	SAA.- fewer pebbles, little clay		
6		B- 8-8.5'	PID=0.0
7			
8			
9	TP completed at 8.5'		
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft): 8.5
Vol (ft^3):

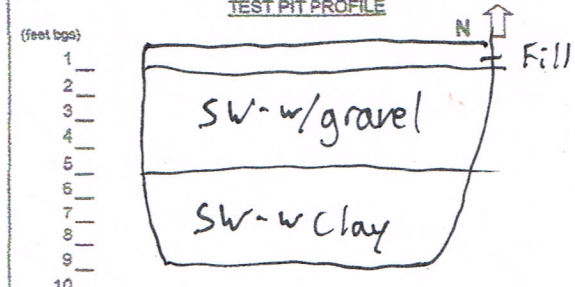
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

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New York, NY 10005
212-785-9123

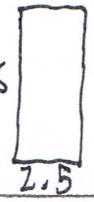
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-116
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomasello
Project Location:	Village of Sea Cliff	Depth to Water:	~	Date:	12/18/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLE	EXCAV. EFFORT
1	FILL - Dark brown, silty organic topsoil. PID=0.0	SS-0-2"	
2	FILL - medium brown silty sand, few pebbles, tr. roots	N, E, S, W -2-2.5	
3	Dark gray COAL ASH, loose fine powder		
4	tr. roots		
5		CA. - 10-10.5	
6		B-11-11.5	
7			
8			
9			
10			
11	SW - silty sand with abundant rounded pebble gravel, medium brown, wet.		PID=0.0
12	T.P. completed at 11.5 FT		

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6
Depth (ft): 11.5
Vol (ft³):

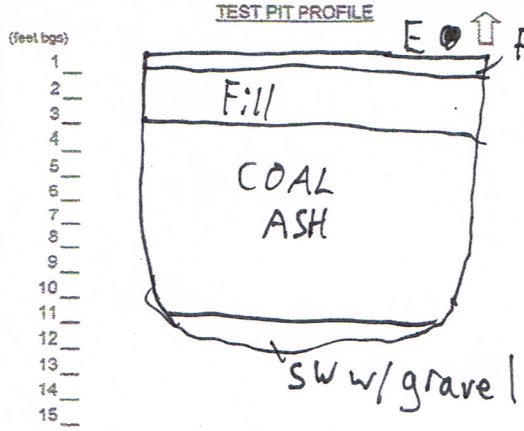
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

CDM Smith

14 Wall Street
Suite 1702
New York, NY 10005
212-785-9123

Test Pit Log

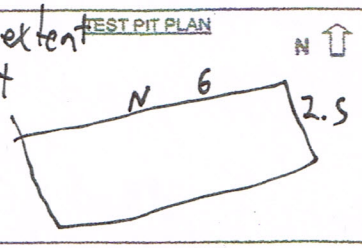
Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-117
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomasello
Project Location:	Village of Sea Cliff	Depth to Water:	–	Date:	12/19/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLE	EXCAV. EFFORT
1	FILL- Brown, silty organic top soil, tr. sand few 1-2cm pebbles, abundant roots PID=0.0	0-2" SS	
2	SW- medium brown, silty sand with some rounded pebble gravel, few cobbles, tr. roots - trace coal ash lenses, thin		
3	COAL ASH, dark grey loose powder	N, E, S, W 2.5-3 CA- 7-7.5	
4			
5			
6	* Small 1-2cm chunk of coal found		
7			
8			
9			
10	few 1cm black streaks	B-14-14.5	
11	COAL DOWN TO 14.5 ↓	PID=0.3	
12			

T.P. completed at 14.5 due to extent of bucket

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 6
Depth (ft): 14.5
Vol (ft³):

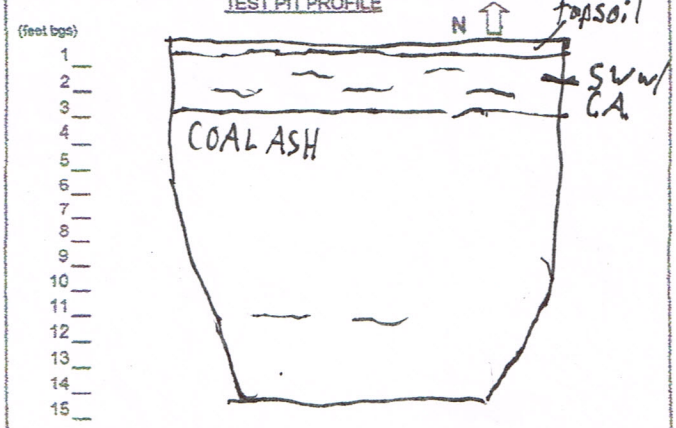
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks: Location at a geophysical anomaly

CDM Smith

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Suite 1702
New York, NY 10005
212-785-9123

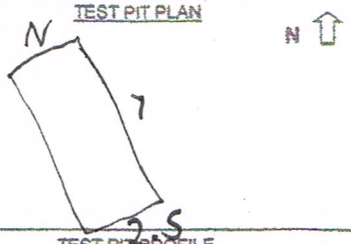
Test Pit Log

Client:	EPA	Contractor:	Zebra	Test Pit No.	TP-118
Project Name:	Sea Cliff Site	Equipment:	Backhoe	Logged By:	T. Tomaselli
Project Location:	Village of Sea Cliff	Depth to Water:	-	Date:	12/19/12
Project Number:	3320-029	Ground Surface EL:		Page:	1 of 1

DEPTH (feet)	SOIL DESCRIPTION	STRATA CHANGE / SAMPLES	EXCAV. EFFORT
1	FILL- Brown silty organic top soil, some sand, pebbles, abundant roots PID=0.0	SS-0-2"	
2	Light brown-orange FILL- silt and sand, abundant 1-2 foot asphalt and concrete pieces, some pebbles, other construction debris	FL-0.5-1' N, E, S, W- 1-1.5'	
3			
4			
5	Hard, crumbly COAL ASH, dark gray PID=0.0	CA-5-5.5'	
6	SW- Dark brown sand with rounded pebble gravel, few pebbles, tr. silt		
7			
8		B-8-8.5'	
9	TP completed at 8.5 ft bgs		
10			
11			
12			

T.P. DIMENSIONS
Width (ft): 2.5
Length (ft): 7
Depth (ft): 8.5
Vol (ft³):

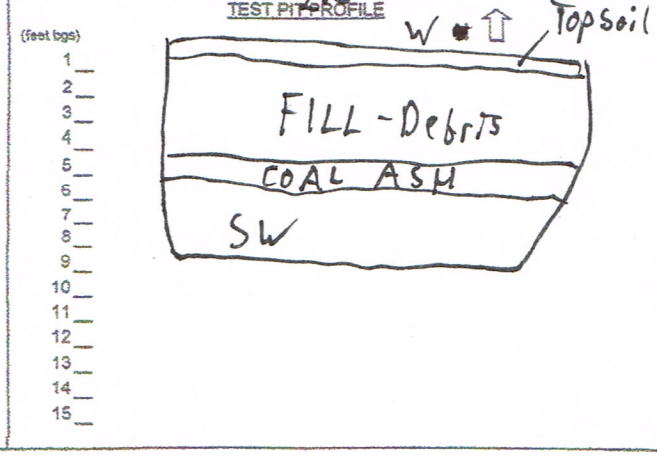
TEST PIT PLAN



BOULDER COUNT
6 in-12 in:
12 in-18 in:
18 in-24 in:
24 in-30 in:

DESCRIPTION
and : 35 to 50 %
some : 20 to 35 %
little : 10 to 20 %
trace : 1 to 10 %

TEST PIT PROFILE



EXCAVATION EFFORT
E : Easy
M : Moderate
D : Difficult

Remarks:

Appendix C
Field Log Book

CONTENTS

PAGE	REFERENCE	DATE
3-5	Geophysical Survey / Site Walk	12/3/12
6		

"Rite in the Rain®"
ALL-WEATHER WRITING PAPER

ALL-WEATHER
FIELD BOOK

Name CDM Smith
Attn: Morgan Brunbauer
Address 14 Wall Street Suite 1702
New York, New York 10005
Phone 212 377 4404

Project Sea Cliff - Targeted Brownfields

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book:

Page Pattern		Cover Options	
Left Page	Right Page	Polydura Cover	Fabrikoid Cover
Columnar	1/4" Grid	Item No. 350N	Item No. 350NF

Table of Contents (continued)

12/3/12

Sea Cliff - Targeted Brownfields Site

-0800 - M. Brunbauer (CDM Smith) arrives onsite

Task - Sea Cliff Geophysical, site Recon, wait for delivery of sampling supplies

Staff - M. Brunbauer (CDM Smith)
Matt Dilenno (Delta)
Saeid (Property Owner)

Weather - Sunny, upper 50's, no wind

-0805 - Go over site health and Safety plan with Matt

0810 - Site walk and Recon
- Many piles of debris, branches throughout the site, large soil piles along the top of the slope facing Prospect Ave
- Base of hill at Prospect Ave Not cleared cannot do Geophysical along this section
- Not safe access to pit location cannot preform Geophysical survey in this area

0900 - Magnitometer used first along clear sections of site

12/3/12

12/3/12

Sea Cliff - Targeted Brownfields Site

- No major anomalies except for two areas west of fence separating Abandoned house and other property
- RD-7000 picks up same anomalies

t935 - Drew Lawrence from Village of Sea Cliff (Superintendent of Buildings) arrives onsite to check out days activities
- Would like to be notified once work starts

1000 - GPR Scans of site are preformed
- shows two anomalies are most likely areas where removals occured
- Large sewer and water lines run from Woodridge road toward prospect Ave on the Southern side of the property
- Underground tank (most likely for home heating oil) on front property of 341 woodridge road.

12/3/12

12/3/12

Sea Cliff - Targeted Brownfields Site

1045 - POD # 1 arrives, John from Zebra arrives, Site walk
1130 - Village of Sea Cliff / Nassau County Public Safety arrives to ask why we are in the neighborhood
1230 - Geophysical survey completed on site
- Pine Environmental delivers Plastic Spoons, gloves, and log books
- Pans, glove liners, and Steady Coolers are placed in POD from 34 Woodridge Rd

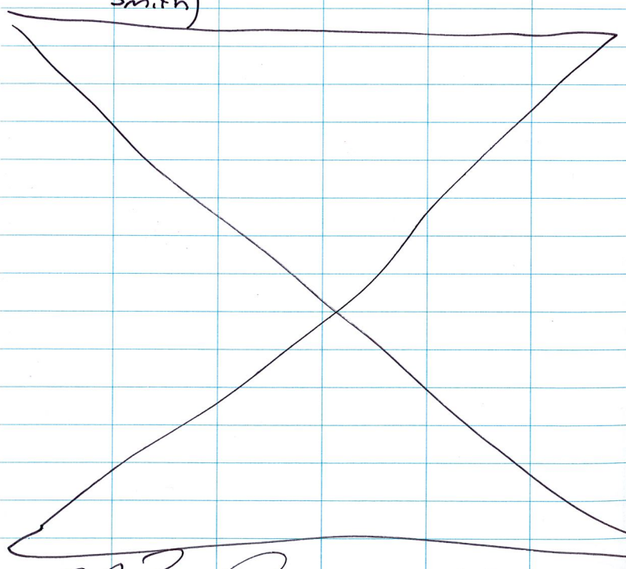
1300 - Place test pit markers on site, finish taking site photos
1445 - POD # 2 arrives, All gates PODs taken
1535 - M. Bronbaver leaves site
* All pictures are on server from day's activities

12/3/12

12/4/12

Sea Cliff - Targeted Brownfields Site

0730 - M. Brunbauer (CDM Smith) arrives onsite
Task: Wait for arrival of supplies from Fedex
Staff: M. Brunbauer (CDM Smith)
Weather: Rain, mid 50's, no wind
0800 - ULine supplies arrive from Fedex
0520 - ESS supplies do not arrive
- M. BRUNBAUER offsite (CDM Smith)

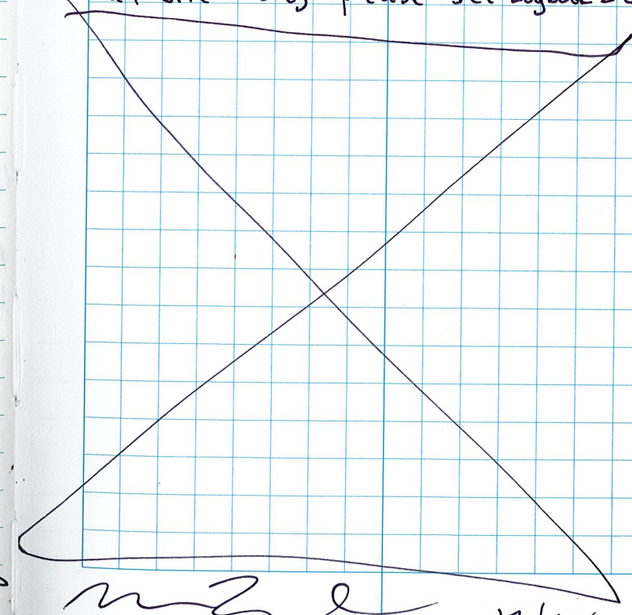


12/4/12

12/10/12

Sea Cliff - Targeted Brownfields site

0645 - M. BRUNBAUER (CDM Smith) arrives onsite
Staff: T. Tomaselli, M. Brunbauer - (CDMS)
Weather: Mid 50's, Foggy, chance of rain
Task: Test pit excavation at Sea Cliff TBA
PPE: Level D
FOR all site notes please see Logbook #2



12/10/12

Location _____ Date _____

Project / Client _____

_____

Table of Contents

Page	Sampled Test Pits - December 2012
7	TP-103, TP-104, TP-105
10	TP-106, TP-107, TP-113
13	TP-110, TP-108, TP-109
15	TP-112, TP-114, return to TP-104
17	Backhoe operator absent
18	TP-100, TP-101, TP-102, return to TP-105
20	TP-111, TP-115, TP-116
22	TP-117, TP-118, GPS survey
26	Demob

Location _____ Date _____

Project / Client _____

_____ _____ Scale

Table of Contents

Location _____ Date _____

Project / Client _____

Table of Contents

Location Sea Cliff, NY Date 12/10/12

Project / Client Sea Cliff TBA / EPA

Scale

Personnel: Travis Tomaselli, Morgan Brunbauer, Tonya Bennett, Jose and Quincy (Zebra)
Task: Test Pit Fill Delineation
Weather - Cloudy, 50°F
PPE - Level D

0630 - TT, MB arrive on site, unload supplies
0710 - TT calibrates Multirae's

Pine ID = 007584

Reading	Fresh Air	Multigas	Iso	Pass?
CO	0	50	-	Y
VOC	0.1	-	98.8	Y
H_2S	0	25	-	Y
LEL	0	49	-	Y
O_2	20.9	20.9	-	Y

Pine ID = 006509

Reading	Fresh Air	Multigas	Iso	Pass
CO	0	50	-	Y
VOC	0.0	-	98.9	Y
H_2S	0	24	-	Y
LEL	0	49	-	Y
O_2	20.9	20.9	-	Y

0800 - poured field blank
0915 - Tonya Bennett on site, Zebra Environmental on site (Quincy and Jose)
0930 - Backhoe unloaded.
0945 - Jose clears TP location located in pit.
1030 - set up at TP-103
1055 - TP-103-SS - sample time

Location Sea Cliff, NY Date 12/10/12

Project / Client Sea Cliff, TBA EPA

TP-103 11[2]00 - TP-103-B-sample time
1130 - TP-103-N - sample time
1150 - TP-103-E - sample time
1200 - TP-103-S - sample time
1140 - TP-103-W - sample time
1150 - TP-103-E - Sample time
1200 - TP-103-S - Sample time
1210 - Backfill TP-103 and decon bucket
1215 - Samples put on ice
1320 set up at TP-105
1340 TP-105-SS sample time
1355 TP-105-B Sample time
1405 TP-105-N Sample time
1415 TP-105-S Sample time
1425 TP-105-W Sample time
1435 TP-105-E Sample time
1440 Backfill TP-105 and decon bucket
1445 Samples put on ice
1450 set up at TP-104
1455 TP-104-SS Sample time
1505 TP-104-B Sample time
1515 TP-104-W Sample time
1525 TP-104-S Sample time

12/10/12

* 1345 - also collected TP-105-TR

Location Sea Cliff, NY Date 12/10/12

Project / Client Sea Cliff, TBA EPA

Scale

1535 TP-104-E Sample time
1545 TP-104-N sample time
1550 Back fill TP-104, Decon Bucket
1600 Samples put on ice
1615 Sample Management & Packing
1730 ⊼, MB offsite

12/10/12

Location Sea Cliff, NY Date 12/11/12

Project / Client Sea Cliff, TBA EPA

Personnel - TT, MB, Jose and Quincy (Zebra)

Task - Test Pit Fill Delineation

Weather - rainy, 40°F

PPE - Level D

0700 - TT, MB onsite

0715 - TT Calibrate PID

Pine ID: 007584

Reading	Fresh Air	Multigas	Iso.	Pass?
CO	0	49	-	Y
VOC	0.1	-	100	Y
H_2S	0	25	-	Y
LEL	0	49	-	Y
O_2	20.9	20.9	-	Y

Calibration Standards

Precision multigas mixture

CO - 50PPM, LEL = 50%, H2S = 25PPM

O_2 = 20.9%

Lot # = IAM-412-15

Exp. Date = 11/25/2013

Portacyl Isobutylene

Iso - 100PPM

Lot# 0221FA12

Exp. 03/2016

0800 - prepare bottle sets for sampling —

TT 12/11/12

Location Sea Cliff, NY Date 12/11/12

Project / Client Sea Cliff, TBA EPA

Scale

0830 - set up on TP-106

0845 - TP-106-SS sample time & dupe (906)

0900 - TP-106-CA sample time

0905 - TP-106-B sample time

0910 - TP-106-TR sample time

0915 - TP-106-E sample time

0925 - TP-106-S sample time

0935 - TP-106-W sample time

0945 - TP-106-N sample time

0955 - Backfill TP-106 and decon bucket

1000 - Samples put on ice

1030 - set up on TP-107

1045 - TP-107-SS sample time

1125 - TP-107-B sample time

1135 - TP-107-CA sample time

1140 - TP-107-N sample time

1145 - TP-107-E sample time

1150 - TP-107-S sample time

1200 - TP-107-W sample time

1210 - Backfill TP-107 and decon bucket

1215 - Samples put on ice

1330 - set up on TP-113

1345 - TP-113-SS sample time

1355 - TP-113-B sample time

1450 - TP-113-N sample time

1500 - TP-113-E sample time

1510 - TP-113-S sample time

1530 - TP-113-W sample time

1540 - TP-113-CA sample time

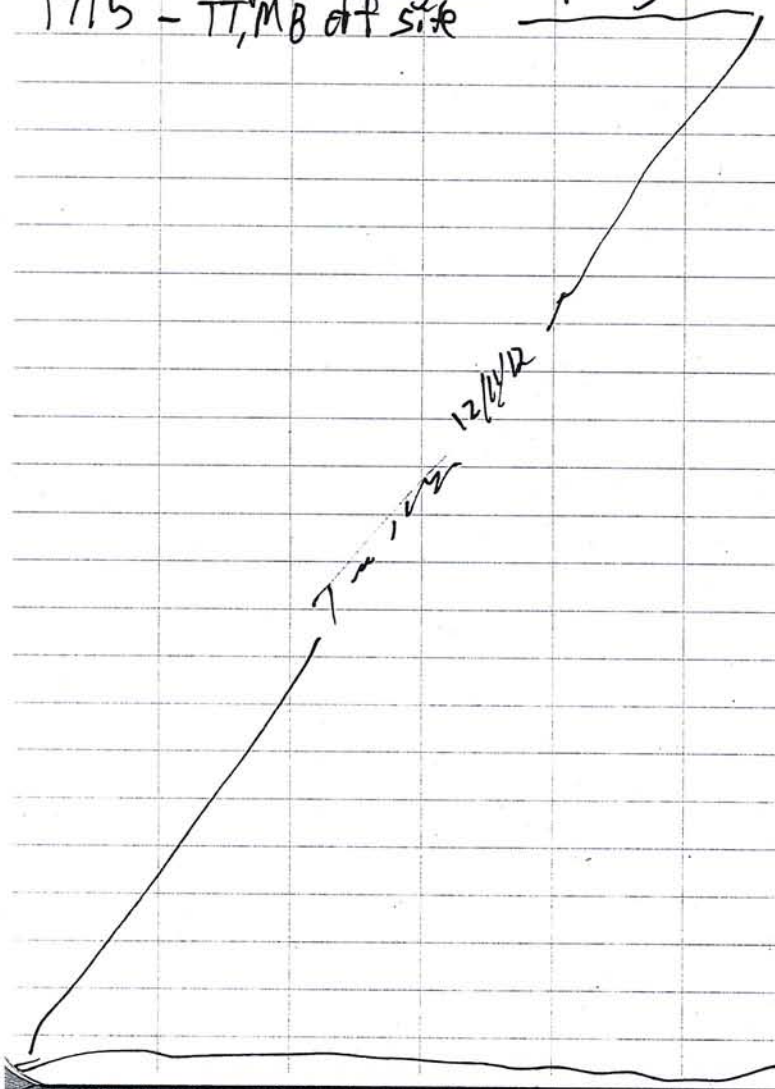
1550 - Back fill TP-113 and decon bucket —

TT 12/11/12

Location Sea Cliff, NY Date 12/11/12

Project / Client Sea Cliff TBA EPA

1600 - Samples put on ice
1630 - Sample management & packing
1715 - TT, MB off site



Location Sea Cliff NY Date 12/12/12

Project / Client Sea Cliff TBA EPA

Scale

Personnel - TT, MB, Jose and Luke (Zebra)
Task - Test pit delineation - Fill
Weather - clear, 35°F
PPE - Level D
0700 - TT, MB on site
0715 - TT calibrates PID
Pine ID: 007584

Reading	Fresh air	Multigas	Iso.	Pass?
CO	0	50	-	Y
VOC	0	-	98.8	Y
H_2S	0	24	-	Y
LEL	0	49	-	Y
O_2	20.9	20.9	-	Y

0800 - Set up on TP-110
0830 - TP-110-SS sample time
0845 - TP-110-B sample time *MS/MSD
0855 - TP-110-N sample time
0900 - TP-110-E sample time
0905 - TP-110-S sample time
0910 - TP-110-W sample time
0915 - TP-110-CA sample time
0930 - Backfill TP-110 and decon bucket
0940 - Put samples on ice
1040 - Set up on TP-108
1100 - TP-108-SS sample time
1135 - TP-108-CA sample time
1145 - TP-108-B sample time
1155 - TP-108-N sample time

12/12/12

Location Sea Cliff, NY Date 12/12/12

Project / Client Sea Cliff TBA EPA

1205 - TP-108-E sample time
1215 - TP-108-S sample time
1225 - TP-108-W sample time
1235 - Backfill test pit and decon. bucket
1240 - put samples on ice
1315 - Setup on TP-109
1330 - TP-109-SS sample time
1345 - TP-109-CA sample time
1400 - TP-109-B sample time
1410 - TP-109-N sample time
1420 - TP-109-E sample time
1430 - TP-109-S sample time
1440 - TP-109-W sample time
1450 - backfill TP-109 and decon bucket
1500 - put samples on ice
1530 - pack coolers and sample management
1630 - TT, MB offsite

TT 12-12-12

Location Sea Cliff, NY Date 12/13/12

Project / Client Sea Cliff, TBA EPA

Scale

Personnel - TT, MB, Matt (Delta), Jose (Zebra)
Task - Test Pit Fill Delineation Luke (Zebra)
Weather - Clear, 35°F
PPE - Level D
0700 - TT, MB onsite
0730 - TT calibrate PID
Pine ID 006509

Reading	Fresh Air	Multigas	Iso.	Pass?
CO	0	49	-	Y
VOC	0.0	-	99.9	Y
H_2S	0	25	-	Y
LEL	0	49	-	Y
O_2	20.9	20.9	-	Y

0800 - Setup on TP-112
0815 - Tonya Bennett onsite
0830 - TP-112-SS and dupe sample time
0850 - TP-112-B sample time
0900 - TP-112-N sample time
0910 - TP-112-E sample time
0920 - TP-112-S sample time
0930 - TP-112-W sample time
0935 - Backfill TP-112 and decon bucket
0940 - Samples put on ice
1000 - prepare new bottle sets
1030 - Setup on TP-114
1100 - TP-114-SS sample time

TT 12/13/12

Location Sea Cliff, NY Date 12/13/12

Project / Client Sea Cliff, TBA EPA

1110 - TP-114-FL sample time
1120 - Testpit extended northwest to attempt to reach Coal Ash at wall of pit, unsuccessful, continue digging down
1140 - TP-114-B sample time
1150 - TP-114-N sample time
1200 - TP-114-E sample time
1210 - TP-114-S sample time
1220 - TP-114-W sample time
1230 - Backfill TP-114 and decon bucket.
1235 - put samples on ice
1300 - MB and TB start processing sidewall samples for: TP-103-N, TP-104-N, TP-106-CA, TP-106-S, TP-112-B, TP-112-E, TP-112-S, TP-113-E, TP-114-B, TP-114-CA, TP-114-CA-E, TP-107-CA, TP-107-W, TP-108-CA, TP-109-CA, TP-109-S, TP-114-FL
1340 - Return to TP-104 to dig deeper to attempt to delineate fill. Unsuccessful, fill continues to at least 14.5 ft bgs, extent of backhoe
1400 - bottom sample TP-104-BR collected
1410 - TP-104-TR sample time
1415 - TP-104 backfilled and decon bucket
1500 - TT, MB, TB process and pack samples
1700 - TT, MB, TB offsite

TT 12/13/12

Location Sea Cliff, NY Date 12/14/12

Project / Client Sea Cliff, TBA EPA

Scale

- Personnel - TT, MB, Luke (Zebra)
Task - Test pit fill delineation
Weather - Clear, 40°F
PPE - Level D
0845 - TT, MB onsite
0900 - TT calibrates PID
Pine ID: 007584

Reading	Fresh Air	Multigas	Iso	Pass
CO	0	50	—	Y
VOC	0	—	99.3	Y
H_2S	0	24	—	Y
LEL	0	50	—	Y
O_2	20.9	20.9	—	Y

0930 - TT, MB prepare bottleware for event
1000 - TT, MB conduct walk through of site recently cleared by geophysical survey, ready for next week
1030 - Luke (Zebra) onsite, waiting for Jose (Zebra) to arrive from AM personal matter
1115 - set up on TP-111
1130 - Luke calls Jose, Jose stuck at personal engagement, will be late
1135 - Luke calls Zebra, no backhoe operator replacement available
1140 - MB calls Mel Koberle, need to postpone work until Monday 12/17/12
1145 - TT, MB offsite

TT 12/14/12

Location Sea Cliff, NY Date 12/17/12

Project / Client Sea Cliff, TBA EPA

Personnel - TT, MB, Jose (Zebra), Luke (Zebra), Wilver (Zebra)

Task - Fill delineation

Weather - Cloudy, 40°F

PPE - Level D

0700 - TT, MB onsite

0715 - TT calibrates PID

Reading	Fresh Air	Im/Hi gas	Iso	Pass
CO	0	49	—	Y
VOC	0	—	99.1	Y
H_2S	0	24	—	Y
LEL	0	50	—	Y
O_2	20.9	20.9	—	Y

0800 - Zebra crew sets up backhoe and traffic control on road and sets up at TP-100

0845 - TP-100-SS sample time

0850 - TP-100-B sample time

0855 - TP-100-N sample time

0900 - TP-100-E sample time

0905 - TP-100-S sample time

0910 - TP-100-W sample time

0915 - backfill TP-100 and decon bucket

0920 - Samples on ice

0925 - Setup on TP-101

TT 12/17/12

Location Sea Cliff, NY Date 12/17/12

Project / Client Sea Cliff, TBA EPA

Scale

0935 - TP-101-SS Sample time

0945 - TP-101-B sample time

0950 - TP-101-N sample time

0955 - TP-101-E Sample time

1000 - TP-101-S Sample time

1005 - TP-101-W sample time

1015 - TP-101 backfill and decon bucket

1025 - Samples on ice

1030 - Set up on TP-102

1045 - TP-102-SS sample time

1055 - TP-102-B Sample time

1100 - TP-102-N sample time

1105 - TP-102-E Sample time

1110 - TP-102-S sample time

1115 - TP-102-W sample time

1120 - Backfill TP-102 and decon bucket

1125 - Samples on ice

1330 - set up on TP-105 to further delineate fill.

1345 - dig to 14.5 feet (extent of bucket) without reaching native material

1400 - TP-105-BR sample time

1405 - backfill TP-105 and decon bucket.

1410 - Sample on ice

1430 - TT, MB process samples and pack coolers

1615 - TT, MB offsite

TT 12/17/12

Location Sea Cliff Date 12/18/12

Project / Client Sea Cliff, TBA EPA

Personnel - TT, MB, Jose (Zebra), Wilver (Zebra)
Task - Test Pit Fill delineation
Weather - Cloudy, 50°F
PPE - Level D
0700 - TT, MB onsite
0715 - TT calibrates PID

Reading	Fresh Air	Multigas	Iso	Pass
CO	0	50	-	Y
VOC	0	-	99.6	Y
H_2S	0	25	-	Y
LEL	0	49	-	Y
O_2	20.9	20.9	-	Y

0800 - Jose, Wilzer (Zebra) onsite
0830 - set up at TP-111
0850 - TP-111-SS sample time
0900 - TP-111-B sample time
0905 - TP-111-S sample time
0910 - TP-111-W sample time
0915 - TP-111-N Sample time
0920 - TP-111-E sample time
0925 - TP-111-CA sample time
0930 - Backfill TP-111 and decon bucket
0935 - samples put on ice
0950 - Need to put TP-115 on eastside of

Location Sea Cliff Date 12/18/12

Project / Client Sea Cliff, TBA EPA

Scale

fence by house. MB talks to Saeid, to ask about moving fence to access pit. Saeid, said we can unclip fence today and he will reclip it together later this week.
1100 - set up on TP-115
1130 - TP-115-SS sample time
1200 - TP-115-B sample time
1210 - TP-115-FL sample time
1215 - TP-115-W Sample time
1220 - TP-115-E sample time
1225 - TP-115-S sample time
1230 - TP-115-N sample time
1235 - Backfill test pit and decon bucket
1240 - put samples on ice
1315 - Set up on TP-116
1330 - TP-116-SS sample time
1400 - TP-116-B sample time
1410 - TP-116-CA
1415 - TP-116-N
1420 - TP-116-E
1425 - TP-116-S
1430 - TP-116-W
1435 Backfill TP-116 and decon bucket
1440 - put samples on ice
1500 - Sample management & cooler packing
1630 - TT, MB offsite

TT 12/18/12

Location Sea Cliff, NY Date 12/19/12

Project / Client SeaCliff, TBA EPA

Personnel - TT, MB, TB, Jose(Zebra), Wilver(Zebra)
Task - Test Pit Fill delineation
Weather - clear 35°F
PPE - Level D
0700 - TT, MB onsite
0715 - TT calibrates PIDs

ID# 07584

Reading	Fresh Air	Multigas	Iso	Pass
CO	0	50	-	Y
VOC	0	-	99.9	Y
H_2S	0	25	-	Y
LEL	0	49	-	Y
O_2	20.9	20.9	-	Y

ID# 006509

Reading	Fresh Air	Multigas	Iso	Pass
CO	0	49	-	Y
VOC	0	-	99.6	Y
H_2S	0	25	-	Y
LEL	0	49	-	Y
O_2	20.9	20.9	-	Y

0730 - Jose, Wilver(Zebra) onsite
0745 - setup on TP 118
0800 - TP-118-SS sample time - MS/MSD
0835 - TP-118-B Sample time - duplicate

TT 12/19/12

Location Sea Cliff, NY Date 12/19/12

Project / Client Sea Cliff, TBA EPA

Scale

0840 - TP-118 - CA sample time
0850 - TP-118 - N sample time
0855 - TP-118 - E sample time
0900 - TP-118 - S sample time
0905 - TP-118 - W sample time
0910 - back fill Test pit and decon bucket
0915 - samples put on ice
1015 - set upon of TP-118
1020 - Jose notices backhoe bucket is crooked and pin holding it together is missing.
1100 - Jose calls Zebra and calls his Backhoe subcontractor to discuss options
1115 - Backhoe Sub contractor will deliver replacement backhoe within 2 hours and take broken one.
1130 - Start labeling bottle ware samples
1200 - MB, TT collect GPS points for all 19 TPs
1240 - TT collect stakes
1300 - Continue with sample management, bagging ice, organizing coolers.

GPS points table - NYSP-LI-ft

TP#	GPS#	Northing	Easting
100	17	74910.14	329282.32
101	18	74894.52	329284.30
102	19	74871.69	329282.33

TT 12/19/12

Location Sea Cliff, NY Date 12/19/12

Project / Client Sea Cliff, TBA EPA

TP#	GPS#	Northing	Easting	
103	5	74903.65	3293 ~~82.32~~	13.33
104	6	74881.61	3292 ~~84.30~~	11.93
105	7	74866.57	3293 ~~82.33~~	10.21
106	8	74850.37	3293 ~~13.33~~	09.91
107	9	74835.83	3293 11.78	
108	14	74816.69	3293 11.26	
109	16	74799.74	3293 33.72	
110	13	74822.51	3293 15.43	
111	3	74858.51	3293 33.66	
112	1	74881.19	3293 68.56	
113	10	74835.67	3293 20.59	
114	12	74815.91	3293 39.62	
115	2	74869.02	3293 42.23	
116	4	74845.20	3293 41.10	
117	11	74840.51	3293 27.99	
118	15	74803.51	3293 21.24	

1400- list of sidewall samples:
TP-100-N, TP-101-W, TP-102-S
TP-111-CA, TP-111-N, TP-115-W
TP-116-CA, TP-116-E, TP-117-B,
TP-117-CA

1445- new backhoe arrives

1500- setup on TP-118

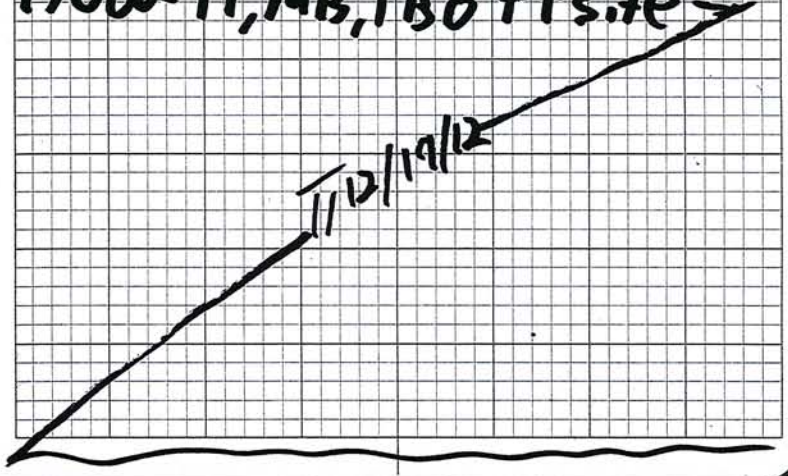
~~~ # 12/19/12 ~~~

Location Sea Cliff, NY Date 12/19/12

Project / Client Sea Cliff, TBA EPA

Scale

1510-TP-118-SS sample time
1530-TP-118-FL sample time
1540-TP-118-B sample time
1545-TP-118-CA sample time
1550-TP-118-S sample time
1555-TP-118-W sample time
1600-TP-118-N sample time
1605-TP-118-E sample time
1610- Backfill TP and clean.
1615- samples on ice
1625- pack up and prep for tomorrow, sample management
1700- TT, MB, TBO to ffs.ite


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Location Seacliff NY Date 12/20/12

Project / Client Seacliff, TBA EPA

Personnel - MB, TI
Task - Pack TP-118 samples, demob
Weather - Clear, 35°
PPE - Level D
0700 - TI, MB onsite
0715 - sample management & packing for TP-118
0815 - Pack up all equipment and check site,
0900 - TI, MB offsite
1045 - TI, MB arrive at warehouse, demob all equipment
1200 - TI, MB off of job.

TI 12/20/12

Location _____ Date _____

Project / Client _____

_____ Scale _____

Appendix D
Analytical Data Tables

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-100		
Sample ID				TP-100-SS	TP-100-N	TP-100-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (North Wall)	1.5 to 2 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)						
1,1,1-Trichloroethane	637,450	100,000	680	17 U	5 U	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	17 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	17 U	5 U	5 U
1,1,2-Trichloroethane	160	NL	NL	17 U	5 U	5 U
1,1-Dichloroethane	3,300	26,000	270	17 U	5 U	5 U
1,1-Dichloroethene	24,000	100,000	330	17 U	5 U	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	17 R	5 U	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	17 R	5 U	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	17 R	5 U	5 U
1,2-Dibromoethane	34	NL	NL	17 U	5 U	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	17 R	5 U	5 U
1,2-Dichloroethane	430	3,100	20	17 U	5 U	5 U
1,2-Dichloropropane	940	NL	NL	17 U	5 U	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	17 R	5 U	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	17 R	5 U	5 U
1,4-Dioxane	4,900	13,000	100	340 R	110 R	95 R
2-Butanone	2,800,000	100,000	NL	34 U	11 U	10 U
2-Hexanone	21,000	NL	NL	34 U	11 U	10 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	34 U	11 U	10 U
Acetone	6,100,000	100,000	50	34 U	11 U	10 U
Benzene	1,100	4,800	60	17 U	5 U	5 U
Bromochloromethane	16,000	NL	NL	17 U	5 U	5 U
Bromodichloromethane	270	NL	NL	17 U	5 U	5 U
Bromoform	62,000	NL	NL	17 R	5 U	5 U
Bromomethane	730	NL	NL	17 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-100		
Sample ID				TP-100-SS	TP-100-N	TP-100-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (North Wall)	1.5 to 2 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	17 U	5 U	5 U
Carbon tetrachloride	610	2,400	760	17 U	5 U	5 U
Chlorobenzene	29,000	100,000	1,100	17 U	5 U	5 U
Chloroethane	1,500,000	NL	NL	17 U	5 U	5 U
Chloroform	290	49,000	370	17 U	5 U	5 U
Chloromethane	12,000	NL	NL	17 U	5 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	17 U	5 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	17 U	5 U	5 U
Cyclohexane	117,000	NL	NL	2 J	5 U	5 U
Dibromochloromethane	680	NL	NL	17 U	5 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	17 U	5 U	5 U
Ethylbenzene	5,400	41,000	1,000	17 U	5 U	5 U
Isopropylbenzene	259,098	NL	NL	17 U	5 U	5 U
m,p-Xylene	59,000	100,000	260	17 U	5 U	5 U
Methyl acetate	7,800,000	NL	NL	17 U	5 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	17 U	5 U	5 U
Methylcyclohexane	NL	NL	NL	17 U	5 U	5 U
Methylene chloride	36,000	100,000	50	17 U	5 U	5 U
o-Xylene	69,000	100,000	260	17 U	5 U	5 U
Styrene	822,434	NL	NL	17 U	5 U	5 U
Tetrachloroethene	8,600	19,000	1,300	17 U	5 U	5 U
Toluene	723,996	100,000	700	17 U	5 U	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	17 U	5 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	17 U	5 U	5 U
Trichloroethene	440	21,000	470	17 U	5 U	5 U
Trichlorofluoromethane	79,000	NL	NL	17 U	5 U	5 U
Vinyl chloride	60	900	20	17 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-100		
Sample ID				TP-100-SS	TP-100-N	TP-100-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (North Wall)	1.5 to 2 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
1,1'-Biphenyl	5,100	NL	NL	8,000 U	210 UJ	180 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	8,000 U	210 UJ	180 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	8,000 U	210 UJ	180 U
2,4,5-Trichlorophenol	610,000	NL	NL	8,000 U	210 UJ	180 U
2,4,6-Trichlorophenol	6,100	NL	NL	8,000 U	210 UJ	180 U
2,4-Dichlorophenol	18,000	NL	NL	8,000 U	210 UJ	180 U
2,4-Dimethylphenol	120,000	NL	NL	8,000 U	210 UJ	180 U
2,4-Dinitrophenol	12,000	NL	NL	16,000 U	420 UJ	360 U
2,4-Dinitrotoluene	1,600	NL	NL	8,000 U	210 UJ	180 U
2,6-Dinitrotoluene	6,100	NL	NL	8,000 U	210 UJ	180 U
2-Chloronaphthalene	630,000	NL	NL	8,000 U	210 UJ	180 U
2-Chlorophenol	39,000	NL	NL	8,000 U	210 UJ	180 U
2-Methylnaphthalene	23,000	NL	NL	8,000 U	210 UJ	180 U
2-Methylphenol	310,000	100,000	330	8,000 U	210 UJ	180 U
2-Nitroaniline	61,000	NL	NL	16,000 U	420 UJ	360 U
2-Nitrophenol	NL	NL	NL	8,000 U	210 UJ	180 U
3,3'-Dichlorobenzidine	1,100	NL	NL	8,000 U	210 UJ	180 U
3-Nitroaniline	NL	NL	NL	16,000 U	420 UJ	360 U
4,6-Dinitro-2-methylphenol	490	NL	NL	16,000 U	420 UJ	360 U
4-Bromophenyl-phenylether	NL	NL	NL	8,000 U	210 UJ	180 U
4-Chloro-3-methylphenol	610,000	NL	NL	8,000 U	210 UJ	180 U
4-Chloroaniline	2,400	NL	NL	8,000 U	210 UJ	180 U
4-Chlorophenyl-phenylether	NL	NL	NL	8,000 U	210 UJ	180 U
4-Methylphenol	610,000	100,000	330	8,000 U	210 UJ	180 U
4-Nitroaniline	24,000	NL	NL	16,000 U	420 UJ	360 U
4-Nitrophenol	NL	NL	NL	16,000 U	420 UJ	360 U
Acenaphthene	340,000	100,000	20,000	8,000 U	210 UJ	180 U
Acenaphthylene	340,000	100,000	100,000	8,000 U	210 UJ	180 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-100		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-100-SS	TP-100-N	TP-100-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (North Wall)	1.5 to 2 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	8,000 U	210 UJ	180 U
Anthracene	1,700,000	100,000	100,000	8,000 U	210 UJ	180 U
Atrazine	2,100	NL	NL	8,000 U	210 UJ	180 U
Benzaldehyde	780,000	NL	NL	8,000 U	210 UJ	180 U
Benzo(a)anthracene	150	**1,000**	*1,000*	8,000 U	13 J	180 U
Benzo(a)pyrene	15	1,000	1,000	8,000 U	11 J	180 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	460 J	20 J	180 U
Benzo(g,h,i)perylene	170,000	100,000	100,000	8,000 U	210 UJ	180 U
Benzo(k)fluoranthene	1,500	3,900	800	8,000 U	210 UJ	180 U
Bis(2-chloroethoxy)methane	18,000	NL	NL	8,000 U	210 UJ	180 U
Bis(2-chloroethyl)ether	210	NL	NL	8,000 U	210 UJ	180 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	8,000 U	210 UJ	180 U
Butylbenzylphthalate	260,000	NL	NL	8,000 U	210 UJ	180 U
Caprolactam	3,100,000	NL	NL	8,000 U	210 UJ	180 U
Carbazole	NL	NL	NL	8,000 U	210 UJ	180 U
Chrysene	15,000	3,900	*1,000*	330 J	14 J	180 U
Dibenzo(a,h)anthracene	15	330	330	8,000 U	210 UJ	180 U
Dibenzofuran	7,800	NL	NL	8,000 U	210 UJ	180 U
Diethylphthalate	4,900,000	NL	NL	8,000 U	210 UJ	180 U
Dimethylphthalate	NL	NL	NL	8,000 U	210 UJ	180 U
Di-n-butylphthalate	610,000	NL	NL	8,000 U	210 UJ	180 U
Di-n-octylphthalate	73,000	NL	NL	8,000 U	210 UJ	180 U
Fluoranthene	230,000	100,000	100,000	520 J	21 J	180 U
Fluorene	230,000	100,000	30,000	8,000 U	210 UJ	180 U
Hexachlorobenzene	300	NL	NL	8,000 U	210 UJ	180 U
Hexachlorobutadiene	6,100	NL	NL	8,000 U	210 UJ	180 U
Hexachlorocyclopentadiene	37,000	NL	NL	8,000 U	210 UJ	180 U
Hexachloroethane	4,300	NL	NL	8,000 U	210 UJ	180 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	8,000 U	11 J	180 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-100		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-100-SS	TP-100-N	TP-100-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (North Wall)	1.5 to 2 ft bgs (Bottom)
Isophorone	510,000	NL	NL	8,000 U	210 UJ	180 U
Naphthalene	3,600	100,000	12,000	8,000 U	210 UJ	180 U
Nitrobenzene	4,800	15,000	NL	8,000 U	210 UJ	180 U
N-Nitroso-di-n-propylamine	69	NL	NL	8,000 U	210 UJ	180 UJ
N-Nitrosodiphenylamine	99,000	NL	NL	8,000 U	210 UJ	180 U
Pentachlorophenol	890	6,700	800	16,000 U	420 UJ	360 U
Phenanthrene	1,700,000	100,000	100,000	8,000 U	10 J	180 U
Phenol	1,800,000	100,000	330	8,000 U	210 UJ	180 U
Pyrene	170,000	100,000	100,000	420 J	20 J	180 U

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (November 2012) for resi
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropropene.
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives, http://www.
3. NYSDEC Subpart 375-6: Table 375-6.3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil Cleanup Objectives, http://www.dec.ny.gov/regs/15507.h
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that compound.
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Objective for that compound.
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protection Agency
NYSDEC = New York State Department of Environmental Conservation
ft = feet
µg/kg = microgram
NL = Not listed
bgs = below groun

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-101		
Sample ID				TP-101-SS	TP-101-W	TP-101-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (West Wall)	2 to 2.5 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)						
1,1,1-Trichloroethane	637,450	100,000	680	9 U	5 U	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	9 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	9 U	5 U	5 U
1,1,2-Trichloroethane	160	NL	NL	9 U	5 U	5 U
1,1-Dichloroethane	3,300	26,000	270	9 U	5 U	5 U
1,1-Dichloroethene	24,000	100,000	330	9 U	5 U	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	9 R	5 U	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	9 R	5 U	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	9 R	5 U	5 U
1,2-Dibromoethane	34	NL	NL	9 U	5 U	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	9 R	5 U	5 U
1,2-Dichloroethane	430	3,100	20	9 U	5 U	5 U
1,2-Dichloropropane	940	NL	NL	9 U	5 U	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	9 R	5 U	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	9 R	5 U	5 U
1,4-Dioxane	4,900	13,000	100	190 R	100 R	100 R
2-Butanone	2,800,000	100,000	NL	19 U	10 U	10 U
2-Hexanone	21,000	NL	NL	19 U	10 U	10 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	19 U	10 U	10 U
Acetone	6,100,000	100,000	50	19 U	10 U	10 U
Benzene	1,100	4,800	60	9 U	5 U	5 U
Bromochloromethane	16,000	NL	NL	9 U	5 U	5 U
Bromodichloromethane	270	NL	NL	9 U	5 U	5 U
Bromoform	62,000	NL	NL	9 R	5 U	5 U
Bromomethane	730	NL	NL	9 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-101		
Sample ID				TP-101-SS	TP-101-W	TP-101-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (West Wall)	2 to 2.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	9 U	5 U	5 U
Carbon tetrachloride	610	2,400	760	9 U	5 U	5 U
Chlorobenzene	29,000	100,000	1,100	9 U	5 U	5 U
Chloroethane	1,500,000	NL	NL	9 U	5 U	5 U
Chloroform	290	49,000	370	9 U	5 U	5 U
Chloromethane	12,000	NL	NL	9 U	5 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	9 U	5 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	9 U	5 U	5 U
Cyclohexane	117,000	NL	NL	1 J	5 U	5 U
Dibromochloromethane	680	NL	NL	9 U	5 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	9 U	5 U	5 U
Ethylbenzene	5,400	41,000	1,000	9 U	5 U	5 U
Isopropylbenzene	259,098	NL	NL	9 U	5 U	5 U
m,p-Xylene	59,000	100,000	260	9 U	5 U	5 U
Methyl acetate	7,800,000	NL	NL	9 U	5 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	9 U	5 U	5 U
Methylcyclohexane	NL	NL	NL	9 U	5 U	5 U
Methylene chloride	36,000	100,000	50	9 U	5 U	5 U
o-Xylene	69,000	100,000	260	9 U	5 U	5 U
Styrene	822,434	NL	NL	9 U	5 U	5 U
Tetrachloroethene	8,600	19,000	1,300	9 U	5 U	5 U
Toluene	723,996	100,000	700	9 U	5 U	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	9 U	5 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	9 U	5 U	5 U
Trichloroethene	440	21,000	470	9 U	5 U	5 U
Trichlorofluoromethane	79,000	NL	NL	9 U	5 U	5 U
Vinyl chloride	60	900	20	9 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-101		
Sample ID				TP-101-SS	TP-101-W	TP-101-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (West Wall)	2 to 2.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
1,1'-Biphenyl	5,100	NL	NL	5,600 U	220 UJ	210 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	5,600 U	220 UJ	210 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	5,600 U	220 UJ	210 U
2,4,5-Trichlorophenol	610,000	NL	NL	5,600 U	220 UJ	210 U
2,4,6-Trichlorophenol	6,100	NL	NL	5,600 U	220 UJ	210 U
2,4-Dichlorophenol	18,000	NL	NL	5,600 U	220 UJ	210 U
2,4-Dimethylphenol	120,000	NL	NL	5,600 U	220 UJ	210 U
2,4-Dinitrophenol	12,000	NL	NL	11,000 U	430 UJ	410 U
2,4-Dinitrotoluene	1,600	NL	NL	5,600 U	220 UJ	210 U
2,6-Dinitrotoluene	6,100	NL	NL	5,600 U	220 UJ	210 U
2-Chloronaphthalene	630,000	NL	NL	5,600 U	220 UJ	210 U
2-Chlorophenol	39,000	NL	NL	5,600 U	220 UJ	210 U
2-Methylnaphthalene	23,000	NL	NL	5,600 U	220 UJ	210 U
2-Methylphenol	310,000	100,000	330	5,600 U	220 UJ	210 U
2-Nitroaniline	61,000	NL	NL	11,000 U	430 UJ	410 U
2-Nitrophenol	NL	NL	NL	5,600 U	220 UJ	210 U
3,3'-Dichlorobenzidine	1,100	NL	NL	5,600 U	220 UJ	210 U
3-Nitroaniline	NL	NL	NL	11,000 U	430 UJ	410 U
4,6-Dinitro-2-methylphenol	490	NL	NL	11,000 U	430 UJ	410 U
4-Bromophenyl-phenylether	NL	NL	NL	5,600 U	220 UJ	210 U
4-Chloro-3-methylphenol	610,000	NL	NL	5,600 U	220 UJ	210 U
4-Chloroaniline	2,400	NL	NL	5,600 U	220 UJ	210 U
4-Chlorophenyl-phenylether	NL	NL	NL	5,600 U	220 UJ	210 U
4-Methylphenol	610,000	100,000	330	5,600 U	220 UJ	210 U
4-Nitroaniline	24,000	NL	NL	11,000 U	430 UJ	410 U
4-Nitrophenol	NL	NL	NL	11,000 U	430 UJ	410 U
Acenaphthene	340,000	100,000	20,000	5,600 U	220 UJ	210 U
Acenaphthylene	340,000	100,000	100,000	5,600 U	220 UJ	210 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-101		
Sample ID				TP-101-SS	TP-101-W	TP-101-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (West Wall)	2 to 2.5 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	5,600 U	220 UJ	210 U
Anthracene	1,700,000	100,000	100,000	5,600 U	12 J	210 U
Atrazine	2,100	NL	NL	5,600 U	220 UJ	210 U
Benzaldehyde	780,000	NL	NL	5,600 U	220 UJ	210 U
Benzo(a)anthracene	150	**1,000**	*1,000*	570 J	75 J	210 U
Benzo(a)pyrene	15	1,000	1,000	390 J	78 J	210 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	960 J	120 J	210 U
Benzo(g,h,i)perylene	170,000	100,000	100,000	5,600 U	31 J	210 U
Benzo(k)fluoranthene	1,500	3,900	800	350 J	35 J	210 U
Bis(2-chloroethoxy)methane	18,000	NL	NL	5,600 U	220 UJ	210 U
Bis(2-chloroethyl)ether	210	NL	NL	5,600 U	220 UJ	210 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	5,600 U	220 UJ	210 U
Butylbenzylphthalate	260,000	NL	NL	5,600 U	220 UJ	210 U
Caprolactam	3,100,000	NL	NL	5,600 U	220 UJ	210 U
Carbazole	NL	NL	NL	5,600 U	220 UJ	210 U
Chrysene	15,000	3,900	*1,000*	660 J	80 J	210 U
Dibenzo(a,h)anthracene	15	330	330	5,600 U	14 J	210 U
Dibenzofuran	7,800	NL	NL	5,600 U	220 UJ	210 U
Diethylphthalate	4,900,000	NL	NL	5,600 U	220 UJ	210 U
Dimethylphthalate	NL	NL	NL	5,600 U	220 UJ	210 U
Di-n-butylphthalate	610,000	NL	NL	5,600 U	220 UJ	210 U
Di-n-octylphthalate	73,000	NL	NL	5,600 U	220 UJ	210 U
Fluoranthene	230,000	100,000	100,000	1,000 J	140 J	210 U
Fluorene	230,000	100,000	30,000	5,600 U	220 UJ	210 U
Hexachlorobenzene	300	NL	NL	5,600 U	220 UJ	210 U
Hexachlorobutadiene	6,100	NL	NL	5,600 U	220 UJ	210 U
Hexachlorocyclopentadiene	37,000	NL	NL	5,600 U	220 UJ	210 U
Hexachloroethane	4,300	NL	NL	5,600 U	220 UJ	210 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	490 J	67 J	210 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-101		
Sample ID				TP-101-SS	TP-101-W	TP-101-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (West Wall)	2 to 2.5 ft bgs (Bottom)
Isophorone	510,000	NL	NL	5,600 U	220 UJ	210 U
Naphthalene	3,600	100,000	12,000	5,600 U	220 UJ	210 U
Nitrobenzene	4,800	15,000	NL	5,600 U	220 UJ	210 U
N-Nitroso-di-n-propylamine	69	NL	NL	5,600 U	220 UJ	210 UJ
N-Nitrosodiphenylamine	99,000	NL	NL	5,600 U	220 UJ	210 U
Pentachlorophenol	890	6,700	800	11,000 U	430 UJ	410 U
Phenanthrene	1,700,000	100,000	100,000	380 J	55 J	210 U
Phenol	1,800,000	100,000	330	5,600 U	220 UJ	210 U
Pyrene	170,000	100,000	100,000	880 J	120 J	210 U

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cdential soil, adjusted to cancer risk of 1E-6 and hazard c
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(adec.ny.gov/regs/15507.html#15513 (375). December14
3. NYSDEC Subpart 375-6: Table 375-6.: 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil Gtml#15513 (375). December14, 2006.
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protecti per kilogram
NYSDEC = New York State Department of E
ft = feet
d surface

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-102		
Sample ID				TP-102-SS	TP-102-S	TP-102-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (West Wall)	4 to 4.5 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)						
1,1,1-Trichloroethane	637,450	100,000	680	7 U	6 U	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	7 U	6 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	7 U	6 U	5 U
1,1,2-Trichloroethane	160	NL	NL	7 U	6 U	5 U
1,1-Dichloroethane	3,300	26,000	270	7 U	6 U	5 U
1,1-Dichloroethene	24,000	100,000	330	7 U	6 U	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	7 R	6 R	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	7 R	6 R	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	7 R	6 R	5 U
1,2-Dibromoethane	34	NL	NL	7 U	6 U	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	7 R	6 R	5 U
1,2-Dichloroethane	430	3,100	20	7 U	6 U	5 U
1,2-Dichloropropane	940	NL	NL	7 U	6 U	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	7 R	6 R	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	7 R	6 R	5 U
1,4-Dioxane	4,900	13,000	100	150 R	130 R	100 R
2-Butanone	2,800,000	100,000	NL	15 U	13 U	10 U
2-Hexanone	21,000	NL	NL	15 U	13 U	10 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	15 U	13 U	10 U
Acetone	6,100,000	100,000	50	15 U	13 U	10 U
Benzene	1,100	4,800	60	7 U	6 U	5 U
Bromochloromethane	16,000	NL	NL	7 U	6 U	5 U
Bromodichloromethane	270	NL	NL	7 U	6 U	5 U
Bromoform	62,000	NL	NL	7 R	6 R	5 U
Bromomethane	730	NL	NL	7 U	6 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-102		
Sample ID				TP-102-SS	TP-102-S	TP-102-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (West Wall)	4 to 4.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	7 U	6 U	5 U
Carbon tetrachloride	610	2,400	760	7 U	6 U	5 U
Chlorobenzene	29,000	100,000	1,100	7 U	6 U	5 U
Chloroethane	1,500,000	NL	NL	7 U	6 U	5 U
Chloroform	290	49,000	370	7 U	6 U	5 U
Chloromethane	12,000	NL	NL	7 U	6 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	7 U	6 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	7 U	6 U	5 U
Cyclohexane	117,000	NL	NL	7 U	6 U	5 U
Dibromochloromethane	680	NL	NL	7 U	6 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	7 U	6 U	5 U
Ethylbenzene	5,400	41,000	1,000	7 U	6 U	5 U
Isopropylbenzene	259,098	NL	NL	7 U	6 U	5 U
m,p-Xylene	59,000	100,000	260	7 U	6 U	5 U
Methyl acetate	7,800,000	NL	NL	7 U	6 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	7 U	6 U	5 U
Methylcyclohexane	NL	NL	NL	7 U	6 U	5 U
Methylene chloride	36,000	100,000	50	7 U	2 J	5 U
o-Xylene	69,000	100,000	260	7 U	6 U	5 U
Styrene	822,434	NL	NL	7 U	6 U	5 U
Tetrachloroethene	8,600	19,000	1,300	7 U	0 J	5 U
Toluene	723,996	100,000	700	7 U	6 UJ	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	7 U	6 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	7 U	6 U	5 U
Trichloroethene	440	21,000	470	7 U	6 U	5 U
Trichlorofluoromethane	79,000	NL	NL	7 U	6 U	5 U
Vinyl chloride	60	900	20	7 U	6 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-102		
Sample ID				TP-102-SS	TP-102-S	TP-102-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (West Wall)	4 to 4.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
1,1'-Biphenyl	5,100	NL	NL	7,300 U	410 UJ	970 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	7,300 U	410 UJ	970 UJ
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	7,300 U	410 UJ	970 U
2,4,5-Trichlorophenol	610,000	NL	NL	7,300 U	410 UJ	970 UJ
2,4,6-Trichlorophenol	6,100	NL	NL	7,300 U	410 UJ	970 UJ
2,4-Dichlorophenol	18,000	NL	NL	7,300 U	410 UJ	970 UJ
2,4-Dimethylphenol	120,000	NL	NL	7,300 U	410 UJ	970 U
2,4-Dinitrophenol	12,000	NL	NL	14,000 U	790 UJ	1,900 U
2,4-Dinitrotoluene	1,600	NL	NL	7,300 U	410 UJ	970 U
2,6-Dinitrotoluene	6,100	NL	NL	7,300 U	410 UJ	970 U
2-Chloronaphthalene	630,000	NL	NL	7,300 U	410 UJ	970 U
2-Chlorophenol	39,000	NL	NL	7,300 U	410 UJ	970 UJ
2-Methylnaphthalene	23,000	NL	NL	7,300 U	410 UJ	970 U
2-Methylphenol	310,000	100,000	330	7,300 U	410 UJ	970 U
2-Nitroaniline	61,000	NL	NL	14,000 U	790 UJ	1,900 U
2-Nitrophenol	NL	NL	NL	7,300 U	410 UJ	970 U
3,3'-Dichlorobenzidine	1,100	NL	NL	7,300 U	410 UJ	970 U
3-Nitroaniline	NL	NL	NL	14,000 U	790 UJ	1,900 U
4,6-Dinitro-2-methylphenol	490	NL	NL	14,000 U	790 UJ	1,900 U
4-Bromophenyl-phenylether	NL	NL	NL	7,300 U	410 UJ	970 U
4-Chloro-3-methylphenol	610,000	NL	NL	7,300 U	410 UJ	970 UJ
4-Chloroaniline	2,400	NL	NL	7,300 U	410 UJ	970 U
4-Chlorophenyl-phenylether	NL	NL	NL	7,300 U	410 UJ	970 U
4-Methylphenol	610,000	100,000	330	7,300 U	410 UJ	970 U
4-Nitroaniline	24,000	NL	NL	14,000 U	790 UJ	1,900 U
4-Nitrophenol	NL	NL	NL	14,000 U	790 UJ	1,900 U
Acenaphthene	340,000	100,000	20,000	7,300 U	410 UJ	970 U
Acenaphthylene	340,000	100,000	100,000	7,300 U	410 UJ	970 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-102					
Sample ID				TP-102-SS		TP-102-S		TP-102-B	
Sample Date				12/17/12		12/17/12		12/17/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)		3 to 3.5 ft bgs (West Wall)		4 to 4.5 ft bgs (Bottom)	
Acetophenone	780,000	NL	NL	7,300	U	410	UJ	970	U
Anthracene	1,700,000	100,000	100,000	7,300	U	20	J	970	U
Atrazine	2,100	NL	NL	7,300	U	410	UJ	970	U
Benzaldehyde	780,000	NL	NL	7,300	U	410	UJ	970	U
Benzo(a)anthracene	150	**1,000**	*1,000*	740	J	98	J	67	J
Benzo(a)pyrene	15	1,000	1,000	360	J	82	J	39	J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	***1,100***	***J***	110	J	87	J
Benzo(g,h,i)perylene	170,000	100,000	100,000	370	J	27	J	970	UJ
Benzo(k)fluoranthene	1,500	3,900	800	380	J	42	J	970	UJ
Bis(2-chloroethoxy)methane	18,000	NL	NL	7,300	U	410	UJ	970	U
Bis(2-chloroethyl)ether	210	NL	NL	7,300	U	410	UJ	970	U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	7,300	U	410	UJ	970	U
Butylbenzylphthalate	260,000	NL	NL	7,300	U	410	UJ	970	U
Caprolactam	3,100,000	NL	NL	7,300	U	410	UJ	970	U
Carbazole	NL	NL	NL	7,300	U	410	UJ	970	U
Chrysene	15,000	3,900	*1,000*	800	J	94	J	65	J
Dibenzo(a,h)anthracene	15	330	330	7,300	U	410	UJ	970	UJ
Dibenzofuran	7,800	NL	NL	7,300	U	410	UJ	970	U
Diethylphthalate	4,900,000	NL	NL	7,300	U	410	UJ	970	U
Dimethylphthalate	NL	NL	NL	7,300	U	410	UJ	970	U
Di-n-butylphthalate	610,000	NL	NL	7,300	U	410	UJ	970	U
Di-n-octylphthalate	73,000	NL	NL	7,300	U	410	UJ	970	U
Fluoranthene	230,000	100,000	100,000	1,400	J	160	J	99	J
Fluorene	230,000	100,000	30,000	7,300	U	410	UJ	970	U
Hexachlorobenzene	300	NL	NL	7,300	U	410	UJ	970	U
Hexachlorobutadiene	6,100	NL	NL	7,300	U	410	UJ	970	UJ
Hexachlorocyclopentadiene	37,000	NL	NL	7,300	U	410	UJ	970	U
Hexachloroethane	4,300	NL	NL	7,300	U	410	UJ	970	U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	***590***	***J***	59	J	45	J

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Analytical Soil Results - VOCs and SVOCs
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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-102		
Sample ID				TP-102-SS	TP-102-S	TP-102-B
Sample Date				12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (West Wall)	4 to 4.5 ft bgs (Bottom)
Isophorone	510,000	NL	NL	7,300 U	410 UJ	970 U
Naphthalene	3,600	100,000	12,000	7,300 U	410 UJ	970 U
Nitrobenzene	4,800	15,000	NL	7,300 U	410 UJ	970 U
N-Nitroso-di-n-propylamine	69	NL	NL	7,300 U	410 UJ	970 U
N-Nitrosodiphenylamine	99,000	NL	NL	7,300 U	410 UJ	970 U
Pentachlorophenol	890	6,700	800	14,000 U	790 UJ	1,900 UJ
Phenanthrene	1,700,000	100,000	100,000	510 J	79 J	970 U
Phenol	1,800,000	100,000	330	7,300 U	410 UJ	970 U
Pyrene	170,000	100,000	100,000	1,200 J	160 J	97 J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cquotient of 0.1.
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a), 2006.
3. NYSDEC Subpart 375-6: Table 375-6.8 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

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Analytical Soil Results - VOCs and SVOCs
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Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-103					
Sample ID				TP-103-SS		TP-103-N		TP-103-B	
Sample Date				12/10/12		12/10/12		12/10/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)		3 to 3.5 ft bgs (North Wall)		6 to 6.5 ft bgs (Bottom)	
Volatile Organic Compounds (VOCs) (µg/kg)									
1,1,1-Trichloroethane	637,450	100,000	680	5	U	6	U	5	U
1,1,2,2-Tetrachloroethane	560	NL	NL	5	U	6	U	5	U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	5	U	6	U	5	U
1,1,2-Trichloroethane	160	NL	NL	5	U	6	U	5	U
1,1-Dichloroethane	3,300	26,000	270	5	U	6	U	5	U
1,1-Dichloroethene	24,000	100,000	330	5	U	6	U	5	U
1,2,3-Trichlorobenzene	4,900	NL	NL	5	U	6	U	5	U
1,2,4-Trichlorobenzene	6,200	NL	NL	5	U	6	U	5	U
1,2-Dibromo-3-chloropropane	5	NL	NL	5	U	6	U	5	U
1,2-Dibromoethane	34	NL	NL	5	U	6	U	5	U
1,2-Dichlorobenzene	190,000	100,000	1,100	5	U	6	U	5	U
1,2-Dichloroethane	430	3,100	20	5	U	6	U	5	U
1,2-Dichloropropane	940	NL	NL	5	U	6	U	5	U
1,3-Dichlorobenzene	NL	49,000	2,400	5	U	6	U	5	U
1,4-Dichlorobenzene	2,400	13,000	1,800	5	U	6	U	5	U
1,4-Dioxane	4,900	13,000	100	99	R	130	R	100	R
2-Butanone	2,800,000	100,000	NL	10	U	13	U	10	U
2-Hexanone	21,000	NL	NL	10	U	13	U	10	U
4-Methyl-2-Pentanone	2,191,304	NL	NL	10	U	13	U	10	U
Acetone	6,100,000	100,000	50	10	U	13	U	10	U
Benzene	1,100	4,800	60	5	U	6	U	5	U
Bromochloromethane	16,000	NL	NL	5	U	6	U	5	U
Bromodichloromethane	270	NL	NL	5	U	6	U	5	U
Bromoform	62,000	NL	NL	5	U	6	U	5	U
Bromomethane	730	NL	NL	5	U	6	U	5	U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-103		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-103-SS	TP-103-N	TP-103-B
Sample Date				12/10/12	12/10/12	12/10/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (North Wall)	6 to 6.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	5 U	6 U	5 U
Carbon tetrachloride	610	2,400	760	5 U	6 U	5 U
Chlorobenzene	29,000	100,000	1,100	5 U	6 U	5 U
Chloroethane	1,500,000	NL	NL	5 U	6 U	5 U
Chloroform	290	49,000	370	5 U	6 U	5 U
Chloromethane	12,000	NL	NL	5 U	6 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	5 U	6 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	5 U	6 U	5 U
Cyclohexane	117,000	NL	NL	5 U	6 U	5 U
Dibromochloromethane	680	NL	NL	5 U	6 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	5 U	6 U	5 U
Ethylbenzene	5,400	41,000	1,000	5 U	6 U	5 U
Isopropylbenzene	259,098	NL	NL	5 U	6 U	5 U
m,p-Xylene	59,000	100,000	260	5 U	6 U	5 U
Methyl acetate	7,800,000	NL	NL	5 U	6 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	5 U	6 U	5 U
Methylcyclohexane	NL	NL	NL	5 U	6 U	5 U
Methylene chloride	36,000	100,000	50	5 U	6 U	5 U
o-Xylene	69,000	100,000	260	5 U	6 U	5 U
Styrene	822,434	NL	NL	5 U	6 U	5 U
Tetrachloroethene	8,600	19,000	1,300	5 U	6 U	5 U
Toluene	723,996	100,000	700	5 U	6 U	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	5 U	6 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	5 U	6 U	5 U
Trichloroethene	440	21,000	470	5 U	6 U	5 U
Trichlorofluoromethane	79,000	NL	NL	5 U	11	5 U
Vinyl chloride	60	900	20	5 U	6 U	5 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
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Sample Location				TP-103		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-103-SS	TP-103-N	TP-103-B
Sample Date				12/10/12	12/10/12	12/10/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (North Wall)	6 to 6.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
1,1'-Biphenyl	5,100	NL	NL	2,000 U	960 U	930 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	2,000 U	960 U	930 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	2,000 U	960 U	930 U
2,4,5-Trichlorophenol	610,000	NL	NL	2,000 U	960 U	930 U
2,4,6-Trichlorophenol	6,100	NL	NL	2,000 U	960 U	930 U
2,4-Dichlorophenol	18,000	NL	NL	2,000 U	960 U	930 U
2,4-Dimethylphenol	120,000	NL	NL	2,000 U	960 U	930 U
2,4-Dinitrophenol	12,000	NL	NL	3,900 U	1,900 U	1,800 U
2,4-Dinitrotoluene	1,600	NL	NL	2,000 U	960 U	930 U
2,6-Dinitrotoluene	6,100	NL	NL	2,000 U	960 U	930 U
2-Chloronaphthalene	630,000	NL	NL	2,000 U	960 U	930 U
2-Chlorophenol	39,000	NL	NL	2,000 U	960 U	930 U
2-Methylnaphthalene	23,000	NL	NL	2,000 U	960 U	930 U
2-Methylphenol	310,000	100,000	330	2,000 U	960 U	930 U
2-Nitroaniline	61,000	NL	NL	3,900 U	1,900 U	1,800 U
2-Nitrophenol	NL	NL	NL	2,000 U	960 U	930 UJ
3,3'-Dichlorobenzidine	1,100	NL	NL	2,000 U	960 U	930 U
3-Nitroaniline	NL	NL	NL	3,900 U	1,900 U	1,800 U
4,6-Dinitro-2-methylphenol	490	NL	NL	3,900 U	1,900 U	1,800 UJ
4-Bromophenyl-phenylether	NL	NL	NL	2,000 U	960 U	930 U
4-Chloro-3-methylphenol	610,000	NL	NL	2,000 U	960 U	930 U
4-Chloroaniline	2,400	NL	NL	2,000 U	960 U	930 U
4-Chlorophenyl-phenylether	NL	NL	NL	2,000 U	960 U	930 U
4-Methylphenol	610,000	100,000	330	2,000 U	960 U	930 U
4-Nitroaniline	24,000	NL	NL	3,900 U	1,900 U	1,800 U
4-Nitrophenol	NL	NL	NL	3,900 U	1,900 U	1,800 U
Acenaphthene	340,000	100,000	20,000	2,000 U	960 U	930 U
Acenaphthylene	340,000	100,000	100,000	110 J	80 J	930 U

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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-103					
Sample ID				TP-103-SS		TP-103-N		TP-103-B	
Sample Date				12/10/12		12/10/12		12/10/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)		3 to 3.5 ft bgs (North Wall)		6 to 6.5 ft bgs (Bottom)	
Acetophenone	780,000	NL	NL	2,000	U	960	U	930	U
Anthracene	1,700,000	100,000	100,000	200	J	95	J	930	U
Atrazine	2,100	NL	NL	2,000	U	960	U	930	U
Benzaldehyde	780,000	NL	NL	2,000	U	960	U	930	U
Benzo(a)anthracene	150	**1,000**	*1,000*	810	J	360	J	930	U
Benzo(a)pyrene	15	1,000	1,000	700	J	340	J	930	U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	880	J	410	J	930	U
Benzo(g,h,i)perylene	170,000	100,000	100,000	180	J	100	J	930	U
Benzo(k)fluoranthene	1,500	3,900	800	310	J	140	J	930	U
Bis(2-chloroethoxy)methane	18,000	NL	NL	2,000	U	960	U	930	U
Bis(2-chloroethyl)ether	210	NL	NL	2,000	U	960	U	930	U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	2,000	U	960	U	930	U
Butylbenzylphthalate	260,000	NL	NL	2,000	U	960	U	930	U
Caprolactam	3,100,000	NL	NL	2,000	U	960	U	930	U
Carbazole	NL	NL	NL	2,000	U	960	U	930	U
Chrysene	15,000	3,900	*1,000*	760	J	350	J	930	U
Dibenzo(a,h)anthracene	15	330	330	89	J	41	J	930	U
Dibenzofuran	7,800	NL	NL	2,000	U	960	U	930	U
Diethylphthalate	4,900,000	NL	NL	2,000	U	960	U	930	U
Dimethylphthalate	NL	NL	NL	2,000	U	960	U	930	U
Di-n-butylphthalate	610,000	NL	NL	2,000	U	960	U	930	U
Di-n-octylphthalate	73,000	NL	NL	2,000	U	960	U	930	U
Fluoranthene	230,000	100,000	100,000	1,200	J	580	J	930	U
Fluorene	230,000	100,000	30,000	2,000	U	960	U	930	U
Hexachlorobenzene	300	NL	NL	2,000	U	960	U	930	U
Hexachlorobutadiene	6,100	NL	NL	2,000	U	960	U	930	U
Hexachlorocyclopentadiene	37,000	NL	NL	2,000	U	960	U	930	U
Hexachloroethane	4,300	NL	NL	2,000	U	960	U	930	U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	320	J	140	J	930	U

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Analytical Soil Results - VOCs and SVOCs
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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-103					
Sample ID				TP-103-SS		TP-103-N		TP-103-B	
Sample Date				12/10/12		12/10/12		12/10/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)		3 to 3.5 ft bgs (North Wall)		6 to 6.5 ft bgs (Bottom)	
Isophorone	510,000	NL	NL	2,000	U	960	U	930	UJ
Naphthalene	3,600	100,000	12,000	2,000	U	960	U	930	U
Nitrobenzene	4,800	15,000	NL	2,000	U	960	U	930	U
N-Nitroso-di-n-propylamine	69	NL	NL	2,000	U	960	U	930	U
N-Nitrosodiphenylamine	99,000	NL	NL	2,000	U	960	U	930	U
Pentachlorophenol	890	6,700	800	3,900	U	1,900	U	1,800	U
Phenanthrene	1,700,000	100,000	100,000	600	J	230	J	930	U
Phenol	1,800,000	100,000	330	2,000	U	960	U	930	U
Pyrene	170,000	100,000	100,000	1,400	J	670	J	930	U

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6. 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-104			
Sample ID				TP-104-SS	TP-104-N	TP-104-B	TP-104-BR
Sample Date				12/10/12	12/10/12	12/10/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2.5 to 3 ft bgs (North Wall)	5.5 to 6 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)							
1,1,1-Trichloroethane	637,450	100,000	680	5 U	6 U	5 U	6 U
1,1,2,2-Tetrachloroethane	560	NL	NL	5 U	6 U	5 U	6 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	5 U	6 U	5 U	6 U
1,1,2-Trichloroethane	160	NL	NL	5 U	6 U	5 U	6 U
1,1-Dichloroethane	3,300	26,000	270	5 U	6 U	5 U	6 U
1,1-Dichloroethene	24,000	100,000	330	5 U	6 U	5 U	6 U
1,2,3-Trichlorobenzene	4,900	NL	NL	5 U	6 U	5 U	6 R
1,2,4-Trichlorobenzene	6,200	NL	NL	5 U	6 U	5 U	6 R
1,2-Dibromo-3-chloropropane	5	NL	NL	5 U	6 U	5 U	6 R
1,2-Dibromoethane	34	NL	NL	5 U	6 U	5 U	6 U
1,2-Dichlorobenzene	190,000	100,000	1,100	5 U	6 U	5 U	6 UJ
1,2-Dichloroethane	430	3,100	20	5 U	6 U	5 U	6 U
1,2-Dichloropropane	940	NL	NL	5 U	6 U	5 U	6 U
1,3-Dichlorobenzene	NL	49,000	2,400	5 U	6 U	5 U	6 UJ
1,4-Dichlorobenzene	2,400	13,000	1,800	5 U	6 U	5 U	6 UJ
1,4-Dioxane	4,900	13,000	100	93 R	110 R	99 R	120 R
2-Butanone	2,800,000	100,000	NL	9 U	11 U	10 U	12 U
2-Hexanone	21,000	NL	NL	9 U	11 U	10 U	12 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	9 U	11 U	10 U	12 U
Acetone	6,100,000	100,000	50	7 J	11 U	10 U	12 U
Benzene	1,100	4,800	60	5 U	6 U	5 U	6 U
Bromochloromethane	16,000	NL	NL	5 U	6 U	5 U	6 U
Bromodichloromethane	270	NL	NL	5 U	6 U	5 U	6 U
Bromoform	62,000	NL	NL	5 U	6 U	5 U	6 R
Bromomethane	730	NL	NL	5 U	6 U	5 U	6 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-104			
Sample ID				TP-104-SS	TP-104-N	TP-104-B	TP-104-BR
Sample Date				12/10/12	12/10/12	12/10/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2.5 to 3 ft bgs (North Wall)	5.5 to 6 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	5 U	6 U	5 U	6 U
Carbon tetrachloride	610	2,400	760	5 U	6 U	5 U	6 U
Chlorobenzene	29,000	100,000	1,100	5 U	6 U	5 U	6 U
Chloroethane	1,500,000	NL	NL	5 U	6 U	5 U	6 U
Chloroform	290	49,000	370	5 U	6 U	5 U	6 U
Chloromethane	12,000	NL	NL	5 U	6 U	5 U	6 U
cis-1,2-Dichloroethene	16,000	100,000	250	5 U	6 U	5 U	6 U
cis-1,3-Dichloropropene	1,700	NL	NL	5 U	6 U	5 U	6 U
Cyclohexane	117,000	NL	NL	5 U	1 J	5 U	6 U
Dibromochloromethane	680	NL	NL	5 U	6 U	5 U	6 U
Dichlorodifluoromethane	9,400	NL	NL	5 U	6 U	5 U	6 U
Ethylbenzene	5,400	41,000	1,000	5 U	6 U	5 U	6 U
Isopropylbenzene	259,098	NL	NL	5 U	6 U	5 U	6 U
m,p-Xylene	59,000	100,000	260	5 U	6 U	5 U	6 U
Methyl acetate	7,800,000	NL	NL	5 U	6 U	5 U	6 U
Methyl tert-butyl ether	43,000	100,000	930	5 U	6 U	5 U	6 U
Methylcyclohexane	NL	NL	NL	5 U	6 U	5 U	6 U
Methylene chloride	36,000	100,000	50	5 U	6 U	5 U	6 U
o-Xylene	69,000	100,000	260	5 U	6 U	5 U	6 U
Styrene	822,434	NL	NL	5 U	6 U	5 U	6 U
Tetrachloroethene	8,600	19,000	1,300	5 U	6 U	5 U	6 U
Toluene	723,996	100,000	700	5 U	6 U	5 U	6 U
trans-1,2-Dichloroethene	15,000	100,000	190	5 U	6 U	5 U	6 U
trans-1,3-Dichloropropene	1,700	NL	NL	5 U	6 U	5 U	6 U
Trichloroethene	440	21,000	470	5 U	6 U	5 U	6 U
Trichlorofluoromethane	79,000	NL	NL	5 U	6 U	5 U	6 U
Vinyl chloride	60	900	20	5 U	6 U	5 U	6 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-104			
Sample ID				TP-104-SS	TP-104-N	TP-104-B	TP-104-BR
Sample Date				12/10/12	12/10/12	12/10/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2.5 to 3 ft bgs (North Wall)	5.5 to 6 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
1,1'-Biphenyl	5,100	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2,4,5-Trichlorophenol	610,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2,4,6-Trichlorophenol	6,100	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2,4-Dichlorophenol	18,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2,4-Dimethylphenol	120,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2,4-Dinitrophenol	12,000	NL	NL	1,900 U	3,800 U	3,700 U	4,300 U
2,4-Dinitrotoluene	1,600	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2,6-Dinitrotoluene	6,100	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2-Chloronaphthalene	630,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2-Chlorophenol	39,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2-Methylnaphthalene	23,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
2-Methylphenol	310,000	100,000	330	1,000 U	1,900 U	1,900 U	2,200 U
2-Nitroaniline	61,000	NL	NL	1,900 U	3,800 U	3,700 U	4,300 U
2-Nitrophenol	NL	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
3,3'-Dichlorobenzidine	1,100	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
3-Nitroaniline	NL	NL	NL	1,900 U	3,800 U	3,700 U	4,300 U
4,6-Dinitro-2-methylphenol	490	NL	NL	1,900 U	3,800 U	3,700 U	4,300 U
4-Bromophenyl-phenylether	NL	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
4-Chloro-3-methylphenol	610,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
4-Chloroaniline	2,400	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
4-Chlorophenyl-phenylether	NL	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
4-Methylphenol	610,000	100,000	330	1,000 U	1,900 U	1,900 U	2,200 U
4-Nitroaniline	24,000	NL	NL	1,900 U	3,800 U	3,700 U	4,300 U
4-Nitrophenol	NL	NL	NL	1,900 U	3,800 U	3,700 U	4,300 U
Acenaphthene	340,000	100,000	20,000	1,000 U	1,900 U	1,900 U	2,200 U
Acenaphthylene	340,000	100,000	100,000	1,000 U	1,900 U	1,900 U	2,200 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-104			
Sample ID				TP-104-SS	TP-104-N	TP-104-B	TP-104-BR
Sample Date				12/10/12	12/10/12	12/10/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2.5 to 3 ft bgs (North Wall)	5.5 to 6 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Anthracene	1,700,000	100,000	100,000	1,000 U	1,900 U	1,900 U	2,200 U
Atrazine	2,100	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Benzaldehyde	780,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Benzo(a)anthracene	150	**1,000**	*1,000*	130 J	210 J	270 J	2,200 U
Benzo(a)pyrene	15	1,000	1,000	130 J	200 J	260 J	400 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	190 J	290 J	310 J	550 J
Benzo(g,h,i)perylene	170,000	100,000	100,000	1,000 U	65 J	85 J	140 J
Benzo(k)fluoranthene	1,500	3,900	800	60 J	97 J	130 J	200 J
Bis(2-chloroethoxy)methane	18,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Bis(2-chloroethyl)ether	210	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Butylbenzylphthalate	260,000	NL	NL	1,000 U	1,900 U	1,900 U	180 J
Caprolactam	3,100,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Carbazole	NL	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Chrysene	15,000	3,900	*1,000*	130 J	200 J	240 J	360 J
Dibenzo(a,h)anthracene	15	330	330	1,000 U	1,900 U	1,900 U	2,200 U
Dibenzofuran	7,800	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Diethylphthalate	4,900,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Dimethylphthalate	NL	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Di-n-butylphthalate	610,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Di-n-octylphthalate	73,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Fluoranthene	230,000	100,000	100,000	230 J	310 J	410 J	590 J
Fluorene	230,000	100,000	30,000	1,000 U	1,900 U	1,900 U	2,200 U
Hexachlorobenzene	300	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Hexachlorobutadiene	6,100	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Hexachlorocyclopentadiene	37,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Hexachloroethane	4,300	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	96 J	110 J	160 J	220 J

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-104			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-104-SS	TP-104-N	TP-104-B	TP-104-BR
Sample Date				12/10/12	12/10/12	12/10/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2.5 to 3 ft bgs (North Wall)	5.5 to 6 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Isophorone	510,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Naphthalene	3,600	100,000	12,000	1,000 U	1,900 U	1,900 U	2,200 U
Nitrobenzene	4,800	15,000	NL	1,000 U	1,900 U	1,900 U	2,200 U
N-Nitroso-di-n-propylamine	69	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
N-Nitrosodiphenylamine	99,000	NL	NL	1,000 U	1,900 U	1,900 U	2,200 U
Pentachlorophenol	890	6,700	800	1,900 U	3,800 U	3,700 U	4,300 U
Phenanthrene	1,700,000	100,000	100,000	82 J	110 J	160 J	210 J
Phenol	1,800,000	100,000	330	1,000 U	1,900 U	1,900 U	2,200 U
Pyrene	170,000	100,000	100,000	210 J	320 J	430 J	570 J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-105		
Sample ID				TP-105-SS	TP-105-B	TP-105-BR
Sample Date				12/10/12	12/10/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6 to 6.5 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)						
1,1,1-Trichloroethane	637,450	100,000	680	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	5 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	5 U	5 U	5 U
1,1,2-Trichloroethane	160	NL	NL	5 U	5 U	5 U
1,1-Dichloroethane	3,300	26,000	270	5 U	5 U	5 U
1,1-Dichloroethene	24,000	100,000	330	5 U	5 U	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	5 U	5 U	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	5 U	5 U	5 U
1,2-Dibromoethane	34	NL	NL	5 U	5 U	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	5 U	5 U	5 U
1,2-Dichloroethane	430	3,100	20	5 U	5 U	5 U
1,2-Dichloropropane	940	NL	NL	5 U	5 U	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	5 U	5 U	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	5 U	5 U	5 U
1,4-Dioxane	4,900	13,000	100	110 R	98 R	99 R
2-Butanone	2,800,000	100,000	NL	11 U	10 U	10 U
2-Hexanone	21,000	NL	NL	11 U	10 U	10 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	11 U	10 U	10 U
Acetone	6,100,000	100,000	50	5 J	10 U	10 U
Benzene	1,100	4,800	60	2 J	5 U	5 U
Bromochloromethane	16,000	NL	NL	5 U	5 U	5 U
Bromodichloromethane	270	NL	NL	5 U	5 U	5 U
Bromoform	62,000	NL	NL	5 U	5 U	5 U
Bromomethane	730	NL	NL	5 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-105		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-105-SS	TP-105-B	TP-105-BR
Sample Date				12/10/12	12/10/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6 to 6.5 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	5 U	5 U	5 U
Carbon tetrachloride	610	2,400	760	5 U	5 U	5 U
Chlorobenzene	29,000	100,000	1,100	5 U	5 U	5 U
Chloroethane	1,500,000	NL	NL	5 U	5 U	5 U
Chloroform	290	49,000	370	5 U	5 U	5 U
Chloromethane	12,000	NL	NL	5 U	5 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	5 U	5 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	5 U	5 U	5 U
Cyclohexane	117,000	NL	NL	5 U	5 U	5 U
Dibromochloromethane	680	NL	NL	5 U	5 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	5 U	5 U	5 U
Ethylbenzene	5,400	41,000	1,000	5 U	5 U	5 U
Isopropylbenzene	259,098	NL	NL	5 U	5 U	5 U
m,p-Xylene	59,000	100,000	260	5 U	5 U	5 U
Methyl acetate	7,800,000	NL	NL	5 U	5 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	5 U	5 U	5 U
Methylcyclohexane	NL	NL	NL	5 U	5 U	5 U
Methylene chloride	36,000	100,000	50	5 U	5 U	5 U
o-Xylene	69,000	100,000	260	5 U	5 U	5 U
Styrene	822,434	NL	NL	5 U	5 U	5 U
Tetrachloroethene	8,600	19,000	1,300	5 U	0 J	0 J
Toluene	723,996	100,000	700	5 U	5 U	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	5 U	5 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	5 U	5 U	5 U
Trichloroethene	440	21,000	470	5 U	5 U	5 U
Trichlorofluoromethane	79,000	NL	NL	5 U	5 U	5 U
Vinyl chloride	60	900	20	5 U	5 U	5 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-105		
Sample ID				TP-105-SS	TP-105-B	TP-105-BR
Sample Date				12/10/12	12/10/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6 to 6.5 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
1,1'-Biphenyl	5,100	NL	NL	2,000 U	1,900 U	3,900 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	2,000 U	1,900 U	3,900 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	2,000 U	1,900 U	3,900 U
2,4,5-Trichlorophenol	610,000	NL	NL	2,000 U	1,900 U	3,900 U
2,4,6-Trichlorophenol	6,100	NL	NL	2,000 U	1,900 U	3,900 U
2,4-Dichlorophenol	18,000	NL	NL	2,000 U	1,900 U	3,900 U
2,4-Dimethylphenol	120,000	NL	NL	2,000 U	1,900 U	3,900 U
2,4-Dinitrophenol	12,000	NL	NL	3,900 U	3,700 U	7,600 U
2,4-Dinitrotoluene	1,600	NL	NL	2,000 U	1,900 U	3,900 U
2,6-Dinitrotoluene	6,100	NL	NL	2,000 U	1,900 U	3,900 U
2-Chloronaphthalene	630,000	NL	NL	2,000 U	1,900 U	3,900 U
2-Chlorophenol	39,000	NL	NL	2,000 U	1,900 U	3,900 U
2-Methylnaphthalene	23,000	NL	NL	2,000 U	1,900 U	3,900 U
2-Methylphenol	310,000	100,000	330	2,000 U	1,900 U	3,900 U
2-Nitroaniline	61,000	NL	NL	3,900 U	3,700 U	7,600 U
2-Nitrophenol	NL	NL	NL	2,000 U	1,900 U	3,900 U
3,3'-Dichlorobenzidine	1,100	NL	NL	2,000 U	1,900 U	3,900 U
3-Nitroaniline	NL	NL	NL	3,900 U	3,700 U	7,600 U
4,6-Dinitro-2-methylphenol	490	NL	NL	3,900 U	3,700 U	7,600 U
4-Bromophenyl-phenylether	NL	NL	NL	2,000 U	1,900 U	3,900 U
4-Chloro-3-methylphenol	610,000	NL	NL	2,000 U	1,900 U	3,900 U
4-Chloroaniline	2,400	NL	NL	2,000 U	1,900 U	3,900 U
4-Chlorophenyl-phenylether	NL	NL	NL	2,000 U	1,900 U	3,900 U
4-Methylphenol	610,000	100,000	330	2,000 U	1,900 U	3,900 U
4-Nitroaniline	24,000	NL	NL	3,900 U	3,700 U	7,600 U
4-Nitrophenol	NL	NL	NL	3,900 U	3,700 U	7,600 U
Acenaphthene	340,000	100,000	20,000	2,000 U	1,900 U	3,900 U
Acenaphthylene	340,000	100,000	100,000	2,000 U	1,900 U	3,900 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-105		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-105-SS	TP-105-B	TP-105-BR
Sample Date				12/10/12	12/10/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6 to 6.5 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	2,000 U	1,900 U	3,900 U
Anthracene	1,700,000	100,000	100,000	2,000 U	81 J	3,900 U
Atrazine	2,100	NL	NL	2,000 U	1,900 U	3,900 U
Benzaldehyde	780,000	NL	NL	2,000 U	1,900 U	3,900 U
Benzo(a)anthracene	150	**1,000**	*1,000*	280 J	280 J	***1,400 J***
Benzo(a)pyrene	15	1,000	1,000	300 J	280 J	740 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	410 J	380 J	***1,800 J***
Benzo(g,h,i)perylene	170,000	100,000	100,000	140 J	100 J	600 J
Benzo(k)fluoranthene	1,500	3,900	800	150 J	130 J	690 J
Bis(2-chloroethoxy)methane	18,000	NL	NL	2,000 U	1,900 U	3,900 U
Bis(2-chloroethyl)ether	210	NL	NL	2,000 U	1,900 U	3,900 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	2,000 U	1,900 U	3,900 U
Butylbenzylphthalate	260,000	NL	NL	2,000 U	1,900 U	3,900 U
Caprolactam	3,100,000	NL	NL	2,000 U	1,900 U	3,900 U
Carbazole	NL	NL	NL	2,000 U	1,900 U	3,900 U
Chrysene	15,000	3,900	*1,000*	260 J	250 J	*1,300 J*
Dibenzo(a,h)anthracene	15	330	330	2,000 U	1,900 U	280 J
Dibenzofuran	7,800	NL	NL	2,000 U	1,900 U	3,900 U
Diethylphthalate	4,900,000	NL	NL	2,000 U	1,900 U	3,900 U
Dimethylphthalate	NL	NL	NL	2,000 U	1,900 U	3,900 U
Di-n-butylphthalate	610,000	NL	NL	2,000 U	1,900 U	3,900 U
Di-n-octylphthalate	73,000	NL	NL	2,000 U	1,900 U	3,900 U
Fluoranthene	230,000	100,000	100,000	460 J	470 J	2,500 J
Fluorene	230,000	100,000	30,000	2,000 U	1,900 U	3,900 U
Hexachlorobenzene	300	NL	NL	2,000 U	1,900 U	3,900 U
Hexachlorobutadiene	6,100	NL	NL	2,000 U	1,900 U	3,900 U
Hexachlorocyclopentadiene	37,000	NL	NL	2,000 U	1,900 U	3,900 U
Hexachloroethane	4,300	NL	NL	2,000 U	1,900 U	3,900 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	200 J	180 J	***1,000 J***

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-105		
Sample ID				TP-105-SS	TP-105-B	TP-105-BR
Sample Date				12/10/12	12/10/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6 to 6.5 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Isophorone	510,000	NL	NL	2,000 U	1,900 U	3,900 U
Naphthalene	3,600	100,000	12,000	2,000 U	1,900 U	3,900 U
Nitrobenzene	4,800	15,000	NL	2,000 U	1,900 U	3,900 U
N-Nitroso-di-n-propylamine	69	NL	NL	2,000 U	1,900 U	3,900 U
N-Nitrosodiphenylamine	99,000	NL	NL	2,000 U	1,900 U	3,900 U
Pentachlorophenol	890	6,700	800	3,900 U	3,700 U	7,600 U
Phenanthrene	1,700,000	100,000	100,000	240 J	240 J	680 J
Phenol	1,800,000	100,000	330	2,000 U	1,900 U	3,900 U
Pyrene	170,000	100,000	100,000	480 J	430 J	2,200 J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-106				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-106-SS	TP-906-SS	TP-106-S	TP-106-CA	TP-106-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		2.5 to 3 ft bgs (South Wall)	3.5 to 4ft bgs (Coal Ash Sample)	5.5 to 6 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)								
1,1,1-Trichloroethane	637,450	100,000	680	5 R	5 R	5 U	6 U	5 R
1,1,2,2-Tetrachloroethane	560	NL	NL	5 R	5 R	5 U	6 U	5 R
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	5 R	5 R	5 U	6 U	5 R
1,1,2-Trichloroethane	160	NL	NL	5 R	5 R	5 U	6 U	5 R
1,1-Dichloroethane	3,300	26,000	270	5 R	5 R	5 U	6 U	5 R
1,1-Dichloroethene	24,000	100,000	330	5 R	5 R	5 U	6 U	5 R
1,2,3-Trichlorobenzene	4,900	NL	NL	5 R	5 R	5 U	6 R	5 R
1,2,4-Trichlorobenzene	6,200	NL	NL	5 R	5 R	5 U	6 R	5 R
1,2-Dibromo-3-chloropropane	5	NL	NL	5 R	5 R	5 U	6 R	5 R
1,2-Dibromoethane	34	NL	NL	5 R	5 R	5 U	6 U	5 R
1,2-Dichlorobenzene	190,000	100,000	1,100	5 R	5 R	5 U	6 R	5 R
1,2-Dichloroethane	430	3,100	20	5 R	5 R	5 U	6 U	5 R
1,2-Dichloropropane	940	NL	NL	5 R	5 R	5 U	6 U	5 R
1,3-Dichlorobenzene	NL	49,000	2,400	5 R	5 R	5 U	6 R	5 R
1,4-Dichlorobenzene	2,400	13,000	1,800	5 R	5 R	5 U	6 R	5 R
1,4-Dioxane	4,900	13,000	100	95 R	100 R	94 R	120 R	100 R
2-Butanone	2,800,000	100,000	NL	10 R	10 R	9 U	12 U	10 R
2-Hexanone	21,000	NL	NL	10 R	10 R	9 U	12 U	10 R
4-Methyl-2-Pentanone	2,191,304	NL	NL	10 R	10 R	9 U	12 U	10 R
Acetone	6,100,000	100,000	50	10 R	10 R	9 U	12 U	10 R
Benzene	1,100	4,800	60	5 R	5 R	5 U	6 U	5 R
Bromochloromethane	16,000	NL	NL	5 R	5 R	5 U	6 U	5 R
Bromodichloromethane	270	NL	NL	5 R	5 R	5 U	6 U	5 R
Bromoform	62,000	NL	NL	5 R	5 R	5 U	6 R	5 R
Bromomethane	730	NL	NL	5 R	5 R	5 U	6 U	5 R

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-106				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-106-SS	TP-906-SS	TP-106-S	TP-106-CA	TP-106-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		2.5 to 3 ft bgs (South Wall)	3.5 to 4ft bgs (Coal Ash Sample)	5.5 to 6 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	5 R	5 R	5 U	6 U	5 R
Carbon tetrachloride	610	2,400	760	5 R	5 R	5 U	6 U	5 R
Chlorobenzene	29,000	100,000	1,100	5 R	5 R	5 U	6 U	5 R
Chloroethane	1,500,000	NL	NL	5 R	5 R	5 U	6 U	5 R
Chloroform	290	49,000	370	5 R	5 R	5 U	6 U	5 R
Chloromethane	12,000	NL	NL	5 R	5 R	5 U	6 U	5 R
cis-1,2-Dichloroethene	16,000	100,000	250	5 R	5 R	5 U	6 U	5 R
cis-1,3-Dichloropropene	1,700	NL	NL	5 R	5 R	5 U	6 U	5 R
Cyclohexane	117,000	NL	NL	5 R	5 R	5 U	1 J	5 R
Dibromochloromethane	680	NL	NL	5 R	5 R	5 U	6 U	5 R
Dichlorodifluoromethane	9,400	NL	NL	5 R	5 R	5 U	6 U	5 R
Ethylbenzene	5,400	41,000	1,000	5 R	5 R	5 U	6 U	5 R
Isopropylbenzene	259,098	NL	NL	5 R	5 R	5 U	6 U	5 R
m,p-Xylene	59,000	100,000	260	5 R	5 R	5 U	6 U	5 R
Methyl acetate	7,800,000	NL	NL	5 R	5 R	5 U	6 U	5 R
Methyl tert-butyl ether	43,000	100,000	930	5 R	5 R	5 U	6 U	5 R
Methylcyclohexane	NL	NL	NL	5 R	5 R	5 U	6 U	5 R
Methylene chloride	36,000	100,000	50	5 R	5 R	5 U	1 J	5 R
o-Xylene	69,000	100,000	260	5 R	5 R	5 U	6 U	5 R
Styrene	822,434	NL	NL	5 R	5 R	5 U	6 U	5 R
Tetrachloroethene	8,600	19,000	1,300	5 R	5 R	5 U	6 U	5 R
Toluene	723,996	100,000	700	5 R	5 R	5 U	6 UJ	5 R
trans-1,2-Dichloroethene	15,000	100,000	190	5 R	5 R	5 U	6 U	5 R
trans-1,3-Dichloropropene	1,700	NL	NL	5 R	5 R	5 U	6 U	5 R
Trichloroethene	440	21,000	470	5 R	5 R	5 U	6 U	5 R
Trichlorofluoromethane	79,000	NL	NL	5 R	5 R	5 U	6 U	5 R
Vinyl chloride	60	900	20	5 R	5 R	5 U	6 U	5 R

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-106				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-106-SS	TP-906-SS	TP-106-S	TP-106-CA	TP-106-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		2.5 to 3 ft bgs (South Wall)	3.5 to 4ft bgs (Coal Ash Sample)	5.5 to 6 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)								
1,1'-Biphenyl	5,100	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2,4,5-Trichlorophenol	610,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2,4,6-Trichlorophenol	6,100	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2,4-Dichlorophenol	18,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2,4-Dimethylphenol	120,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2,4-Dinitrophenol	12,000	NL	NL	2,000 U	2,000 U	1,800 U	2,000 U	360 U
2,4-Dinitrotoluene	1,600	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2,6-Dinitrotoluene	6,100	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2-Chloronaphthalene	630,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2-Chlorophenol	39,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2-Methylnaphthalene	23,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
2-Methylphenol	310,000	100,000	330	1,000 U	1,100 U	910 U	1,000 U	180 U
2-Nitroaniline	61,000	NL	NL	2,000 U	2,000 U	1,800 U	2,000 U	360 U
2-Nitrophenol	NL	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
3,3'-Dichlorobenzidine	1,100	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
3-Nitroaniline	NL	NL	NL	2,000 U	2,000 U	1,800 U	2,000 U	360 U
4,6-Dinitro-2-methylphenol	490	NL	NL	2,000 U	2,000 U	1,800 U	2,000 U	360 U
4-Bromophenyl-phenylether	NL	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
4-Chloro-3-methylphenol	610,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
4-Chloroaniline	2,400	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
4-Chlorophenyl-phenylether	NL	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
4-Methylphenol	610,000	100,000	330	1,000 U	1,100 U	910 U	1,000 U	180 U
4-Nitroaniline	24,000	NL	NL	2,000 U	2,000 U	1,800 U	2,000 U	360 U
4-Nitrophenol	NL	NL	NL	2,000 U	2,000 U	1,800 U	2,000 U	360 U
Acenaphthene	340,000	100,000	20,000	1,000 U	1,100 U	910 U	1,000 U	180 U
Acenaphthylene	340,000	100,000	100,000	1,000 U	1,100 U	42 J	74 J	180 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-106				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-106-SS	TP-906-SS	TP-106-S	TP-106-CA	TP-106-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		2.5 to 3 ft bgs (South Wall)	3.5 to 4ft bgs (Coal Ash Sample)	5.5 to 6 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Anthracene	1,700,000	100,000	100,000	66 J	1,100 U	47 J	220 J	180 U
Atrazine	2,100	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Benzaldehyde	780,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Benzo(a)anthracene	150	**1,000**	*1,000*	310 J	240 J	370 J	***1,000***	13 J
Benzo(a)pyrene	15	1,000	1,000	300 J	220 J	410 J	830 J	12 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	440 J	320 J	560 J	***1,200***	19 J
Benzo(g,h,i)perylene	170,000	100,000	100,000	96 J	79 J	110 J	86 J	180 U
Benzo(k)fluoranthene	1,500	3,900	800	130 J	110 J	200 J	450 J	7 J
Bis(2-chloroethoxy)methane	18,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Bis(2-chloroethyl)ether	210	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Butylbenzylphthalate	260,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Caprolactam	3,100,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Carbazole	NL	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Chrysene	15,000	3,900	*1,000*	300 J	240 J	360 J	980 J	15 J
Dibenzo(a,h)anthracene	15	330	330	59 J	1,100 U	49 J	92 J	180 U
Dibenzofuran	7,800	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Diethylphthalate	4,900,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Dimethylphthalate	NL	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Di-n-butylphthalate	610,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Di-n-octylphthalate	73,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Fluoranthene	230,000	100,000	100,000	580 J	430 J	540 J	1,900	23 J
Fluorene	230,000	100,000	30,000	1,000 U	1,100 U	910 U	42 J	180 U
Hexachlorobenzene	300	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Hexachlorobutadiene	6,100	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Hexachlorocyclopentadiene	37,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Hexachloroethane	4,300	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	220 J	150 J	200 J	340 J	9 J

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-106				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-106-SS	TP-906-SS	TP-106-S	TP-106-CA	TP-106-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		2.5 to 3 ft bgs (South Wall)	3.5 to 4ft bgs (Coal Ash Sample)	5.5 to 6 ft bgs (Bottom)
Isophorone	510,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Naphthalene	3,600	100,000	12,000	1,000 U	1,100 U	910 U	1,000 U	180 U
Nitrobenzene	4,800	15,000	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
N-Nitroso-di-n-propylamine	69	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
N-Nitrosodiphenylamine	99,000	NL	NL	1,000 U	1,100 U	910 U	1,000 U	180 U
Pentachlorophenol	890	6,700	800	2,000 U	2,000 U	1,800 U	2,000 U	360 U
Phenanthrene	1,700,000	100,000	100,000	270 J	150 J	130 J	590 J	10 J
Phenol	1,800,000	100,000	330	1,000 U	1,100 U	910 U	1,000 U	180 U
Pyrene	170,000	100,000	100,000	510 J	380 J	530 J	1,700	22 J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6. 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-107			
Sample ID				TP-107-SS	TP-107-W	TP-107-CA	TP-107-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (West Wall)	6 to 6.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)							
1,1,1-Trichloroethane	637,450	100,000	680	4 U	4 U	2 J	8 R
1,1,2,2-Tetrachloroethane	560	NL	NL	4 U	4 U	12 R	8 R
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	4 U	4 U	12 R	8 R
1,1,2-Trichloroethane	160	NL	NL	4 U	4 U	12 R	8 R
1,1-Dichloroethane	3,300	26,000	270	4 U	4 U	12 R	8 R
1,1-Dichloroethene	24,000	100,000	330	4 U	4 U	12 R	8 R
1,2,3-Trichlorobenzene	4,900	NL	NL	4 R	4 U	12 R	8 R
1,2,4-Trichlorobenzene	6,200	NL	NL	4 R	4 U	12 R	8 R
1,2-Dibromo-3-chloropropane	5	NL	NL	4 R	4 U	12 R	8 R
1,2-Dibromoethane	34	NL	NL	4 U	4 U	12 R	8 R
1,2-Dichlorobenzene	190,000	100,000	1,100	4 R	4 U	12 R	8 R
1,2-Dichloroethane	430	3,100	20	4 U	4 U	12 R	8 R
1,2-Dichloropropane	940	NL	NL	4 U	4 U	12 R	8 R
1,3-Dichlorobenzene	NL	49,000	2,400	4 R	4 U	12 R	8 R
1,4-Dichlorobenzene	2,400	13,000	1,800	4 R	4 U	12 R	8 R
1,4-Dioxane	4,900	13,000	100	88 R	85 R	250 R	150 R
2-Butanone	2,800,000	100,000	NL	9 U	9 U	25 R	15 R
2-Hexanone	21,000	NL	NL	9 U	9 U	25 R	15 R
4-Methyl-2-Pentanone	2,191,304	NL	NL	9 U	9 U	25 R	15 R
Acetone	6,100,000	100,000	50	2 J	9 U	25 R	15 R
Benzene	1,100	4,800	60	4 U	4 U	12 R	8 R
Bromochloromethane	16,000	NL	NL	4 U	4 U	12 R	8 R
Bromodichloromethane	270	NL	NL	4 U	4 U	12 R	8 R
Bromoform	62,000	NL	NL	4 R	4 U	12 R	8 R
Bromomethane	730	NL	NL	4 U	4 U	12 R	8 R

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-107			
Sample ID				TP-107-SS	TP-107-W	TP-107-CA	TP-107-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (West Wall)	6 to 6.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	4 UJ	4 U	12 R	8 R
Carbon tetrachloride	610	2,400	760	4 U	4 U	12 R	8 R
Chlorobenzene	29,000	100,000	1,100	4 U	4 U	12 R	8 R
Chloroethane	1,500,000	NL	NL	4 U	4 U	12 R	8 R
Chloroform	290	49,000	370	4 U	4 U	12 R	8 R
Chloromethane	12,000	NL	NL	4 U	4 U	12 R	8 R
cis-1,2-Dichloroethene	16,000	100,000	250	4 U	4 U	12 R	8 R
cis-1,3-Dichloropropene	1,700	NL	NL	4 U	4 U	12 R	8 R
Cyclohexane	117,000	NL	NL	4 U	4 U	12 R	8 R
Dibromochloromethane	680	NL	NL	4 U	4 U	12 R	8 R
Dichlorodifluoromethane	9,400	NL	NL	4 U	4 U	12 R	8 R
Ethylbenzene	5,400	41,000	1,000	4 U	4 U	12 R	8 R
Isopropylbenzene	259,098	NL	NL	4 U	4 U	12 R	8 R
m,p-Xylene	59,000	100,000	260	4 U	4 U	12 R	8 R
Methyl acetate	7,800,000	NL	NL	4 U	4 U	12 R	8 R
Methyl tert-butyl ether	43,000	100,000	930	4 U	4 U	12 R	8 R
Methylcyclohexane	NL	NL	NL	4 U	4 U	12 R	8 R
Methylene chloride	36,000	100,000	50	4 U	4 U	12 R	8 R
o-Xylene	69,000	100,000	260	4 U	4 U	12 R	8 R
Styrene	822,434	NL	NL	4 U	4 U	12 R	8 R
Tetrachloroethene	8,600	19,000	1,300	4 U	4 U	12 R	8 R
Toluene	723,996	100,000	700	4 U	4 U	12 R	8 R
trans-1,2-Dichloroethene	15,000	100,000	190	4 U	4 U	12 R	8 R
trans-1,3-Dichloropropene	1,700	NL	NL	4 U	4 U	12 R	8 R
Trichloroethene	440	21,000	470	4 U	4 U	12 R	8 R
Trichlorofluoromethane	79,000	NL	NL	4 U	4 U	12 UJ	8 R
Vinyl chloride	60	900	20	4 UJ	4 U	12 R	8 R

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-107			
Sample ID				TP-107-SS	TP-107-W	TP-107-CA	TP-107-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (West Wall)	6 to 6.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
1,1'-Biphenyl	5,100	NL	NL	990 U	180 U	210 U	1,000 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	990 U	180 U	210 U	1,000 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	990 U	180 U	210 U	1,000 U
2,4,5-Trichlorophenol	610,000	NL	NL	990 U	180 U	210 U	1,000 U
2,4,6-Trichlorophenol	6,100	NL	NL	990 U	180 U	210 U	1,000 U
2,4-Dichlorophenol	18,000	NL	NL	990 U	180 U	210 U	1,000 U
2,4-Dimethylphenol	120,000	NL	NL	990 U	180 U	210 U	1,000 U
2,4-Dinitrophenol	12,000	NL	NL	1,900 U	350 U	400 U	2,000 U
2,4-Dinitrotoluene	1,600	NL	NL	990 U	180 U	210 U	1,000 U
2,6-Dinitrotoluene	6,100	NL	NL	990 U	180 U	210 U	1,000 U
2-Chloronaphthalene	630,000	NL	NL	990 U	180 U	210 U	1,000 U
2-Chlorophenol	39,000	NL	NL	990 U	180 U	210 U	1,000 U
2-Methylnaphthalene	23,000	NL	NL	990 U	180 U	210 U	1,000 U
2-Methylphenol	310,000	100,000	330	990 U	180 U	210 U	1,000 U
2-Nitroaniline	61,000	NL	NL	1,900 U	350 U	400 U	2,000 U
2-Nitrophenol	NL	NL	NL	990 U	180 U	210 U	1,000 U
3,3'-Dichlorobenzidine	1,100	NL	NL	990 U	180 U	210 U	1,000 U
3-Nitroaniline	NL	NL	NL	1,900 U	350 U	400 U	2,000 U
4,6-Dinitro-2-methylphenol	490	NL	NL	1,900 U	350 U	400 U	2,000 U
4-Bromophenyl-phenylether	NL	NL	NL	990 U	180 U	210 U	1,000 U
4-Chloro-3-methylphenol	610,000	NL	NL	990 U	180 U	210 U	1,000 U
4-Chloroaniline	2,400	NL	NL	990 U	180 U	210 U	1,000 U
4-Chlorophenyl-phenylether	NL	NL	NL	990 U	180 U	210 U	1,000 U
4-Methylphenol	610,000	100,000	330	990 U	180 U	210 U	1,000 U
4-Nitroaniline	24,000	NL	NL	1,900 U	350 U	400 U	2,000 U
4-Nitrophenol	NL	NL	NL	1,900 U	350 U	400 U	2,000 U
Acenaphthene	340,000	100,000	20,000	990 U	14 J	210 U	1,000 U
Acenaphthylene	340,000	100,000	100,000	990 U	19 J	10 J	62 J

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-107			
Sample ID				TP-107-SS	TP-107-W	TP-107-CA	TP-107-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (West Wall)	6 to 6.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	990 U	180 U	210 U	1,000 U
Anthracene	1,700,000	100,000	100,000	78 J	41 J	24 J	100 J
Atrazine	2,100	NL	NL	990 U	180 U	210 U	1,000 U
Benzaldehyde	780,000	NL	NL	990 U	180 U	210 U	1,000 U
Benzo(a)anthracene	150	**1,000**	*1,000*	220 J	190	100 J	560 J
Benzo(a)pyrene	15	1,000	1,000	180 J	200	87 J	530 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	250 J	300	140 J	790 J
Benzo(g,h,i)perylene	170,000	100,000	100,000	45 J	61 J	210 UJ	140 J
Benzo(k)fluoranthene	1,500	3,900	800	89 J	93 J	51 J	270 J
Bis(2-chloroethoxy)methane	18,000	NL	NL	990 U	180 U	210 U	1,000 U
Bis(2-chloroethyl)ether	210	NL	NL	990 U	180 U	210 U	1,000 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	990 U	180 U	210 U	1,000 U
Butylbenzylphthalate	260,000	NL	NL	990 U	180 U	210 U	1,000 U
Caprolactam	3,100,000	NL	NL	990 U	11 J	15 J	1,000 U
Carbazole	NL	NL	NL	990 U	22 J	12 J	51 J
Chrysene	15,000	3,900	*1,000*	200 J	220	120 J	600 J
Dibenzo(a,h)anthracene	15	330	330	990 U	31 J	14 J	83 J
Dibenzofuran	7,800	NL	NL	990 U	180 U	210 U	1,000 U
Diethylphthalate	4,900,000	NL	NL	990 U	180 U	210 U	1,000 U
Dimethylphthalate	NL	NL	NL	990 U	180 U	210 U	1,000 U
Di-n-butylphthalate	610,000	NL	NL	990 U	180 U	210 U	1,000 U
Di-n-octylphthalate	73,000	NL	NL	990 U	180 U	210 U	1,000 U
Fluoranthene	230,000	100,000	100,000	470 J	450	270	1,200
Fluorene	230,000	100,000	30,000	990 U	19 J	9 J	1,000 U
Hexachlorobenzene	300	NL	NL	990 U	180 U	210 U	1,000 U
Hexachlorobutadiene	6,100	NL	NL	990 U	180 U	210 U	1,000 U
Hexachlorocyclopentadiene	37,000	NL	NL	990 U	180 U	210 U	1,000 U
Hexachloroethane	4,300	NL	NL	990 U	180 U	210 U	1,000 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	120 J	130 J	57 J	380 J

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-107							
Sample ID				TP-107-SS		TP-107-W		TP-107-CA		TP-107-B	
Sample Date				12/11/12		12/11/12		12/11/12		12/11/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)		2 to 2.5 ft bgs (West Wall)		6 to 6.5 ft bgs (Coal Ash Sample)		6.5 to 7 ft bgs (Bottom)	
Isophorone	510,000	NL	NL	990	U	180	U	210	U	1,000	U
Naphthalene	3,600	100,000	12,000	990	U	180	U	210	U	1,000	U
Nitrobenzene	4,800	15,000	NL	990	U	180	U	210	U	1,000	U
N-Nitroso-di-n-propylamine	69	NL	NL	990	U	180	U	210	U	1,000	U
N-Nitrosodiphenylamine	99,000	NL	NL	990	U	180	U	210	U	1,000	U
Pentachlorophenol	890	6,700	800	1,900	U	350	U	400	U	2,000	U
Phenanthrene	1,700,000	100,000	100,000	270	J	260		140	J	540	J
Phenol	1,800,000	100,000	330	990	U	180	U	210	U	1,000	U
Pyrene	170,000	100,000	100,000	400	J	400		220		1,000	J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.8 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-108		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-108-SS	TP-108-CA	TP-108-B
Sample Date				12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)						
1,1,1-Trichloroethane	637,450	100,000	680	6 R	1 J	5 R
1,1,2,2-Tetrachloroethane	560	NL	NL	6 R	10 R	5 R
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	6 R	10 U	5 R
1,1,2-Trichloroethane	160	NL	NL	6 R	10 R	5 R
1,1-Dichloroethane	3,300	26,000	270	6 R	10 U	5 R
1,1-Dichloroethene	24,000	100,000	330	6 R	10 U	5 R
1,2,3-Trichlorobenzene	4,900	NL	NL	6 R	10 R	5 R
1,2,4-Trichlorobenzene	6,200	NL	NL	6 R	10 R	5 R
1,2-Dibromo-3-chloropropane	5	NL	NL	6 R	10 R	5 R
1,2-Dibromoethane	34	NL	NL	6 R	10 R	5 R
1,2-Dichlorobenzene	190,000	100,000	1,100	6 R	10 UJ	5 R
1,2-Dichloroethane	430	3,100	20	6 R	10 U	5 R
1,2-Dichloropropane	940	NL	NL	6 R	10 R	5 R
1,3-Dichlorobenzene	NL	49,000	2,400	6 R	10 UJ	5 R
1,4-Dichlorobenzene	2,400	13,000	1,800	6 R	10 UJ	5 R
1,4-Dioxane	4,900	13,000	100	130 R	200 R	100 R
2-Butanone	2,800,000	100,000	NL	13 R	20 U	10 R
2-Hexanone	21,000	NL	NL	13 R	20 R	10 R
4-Methyl-2-Pentanone	2,191,304	NL	NL	13 R	20 R	10 R
Acetone	6,100,000	100,000	50	13 R	20 U	10 R
Benzene	1,100	4,800	60	6 R	10 R	5 R
Bromochloromethane	16,000	NL	NL	6 R	10 U	5 R
Bromodichloromethane	270	NL	NL	6 R	10 R	5 R
Bromoform	62,000	NL	NL	6 R	10 R	5 R
Bromomethane	730	NL	NL	6 R	10 U	5 R

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-108		
Sample ID				TP-108-SS	TP-108-CA	TP-108-B
Sample Date				12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	6 R	10 U	5 R
Carbon tetrachloride	610	2,400	760	6 R	10 R	5 R
Chlorobenzene	29,000	100,000	1,100	6 R	10 R	5 R
Chloroethane	1,500,000	NL	NL	6 R	10 U	5 R
Chloroform	290	49,000	370	6 R	10 U	5 R
Chloromethane	12,000	NL	NL	6 R	10 U	5 R
cis-1,2-Dichloroethene	16,000	100,000	250	6 R	10 U	5 R
cis-1,3-Dichloropropene	1,700	NL	NL	6 R	10 R	5 R
Cyclohexane	117,000	NL	NL	6 R	10 R	5 R
Dibromochloromethane	680	NL	NL	6 R	10 R	5 R
Dichlorodifluoromethane	9,400	NL	NL	6 R	10 U	5 R
Ethylbenzene	5,400	41,000	1,000	6 R	10 R	5 R
Isopropylbenzene	259,098	NL	NL	6 R	10 R	5 R
m,p-Xylene	59,000	100,000	260	6 R	10 R	5 R
Methyl acetate	7,800,000	NL	NL	6 R	10 U	5 R
Methyl tert-butyl ether	43,000	100,000	930	6 R	10 U	5 R
Methylcyclohexane	NL	NL	NL	6 R	10 R	5 R
Methylene chloride	36,000	100,000	50	6 R	10 UJ	5 R
o-Xylene	69,000	100,000	260	6 R	10 R	5 R
Styrene	822,434	NL	NL	6 R	10 UJ	5 R
Tetrachloroethene	8,600	19,000	1,300	6 R	10 R	5 R
Toluene	723,996	100,000	700	6 R	10 UJ	5 R
trans-1,2-Dichloroethene	15,000	100,000	190	6 R	10 U	5 R
trans-1,3-Dichloropropene	1,700	NL	NL	6 R	10 R	5 R
Trichloroethene	440	21,000	470	6 R	10 R	5 R
Trichlorofluoromethane	79,000	NL	NL	6 R	10 U	5 R
Vinyl chloride	60	900	20	6 R	10 U	5 R

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-108		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-108-SS	TP-108-CA	TP-108-B
Sample Date				12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
1,1'-Biphenyl	5,100	NL	NL	1,100 U	210 U	360 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	1,100 U	210 U	360 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	1,100 U	210 U	360 U
2,4,5-Trichlorophenol	610,000	NL	NL	1,100 U	210 U	360 U
2,4,6-Trichlorophenol	6,100	NL	NL	1,100 U	210 U	360 U
2,4-Dichlorophenol	18,000	NL	NL	1,100 U	210 U	360 U
2,4-Dimethylphenol	120,000	NL	NL	1,100 U	210 UJ	360 U
2,4-Dinitrophenol	12,000	NL	NL	2,100 U	410 U	690 U
2,4-Dinitrotoluene	1,600	NL	NL	1,100 U	210 U	360 U
2,6-Dinitrotoluene	6,100	NL	NL	1,100 U	210 U	360 U
2-Chloronaphthalene	630,000	NL	NL	1,100 U	210 U	360 U
2-Chlorophenol	39,000	NL	NL	1,100 U	210 U	360 U
2-Methylnaphthalene	23,000	NL	NL	1,100 U	210 U	360 U
2-Methylphenol	310,000	100,000	330	1,100 U	210 UJ	360 U
2-Nitroaniline	61,000	NL	NL	2,100 U	410 U	690 U
2-Nitrophenol	NL	NL	NL	1,100 U	210 U	360 U
3,3'-Dichlorobenzidine	1,100	NL	NL	1,100 U	210 U	360 U
3-Nitroaniline	NL	NL	NL	2,100 U	410 U	690 U
4,6-Dinitro-2-methylphenol	490	NL	NL	2,100 U	410 U	690 U
4-Bromophenyl-phenylether	NL	NL	NL	1,100 U	210 U	360 U
4-Chloro-3-methylphenol	610,000	NL	NL	1,100 U	210 U	360 U
4-Chloroaniline	2,400	NL	NL	1,100 U	210 U	360 U
4-Chlorophenyl-phenylether	NL	NL	NL	1,100 U	210 U	360 U
4-Methylphenol	610,000	100,000	330	1,100 U	210 UJ	360 U
4-Nitroaniline	24,000	NL	NL	2,100 U	410 U	690 U
4-Nitrophenol	NL	NL	NL	2,100 U	410 U	690 U
Acenaphthene	340,000	100,000	20,000	1,100 U	210 U	360 U
Acenaphthylene	340,000	100,000	100,000	1,100 U	210 U	14 J

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-108		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-108-SS	TP-108-CA	TP-108-B
Sample Date				12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	1,100 U	210 U	360 U
Anthracene	1,700,000	100,000	100,000	1,100 U	210 U	26 J
Atrazine	2,100	NL	NL	1,100 U	210 U	360 U
Benzaldehyde	780,000	NL	NL	1,100 U	210 U	360 U
Benzo(a)anthracene	150	**1,000**	*1,000*	76 J	210 UJ	110 J
Benzo(a)pyrene	15	1,000	1,000	69 J	210 UJ	110 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	97 J	210 UJ	140 J
Benzo(g,h,i)perylene	170,000	100,000	100,000	1,100 U	210 UJ	28 J
Benzo(k)fluoranthene	1,500	3,900	800	1,100 U	210 UJ	46 J
Bis(2-chloroethoxy)methane	18,000	NL	NL	1,100 U	210 U	360 U
Bis(2-chloroethyl)ether	210	NL	NL	1,100 U	210 U	360 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	1,100 U	210 U	360 U
Butylbenzylphthalate	260,000	NL	NL	1,100 U	11 J	360 U
Caprolactam	3,100,000	NL	NL	1,100 U	15 J	360 U
Carbazole	NL	NL	NL	1,100 U	210 U	360 U
Chrysene	15,000	3,900	*1,000*	66 J	210 UJ	98 J
Dibenzo(a,h)anthracene	15	330	330	1,100 U	210 UJ	16 J
Dibenzofuran	7,800	NL	NL	1,100 U	210 U	360 U
Diethylphthalate	4,900,000	NL	NL	1,100 U	210 U	360 U
Dimethylphthalate	NL	NL	NL	1,100 U	210 U	360 U
Di-n-butylphthalate	610,000	NL	NL	1,100 U	210 U	360 U
Di-n-octylphthalate	73,000	NL	NL	1,100 U	210 U	360 U
Fluoranthene	230,000	100,000	100,000	97 J	210 UJ	180 J
Fluorene	230,000	100,000	30,000	1,100 U	210 U	360 U
Hexachlorobenzene	300	NL	NL	1,100 U	210 U	360 U
Hexachlorobutadiene	6,100	NL	NL	1,100 U	210 U	360 U
Hexachlorocyclopentadiene	37,000	NL	NL	1,100 U	210 U	360 U
Hexachloroethane	4,300	NL	NL	1,100 U	210 U	360 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	44 J	210 UJ	63 J

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-108		
Sample ID				TP-108-SS	TP-108-CA	TP-108-B
Sample Date				12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs (Bottom)
Isophorone	510,000	NL	NL	1,100 U	210 U	360 U
Naphthalene	3,600	100,000	12,000	1,100 U	210 U	360 U
Nitrobenzene	4,800	15,000	NL	1,100 U	210 U	360 U
N-Nitroso-di-n-propylamine	69	NL	NL	1,100 U	210 U	360 U
N-Nitrosodiphenylamine	99,000	NL	NL	1,100 U	210 U	360 U
Pentachlorophenol	890	6,700	800	2,100 U	410 U	690 U
Phenanthrene	1,700,000	100,000	100,000	1,100 U	210 U	70 J
Phenol	1,800,000	100,000	330	1,100 U	210 U	360 U
Pyrene	170,000	100,000	100,000	94 J	210 UJ	170 J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6. 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-109			
Sample ID				TP-109-SS	TP-109-S	TP-109-CA	TP-109-B
Sample Date				12/12/12	12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1.5 ft bgs (South Wall)	1.5 to 2.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)							
1,1,1-Trichloroethane	637,450	100,000	680	6 U	5 U	7 R	4 R
1,1,2,2-Tetrachloroethane	560	NL	NL	6 U	5 U	7 R	4 R
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	6 U	5 U	7 U	4 R
1,1,2-Trichloroethane	160	NL	NL	6 U	5 U	7 R	4 R
1,1-Dichloroethane	3,300	26,000	270	6 U	5 U	7 U	4 R
1,1-Dichloroethene	24,000	100,000	330	6 U	5 U	7 U	4 R
1,2,3-Trichlorobenzene	4,900	NL	NL	6 R	5 R	7 R	4 R
1,2,4-Trichlorobenzene	6,200	NL	NL	6 R	5 R	7 R	4 R
1,2-Dibromo-3-chloropropane	5	NL	NL	6 R	5 R	7 R	4 R
1,2-Dibromoethane	34	NL	NL	6 U	5 U	7 R	4 R
1,2-Dichlorobenzene	190,000	100,000	1,100	6 R	5 R	7 R	4 R
1,2-Dichloroethane	430	3,100	20	6 U	5 U	7 U	4 R
1,2-Dichloropropane	940	NL	NL	6 U	5 U	7 R	4 R
1,3-Dichlorobenzene	NL	49,000	2,400	6 R	5 R	7 R	4 R
1,4-Dichlorobenzene	2,400	13,000	1,800	6 R	5 R	7 R	4 R
1,4-Dioxane	4,900	13,000	100	120 R	110 R	140 R	83 R
2-Butanone	2,800,000	100,000	NL	12 U	11 U	14 U	8 R
2-Hexanone	21,000	NL	NL	12 U	11 U	14 R	8 R
4-Methyl-2-Pentanone	2,191,304	NL	NL	12 U	11 U	14 R	8 R
Acetone	6,100,000	100,000	50	3 J	11 U	14 U	8 R
Benzene	1,100	4,800	60	6 U	5 U	7 R	4 R
Bromochloromethane	16,000	NL	NL	6 U	5 U	7 U	4 R
Bromodichloromethane	270	NL	NL	6 U	5 U	7 R	4 R
Bromoform	62,000	NL	NL	6 R	5 R	7 R	4 R
Bromomethane	730	NL	NL	6 U	5 U	7 U	4 R

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-109			
Sample ID				TP-109-SS	TP-109-S	TP-109-CA	TP-109-B
Sample Date				12/12/12	12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1.5 ft bgs (South Wall)	1.5 to 2.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	6 U	5 U	7 UJ	4 R
Carbon tetrachloride	610	2,400	760	6 U	5 U	7 R	4 R
Chlorobenzene	29,000	100,000	1,100	6 U	5 U	7 R	4 R
Chloroethane	1,500,000	NL	NL	6 U	5 U	7 U	4 R
Chloroform	290	49,000	370	6 U	5 U	7 J	4 R
Chloromethane	12,000	NL	NL	6 U	5 U	7 U	4 R
cis-1,2-Dichloroethene	16,000	100,000	250	6 U	5 U	7 U	4 R
cis-1,3-Dichloropropene	1,700	NL	NL	6 U	5 U	7 R	4 R
Cyclohexane	117,000	NL	NL	1 J	5 U	7 R	4 R
Dibromochloromethane	680	NL	NL	6 U	5 U	7 R	4 R
Dichlorodifluoromethane	9,400	NL	NL	6 U	5 U	7 U	4 R
Ethylbenzene	5,400	41,000	1,000	6 U	5 U	7 R	4 R
Isopropylbenzene	259,098	NL	NL	6 U	5 U	7 R	4 R
m,p-Xylene	59,000	100,000	260	6 U	5 U	7 R	4 R
Methyl acetate	7,800,000	NL	NL	6 U	5 U	7 U	4 R
Methyl tert-butyl ether	43,000	100,000	930	6 U	5 U	7 U	4 R
Methylcyclohexane	NL	NL	NL	6 U	5 U	7 R	4 R
Methylene chloride	36,000	100,000	50	6 U	5 U	7 UJ	4 R
o-Xylene	69,000	100,000	260	6 U	5 U	7 R	4 R
Styrene	822,434	NL	NL	6 U	5 U	7 R	4 R
Tetrachloroethene	8,600	19,000	1,300	6 U	5 U	7 R	4 R
Toluene	723,996	100,000	700	6 U	5 U	7 R	4 R
trans-1,2-Dichloroethene	15,000	100,000	190	6 U	5 U	7 U	4 R
trans-1,3-Dichloropropene	1,700	NL	NL	6 U	5 U	7 R	4 R
Trichloroethene	440	21,000	470	6 U	5 U	7 R	4 R
Trichlorofluoromethane	79,000	NL	NL	6 U	5 U	7 UJ	4 R
Vinyl chloride	60	900	20	6 UJ	5 U	7 U	4 R

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-109			
Sample ID				TP-109-SS	TP-109-S	TP-109-CA	TP-109-B
Sample Date				12/12/12	12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1.5 ft bgs (South Wall)	1.5 to 2.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
1,1'-Biphenyl	5,100	NL	NL	6,900 U	2,000 U	220 UJ	190 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2,4,5-Trichlorophenol	610,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2,4,6-Trichlorophenol	6,100	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2,4-Dichlorophenol	18,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2,4-Dimethylphenol	120,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2,4-Dinitrophenol	12,000	NL	NL	13,000 U	3,800 U	420 UJ	370 U
2,4-Dinitrotoluene	1,600	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2,6-Dinitrotoluene	6,100	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2-Chloronaphthalene	630,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2-Chlorophenol	39,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2-Methylnaphthalene	23,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
2-Methylphenol	310,000	100,000	330	6,900 U	2,000 U	220 UJ	190 U
2-Nitroaniline	61,000	NL	NL	13,000 U	3,800 U	420 UJ	370 U
2-Nitrophenol	NL	NL	NL	6,900 U	2,000 U	220 UJ	190 U
3,3'-Dichlorobenzidine	1,100	NL	NL	6,900 U	2,000 U	220 UJ	190 U
3-Nitroaniline	NL	NL	NL	13,000 U	3,800 U	420 UJ	370 U
4,6-Dinitro-2-methylphenol	490	NL	NL	13,000 U	3,800 U	420 UJ	370 U
4-Bromophenyl-phenylether	NL	NL	NL	6,900 U	2,000 U	220 UJ	190 U
4-Chloro-3-methylphenol	610,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
4-Chloroaniline	2,400	NL	NL	6,900 U	2,000 U	220 UJ	190 U
4-Chlorophenyl-phenylether	NL	NL	NL	6,900 U	2,000 U	220 UJ	190 U
4-Methylphenol	610,000	100,000	330	6,900 U	2,000 U	220 UJ	190 U
4-Nitroaniline	24,000	NL	NL	13,000 U	3,800 U	420 UJ	370 U
4-Nitrophenol	NL	NL	NL	13,000 U	3,800 U	420 UJ	370 U
Acenaphthene	340,000	100,000	20,000	6,900 U	2,000 U	220 UJ	190 U
Acenaphthylene	340,000	100,000	100,000	6,900 U	2,000 U	220 UJ	190 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-109			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-109-SS	TP-109-S	TP-109-CA	TP-109-B
Sample Date				12/12/12	12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1.5 ft bgs (South Wall)	1.5 to 2.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Anthracene	1,700,000	100,000	100,000	6,900 U	2,000 U	15 J	190 U
Atrazine	2,100	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Benzaldehyde	780,000	NL	NL	6,900 U	2,000 U	18 J	190 U
Benzo(a)anthracene	150	**1,000**	*1,000*	6,900 U	84 J	79 J	9 J
Benzo(a)pyrene	15	1,000	1,000	6,900 U	2,000 U	58 J	8 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	330 J	110 J	91 J	10 J
Benzo(g,h,i)perylene	170,000	100,000	100,000	6,900 U	2,000 U	220 UJ	190 U
Benzo(k)fluoranthene	1,500	3,900	800	6,900 U	2,000 U	29 J	190 U
Bis(2-chloroethoxy)methane	18,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Bis(2-chloroethyl)ether	210	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Butylbenzylphthalate	260,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Caprolactam	3,100,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Carbazole	NL	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Chrysene	15,000	3,900	*1,000*	6,900 U	59 J	72 J	190 U
Dibenzo(a,h)anthracene	15	330	330	6,900 U	2,000 U	10 J	190 U
Dibenzofuran	7,800	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Diethylphthalate	4,900,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Dimethylphthalate	NL	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Di-n-butylphthalate	610,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Di-n-octylphthalate	73,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Fluoranthene	230,000	100,000	100,000	6,900 U	100 J	140 J	9 J
Fluorene	230,000	100,000	30,000	6,900 U	2,000 U	220 UJ	190 U
Hexachlorobenzene	300	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Hexachlorobutadiene	6,100	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Hexachlorocyclopentadiene	37,000	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Hexachloroethane	4,300	NL	NL	6,900 U	2,000 U	220 UJ	190 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	6,900 U	2,000 U	35 J	190 U

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Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location		EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-109							
Sample ID					TP-109-SS		TP-109-S		TP-109-CA		TP-109-B	
Sample Date					12/12/12		12/12/12		12/12/12		12/12/12	
Sample Depth					0 to 2 inches bgs (Surface Soil)		0.5 to 1.5 ft bgs (South Wall)		1.5 to 2.5 ft bgs (Coal Ash Sample)		6.5 to 7 ft bgs (Bottom)	
Isophorone		510,000	NL	NL	6,900	U	2,000	U	220	UJ	190	U
Naphthalene		3,600	100,000	12,000	6,900	U	2,000	U	220	UJ	190	U
Nitrobenzene		4,800	15,000	NL	6,900	U	2,000	U	220	UJ	190	U
N-Nitroso-di-n-propylamine		69	NL	NL	6,900	U	2,000	U	220	UJ	190	U
N-Nitrosodiphenylamine		99,000	NL	NL	6,900	U	2,000	U	220	UJ	190	U
Pentachlorophenol		890	6,700	800	13,000	U	3,800	U	420	UJ	370	U
Phenanthrene		1,700,000	100,000	100,000	6,900	U	2,000	U	44	J	190	U
Phenol		1,800,000	100,000	330	6,900	U	2,000	U	220	UJ	190	U
Pyrene		170,000	100,000	100,000	6,900	U	92	J	130	J	10	J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.8 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-110	
Sample ID				TP-110-SS	TP-110-B
Sample Date				12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)
Volatile Organic Compounds (VOCs) (µg/kg)					
1,1,1-Trichloroethane	637,450	100,000	680	5 R	6 J
1,1,2,2-Tetrachloroethane	560	NL	NL	5 R	9 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	5 R	9 U
1,1,2-Trichloroethane	160	NL	NL	5 R	9 U
1,1-Dichloroethane	3,300	26,000	270	5 R	9 U
1,1-Dichloroethene	24,000	100,000	330	5 R	9 U
1,2,3-Trichlorobenzene	4,900	NL	NL	5 R	9 R
1,2,4-Trichlorobenzene	6,200	NL	NL	5 R	9 R
1,2-Dibromo-3-chloropropane	5	NL	NL	5 R	9 R
1,2-Dibromoethane	34	NL	NL	5 R	9 U
1,2-Dichlorobenzene	190,000	100,000	1,100	5 R	9 R
1,2-Dichloroethane	430	3,100	20	5 R	9 U
1,2-Dichloropropane	940	NL	NL	5 R	9 U
1,3-Dichlorobenzene	NL	49,000	2,400	5 R	9 R
1,4-Dichlorobenzene	2,400	13,000	1,800	5 R	9 R
1,4-Dioxane	4,900	13,000	100	91 R	180 R
2-Butanone	2,800,000	100,000	NL	9 R	18 U
2-Hexanone	21,000	NL	NL	9 R	18 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	9 R	18 U
Acetone	6,100,000	100,000	50	9 R	18 U
Benzene	1,100	4,800	60	5 R	9 U
Bromochloromethane	16,000	NL	NL	5 R	9 U
Bromodichloromethane	270	NL	NL	5 R	9 U
Bromoform	62,000	NL	NL	5 R	9 R
Bromomethane	730	NL	NL	5 R	9 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-110	
Sample ID				TP-110-SS	TP-110-B
Sample Date				12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)
Carbon disulfide	82,000	NL	NL	5 R	9 U
Carbon tetrachloride	610	2,400	760	5 R	9 U
Chlorobenzene	29,000	100,000	1,100	5 R	9 U
Chloroethane	1,500,000	NL	NL	5 R	9 U
Chloroform	290	49,000	370	5 R	9 U
Chloromethane	12,000	NL	NL	5 R	9 U
cis-1,2-Dichloroethene	16,000	100,000	250	5 R	9 U
cis-1,3-Dichloropropene	1,700	NL	NL	5 R	9 U
Cyclohexane	117,000	NL	NL	5 R	9 U
Dibromochloromethane	680	NL	NL	5 R	9 U
Dichlorodifluoromethane	9,400	NL	NL	5 R	9 U
Ethylbenzene	5,400	41,000	1,000	5 R	9 U
Isopropylbenzene	259,098	NL	NL	5 R	9 U
m,p-Xylene	59,000	100,000	260	5 R	9 U
Methyl acetate	7,800,000	NL	NL	5 R	9 U
Methyl tert-butyl ether	43,000	100,000	930	5 R	9 U
Methylcyclohexane	NL	NL	NL	5 R	9 U
Methylene chloride	36,000	100,000	50	5 R	9 U
o-Xylene	69,000	100,000	260	5 R	9 U
Styrene	822,434	NL	NL	5 R	9 U
Tetrachloroethene	8,600	19,000	1,300	5 R	9 U
Toluene	723,996	100,000	700	5 R	9 U
trans-1,2-Dichloroethene	15,000	100,000	190	5 R	9 U
trans-1,3-Dichloropropene	1,700	NL	NL	5 R	9 U
Trichloroethene	440	21,000	470	5 R	9 U
Trichlorofluoromethane	79,000	NL	NL	5 R	9 U
Vinyl chloride	60	900	20	5 R	9 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-110	
Sample ID				TP-110-SS	TP-110-B
Sample Date				12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)					
1,1'-Biphenyl	5,100	NL	NL	190 U	230 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	190 U	230 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	190 U	230 U
2,4,5-Trichlorophenol	610,000	NL	NL	190 U	230 U
2,4,6-Trichlorophenol	6,100	NL	NL	190 U	230 U
2,4-Dichlorophenol	18,000	NL	NL	190 U	230 U
2,4-Dimethylphenol	120,000	NL	NL	190 U	230 UJ
2,4-Dinitrophenol	12,000	NL	NL	360 U	450 U
2,4-Dinitrotoluene	1,600	NL	NL	190 U	230 U
2,6-Dinitrotoluene	6,100	NL	NL	190 U	230 U
2-Chloronaphthalene	630,000	NL	NL	190 U	230 U
2-Chlorophenol	39,000	NL	NL	190 U	230 U
2-Methylnaphthalene	23,000	NL	NL	190 U	230 U
2-Methylphenol	310,000	100,000	330	190 U	230 UJ
2-Nitroaniline	61,000	NL	NL	360 U	450 U
2-Nitrophenol	NL	NL	NL	190 U	230 U
3,3'-Dichlorobenzidine	1,100	NL	NL	190 U	230 U
3-Nitroaniline	NL	NL	NL	360 U	450 U
4,6-Dinitro-2-methylphenol	490	NL	NL	360 U	450 U
4-Bromophenyl-phenylether	NL	NL	NL	190 U	230 U
4-Chloro-3-methylphenol	610,000	NL	NL	190 U	230 U
4-Chloroaniline	2,400	NL	NL	190 U	230 U
4-Chlorophenyl-phenylether	NL	NL	NL	190 U	230 U
4-Methylphenol	610,000	100,000	330	190 U	230 UJ
4-Nitroaniline	24,000	NL	NL	360 U	450 U
4-Nitrophenol	NL	NL	NL	360 U	450 U
Acenaphthene	340,000	100,000	20,000	190 U	230 U
Acenaphthylene	340,000	100,000	100,000	190 U	230 U

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Analytical Soil Results - VOCs and SVOCs
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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-110	
Sample ID				TP-110-SS	TP-110-B
Sample Date				12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)
Acetophenone	780,000	NL	NL	190 U	33 J
Anthracene	1,700,000	100,000	100,000	190 U	230 U
Atrazine	2,100	NL	NL	190 U	230 U
Benzaldehyde	780,000	NL	NL	190 U	230 U
Benzo(a)anthracene	150	**1,000**	*1,000*	39 J	230 UJ
Benzo(a)pyrene	15	1,000	1,000	42 J	230 UJ
Benzo(b)fluoranthene	150	**1,000**	*1,000*	61 J	230 UJ
Benzo(g,h,i)perylene	170,000	100,000	100,000	13 J	230 UJ
Benzo(k)fluoranthene	1,500	3,900	800	21 J	230 UJ
Bis(2-chloroethoxy)methane	18,000	NL	NL	190 U	230 U
Bis(2-chloroethyl)ether	210	NL	NL	190 U	230 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	190 U	230 U
Butylbenzylphthalate	260,000	NL	NL	190 U	12 J
Caprolactam	3,100,000	NL	NL	190 U	230 U
Carbazole	NL	NL	NL	190 U	230 U
Chrysene	15,000	3,900	*1,000*	42 J	230 UJ
Dibenzo(a,h)anthracene	15	330	330	190 U	230 UJ
Dibenzofuran	7,800	NL	NL	190 U	230 U
Diethylphthalate	4,900,000	NL	NL	190 U	230 U
Dimethylphthalate	NL	NL	NL	190 U	230 U
Di-n-butylphthalate	610,000	NL	NL	190 U	230 U
Di-n-octylphthalate	73,000	NL	NL	190 U	230 U
Fluoranthene	230,000	100,000	100,000	71 J	230 UJ
Fluorene	230,000	100,000	30,000	190 U	230 U
Hexachlorobenzene	300	NL	NL	190 U	230 U
Hexachlorobutadiene	6,100	NL	NL	190 U	230 U
Hexachlorocyclopentadiene	37,000	NL	NL	190 U	230 U
Hexachloroethane	4,300	NL	NL	190 U	230 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	29 J	230 UJ

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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-110	
Sample ID				TP-110-SS	TP-110-B
Sample Date				12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)
Isophorone	510,000	NL	NL	190 U	230 U
Naphthalene	3,600	100,000	12,000	190 U	10 J
Nitrobenzene	4,800	15,000	NL	190 U	230 U
N-Nitroso-di-n-propylamine	69	NL	NL	190 U	230 U
N-Nitrosodiphenylamine	99,000	NL	NL	190 U	230 U
Pentachlorophenol	890	6,700	800	360 U	450 U
Phenanthrene	1,700,000	100,000	100,000	25 J	230 U
Phenol	1,800,000	100,000	330	190 U	10 J
Pyrene	170,000	100,000	100,000	67 J	230 UJ

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.8 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-111				
Sample ID				TP-111-SS	TP-911-SS	TP-111-N	TP-111-CA	TP-111-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1.5 to 2 ft bgs (North Wall)	12.5 to 13 ft bgs (Coal Ash Sample)	12.5 to 13 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)								
1,1,1-Trichloroethane	637,450	100,000	680	5 U	6 U	4 U	8 R	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	5 U	6 U	4 U	8 R	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	5 U	6 U	4 U	8 R	5 U
1,1,2-Trichloroethane	160	NL	NL	5 U	6 U	4 U	8 R	5 U
1,1-Dichloroethane	3,300	26,000	270	5 U	6 U	4 U	8 R	5 U
1,1-Dichloroethene	24,000	100,000	330	5 U	6 U	4 U	8 R	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	5 U	6 U	4 U	8 R	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	5 U	6 U	4 U	8 R	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	5 U	6 U	4 U	8 R	5 U
1,2-Dibromoethane	34	NL	NL	5 U	6 U	4 U	8 R	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	5 U	6 U	4 U	8 R	5 U
1,2-Dichloroethane	430	3,100	20	5 U	6 U	4 U	8 R	5 U
1,2-Dichloropropane	940	NL	NL	5 U	6 U	4 U	8 R	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	5 U	6 U	4 U	8 R	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	5 U	6 U	4 U	8 R	5 U
1,4-Dioxane	4,900	13,000	100	110 R	110 R	88 R	170 R	100 R
2-Butanone	2,800,000	100,000	NL	11 U	11 U	9 U	17 R	10 U
2-Hexanone	21,000	NL	NL	11 U	11 U	9 U	17 R	10 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	11 U	11 U	9 U	17 R	10 U
Acetone	6,100,000	100,000	50	11 U	30	9 U	17 R	10 U
Benzene	1,100	4,800	60	5 U	6 U	4 U	8 R	5 U
Bromochloromethane	16,000	NL	NL	5 U	6 U	4 U	8 R	5 U
Bromodichloromethane	270	NL	NL	5 U	6 U	4 U	8 R	5 U
Bromoform	62,000	NL	NL	5 U	6 U	4 U	8 R	5 U
Bromomethane	730	NL	NL	5 U	6 U	4 U	8 R	5 U

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Sample ID				TP-111-SS	TP-911-SS	TP-111-N	TP-111-CA	TP-111-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1.5 to 2 ft bgs (North Wall)	12.5 to 13 ft bgs (Coal Ash Sample)	12.5 to 13 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	5 U	6 U	4 U	8 R	5 U
Carbon tetrachloride	610	2,400	760	5 U	6 U	4 U	8 R	5 U
Chlorobenzene	29,000	100,000	1,100	5 U	6 U	4 U	8 R	5 U
Chloroethane	1,500,000	NL	NL	5 U	6 U	4 U	8 R	5 U
Chloroform	290	49,000	370	5 U	6 U	4 U	8 R	5 U
Chloromethane	12,000	NL	NL	5 U	6 U	4 U	8 R	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	5 U	6 U	4 U	8 R	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	5 U	6 U	4 U	8 R	5 U
Cyclohexane	117,000	NL	NL	5 U	6 U	4 U	8 R	5 U
Dibromochloromethane	680	NL	NL	5 U	6 U	4 U	8 R	5 U
Dichlorodifluoromethane	9,400	NL	NL	5 U	6 U	4 U	8 R	5 U
Ethylbenzene	5,400	41,000	1,000	5 U	6 U	4 U	8 R	5 U
Isopropylbenzene	259,098	NL	NL	5 U	6 U	4 U	8 R	5 U
m,p-Xylene	59,000	100,000	260	5 U	6 U	4 U	8 R	5 U
Methyl acetate	7,800,000	NL	NL	5 U	6 U	4 U	8 R	5 U
Methyl tert-butyl ether	43,000	100,000	930	5 U	6 U	4 U	8 R	5 U
Methylcyclohexane	NL	NL	NL	5 U	6 U	4 U	8 R	5 U
Methylene chloride	36,000	100,000	50	5 U	6 U	4 U	8 R	5 U
o-Xylene	69,000	100,000	260	5 U	6 U	4 U	8 R	5 U
Styrene	822,434	NL	NL	5 U	6 U	4 U	8 R	5 U
Tetrachloroethene	8,600	19,000	1,300	5 U	6 U	4 U	8 R	5 U
Toluene	723,996	100,000	700	5 U	6 U	4 U	8 R	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	5 U	6 U	4 U	8 R	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	5 U	6 U	4 U	8 R	5 U
Trichloroethene	440	21,000	470	5 U	6 U	4 U	8 R	5 U
Trichlorofluoromethane	79,000	NL	NL	5 U	6 U	4 U	8 R	5 U
Vinyl chloride	60	900	20	5 U	6 U	4 U	8 R	5 U

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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-111				
Sample ID				TP-111-SS	TP-911-SS	TP-111-N	TP-111-CA	TP-111-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1.5 to 2 ft bgs (North Wall)	12.5 to 13 ft bgs (Coal Ash Sample)	12.5 to 13 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)								
1,1'-Biphenyl	5,100	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2,4,5-Trichlorophenol	610,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2,4,6-Trichlorophenol	6,100	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2,4-Dichlorophenol	18,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2,4-Dimethylphenol	120,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2,4-Dinitrophenol	12,000	NL	NL	360 U	460 U	360 UJ	390 UJ	410 U
2,4-Dinitrotoluene	1,600	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2,6-Dinitrotoluene	6,100	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2-Chloronaphthalene	630,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2-Chlorophenol	39,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2-Methylnaphthalene	23,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
2-Methylphenol	310,000	100,000	330	190 U	240 U	190 UJ	200 UJ	210 U
2-Nitroaniline	61,000	NL	NL	360 U	460 U	360 UJ	390 UJ	410 U
2-Nitrophenol	NL	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
3,3'-Dichlorobenzidine	1,100	NL	NL	190 UJ	240 U	190 UJ	200 UJ	210 U
3-Nitroaniline	NL	NL	NL	360 U	460 U	360 UJ	390 UJ	410 U
4,6-Dinitro-2-methylphenol	490	NL	NL	360 U	460 U	360 UJ	390 UJ	410 U
4-Bromophenyl-phenylether	NL	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
4-Chloro-3-methylphenol	610,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
4-Chloroaniline	2,400	NL	NL	190 UJ	240 U	190 UJ	200 UJ	210 U
4-Chlorophenyl-phenylether	NL	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
4-Methylphenol	610,000	100,000	330	190 U	240 U	190 UJ	200 UJ	210 U
4-Nitroaniline	24,000	NL	NL	360 U	460 U	360 UJ	390 UJ	410 U
4-Nitrophenol	NL	NL	NL	360 U	460 U	360 UJ	390 UJ	410 U
Acenaphthene	340,000	100,000	20,000	190 U	240 U	190 UJ	200 UJ	210 U
Acenaphthylene	340,000	100,000	100,000	190 U	240 U	190 UJ	200 UJ	210 U

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Sample ID				TP-111-SS	TP-911-SS	TP-111-N	TP-111-CA	TP-111-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1.5 to 2 ft bgs (North Wall)	12.5 to 13 ft bgs (Coal Ash Sample)	12.5 to 13 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Anthracene	1,700,000	100,000	100,000	190 U	9 J	190 UJ	200 UJ	210 U
Atrazine	2,100	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Benzaldehyde	780,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Benzo(a)anthracene	150	**1,000**	*1,000*	28 J	50 J	190 UJ	200 UJ	210 U
Benzo(a)pyrene	15	1,000	1,000	31 J	52 J	190 UJ	200 UJ	210 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	49 J	82 J	190 UJ	200 UJ	210 U
Benzo(g,h,i)perylene	170,000	100,000	100,000	190 U	240 U	190 UJ	200 UJ	210 U
Benzo(k)fluoranthene	1,500	3,900	800	16 J	28 J	190 UJ	200 UJ	210 U
Bis(2-chloroethoxy)methane	18,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Bis(2-chloroethyl)ether	210	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Butylbenzylphthalate	260,000	NL	NL	190 U	240 U	190 UJ	9 J	210 U
Caprolactam	3,100,000	NL	NL	190 U	240 U	190 UJ	33 J	210 U
Carbazole	NL	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Chrysene	15,000	3,900	*1,000*	34 J	65 J	190 UJ	200 UJ	210 U
Dibenzo(a,h)anthracene	15	330	330	190 U	12 J	190 UJ	200 UJ	210 U
Dibenzofuran	7,800	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Diethylphthalate	4,900,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Dimethylphthalate	NL	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Di-n-butylphthalate	610,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Di-n-octylphthalate	73,000	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Fluoranthene	230,000	100,000	100,000	54 J	110 J	190 UJ	200 UJ	210 U
Fluorene	230,000	100,000	30,000	190 U	240 U	190 UJ	200 UJ	210 U
Hexachlorobenzene	300	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Hexachlorobutadiene	6,100	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Hexachlorocyclopentadiene	37,000	NL	NL	190 UJ	240 U	190 UJ	200 UJ	210 U
Hexachloroethane	4,300	NL	NL	190 U	240 U	190 UJ	200 UJ	210 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	26 J	47 J	190 UJ	200 UJ	210 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-111									
Sample ID				TP-111-SS		TP-911-SS		TP-111-N		TP-111-CA		TP-111-B	
Sample Date				12/18/12		12/18/12		12/18/12		12/18/12		12/18/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)				1.5 to 2 ft bgs (North Wall)		12.5 to 13 ft bgs (Coal Ash Sample)		12.5 to 13 ft bgs (Bottom)	
Isophorone	510,000	NL	NL	190	U	240	U	190	UJ	200	UJ	210	U
Naphthalene	3,600	100,000	12,000	190	U	240	U	190	UJ	200	UJ	210	U
Nitrobenzene	4,800	15,000	NL	190	U	240	U	190	UJ	200	UJ	210	U
N-Nitroso-di-n-propylamine	69	NL	NL	190	UJ	240	UJ	190	UJ	200	UJ	210	UJ
N-Nitrosodiphenylamine	99,000	NL	NL	190	U	240	U	190	UJ	200	UJ	210	U
Pentachlorophenol	890	6,700	800	360	U	460	U	360	UJ	390	UJ	410	U
Phenanthrene	1,700,000	100,000	100,000	24	J	55	J	190	UJ	200	UJ	210	U
Phenol	1,800,000	100,000	330	190	U	240	U	8	J	200	UJ	210	U
Pyrene	170,000	100,000	100,000	51	J	110	J	190	UJ	200	UJ	210	U

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.8 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-112				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-112-SS	TP-912-SS	TP-112-E	TP-112-S	TP-112-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1 to 1.5 ft bgs (East Wall)	1 to 1.5 ft bgs (South Wall)	5.5 to 6 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)								
1,1,1-Trichloroethane	637,450	100,000	680	6 U	5 U	5 U	4 U	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	6 U	5 U	5 U	4 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	6 U	5 U	5 U	4 U	5 U
1,1,2-Trichloroethane	160	NL	NL	6 U	5 U	5 U	4 U	5 U
1,1-Dichloroethane	3,300	26,000	270	6 U	5 U	5 U	4 U	5 U
1,1-Dichloroethene	24,000	100,000	330	6 U	5 U	5 U	4 U	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	6 U	5 U	5 U	4 U	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	6 U	5 U	5 U	4 U	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	6 U	5 U	5 U	4 U	5 U
1,2-Dibromoethane	34	NL	NL	6 U	5 U	5 U	4 U	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	6 U	5 U	5 U	4 U	5 U
1,2-Dichloroethane	430	3,100	20	6 U	5 U	5 U	4 U	5 U
1,2-Dichloropropane	940	NL	NL	6 U	5 U	5 U	4 U	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	6 U	5 U	5 U	4 U	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	6 U	5 U	5 U	4 U	5 U
1,4-Dioxane	4,900	13,000	100	120 R	99 R	92 R	78 R	100 R
2-Butanone	2,800,000	100,000	NL	12 U	10 U	9 U	8 U	10 U
2-Hexanone	21,000	NL	NL	12 U	10 U	9 U	8 U	10 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	12 U	10 U	9 U	8 U	10 U
Acetone	6,100,000	100,000	50	12 U	5 J	9 U	8 U	10 U
Benzene	1,100	4,800	60	6 U	5 U	5 U	4 U	5 U
Bromochloromethane	16,000	NL	NL	6 U	5 U	5 U	4 U	5 U
Bromodichloromethane	270	NL	NL	6 U	5 U	5 U	4 U	5 U
Bromoform	62,000	NL	NL	6 U	5 U	5 U	4 U	5 U
Bromomethane	730	NL	NL	6 U	5 U	5 U	4 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-112				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-112-SS	TP-912-SS	TP-112-E	TP-112-S	TP-112-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1 to 1.5 ft bgs (East Wall)	1 to 1.5 ft bgs (South Wall)	5.5 to 6 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	6 U	5 U	5 U	4 U	5 U
Carbon tetrachloride	610	2,400	760	6 U	5 U	5 U	4 U	5 U
Chlorobenzene	29,000	100,000	1,100	6 U	5 U	5 U	4 U	5 U
Chloroethane	1,500,000	NL	NL	6 U	5 U	5 U	4 U	5 U
Chloroform	290	49,000	370	6 U	5 U	5 U	4 U	5 U
Chloromethane	12,000	NL	NL	6 U	5 U	5 U	4 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	6 U	5 U	5 U	4 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	6 U	5 U	5 U	4 U	5 U
Cyclohexane	117,000	NL	NL	6 U	5 U	5 U	4 U	5 U
Dibromochloromethane	680	NL	NL	6 U	5 U	5 U	4 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	6 U	5 U	5 U	4 U	5 U
Ethylbenzene	5,400	41,000	1,000	6 U	5 U	5 U	4 U	5 U
Isopropylbenzene	259,098	NL	NL	6 U	5 U	5 U	4 U	5 U
m,p-Xylene	59,000	100,000	260	6 U	5 U	5 U	4 U	5 U
Methyl acetate	7,800,000	NL	NL	6 U	5 U	5 U	4 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	6 U	5 U	5 U	4 U	5 U
Methylcyclohexane	NL	NL	NL	6 U	5 U	5 U	4 U	5 U
Methylene chloride	36,000	100,000	50	6 U	1 J	5 U	4 U	5 U
o-Xylene	69,000	100,000	260	6 U	5 U	5 U	4 U	5 U
Styrene	822,434	NL	NL	6 U	5 U	5 U	4 U	5 U
Tetrachloroethene	8,600	19,000	1,300	6 U	5 U	5 U	4 U	5 U
Toluene	723,996	100,000	700	6 U	5 U	5 U	4 U	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	6 U	5 U	5 U	4 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	6 U	5 U	5 U	4 U	5 U
Trichloroethene	440	21,000	470	6 U	5 U	5 U	4 U	5 U
Trichlorofluoromethane	79,000	NL	NL	6 U	7	5 U	4 U	5 U
Vinyl chloride	60	900	20	6 U	5 U	5 U	4 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-112				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-112-SS	TP-912-SS	TP-112-E	TP-112-S	TP-112-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1 to 1.5 ft bgs (East Wall)	1 to 1.5 ft bgs (South Wall)	5.5 to 6 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)								
1,1'-Biphenyl	5,100	NL	NL	210 U	200 U	180 U	190 U	180 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	210 U	200 U	180 U	190 UJ	180 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	210 U	200 U	180 U	190 U	180 U
2,4,5-Trichlorophenol	610,000	NL	NL	210 U	200 U	180 U	190 UJ	180 U
2,4,6-Trichlorophenol	6,100	NL	NL	210 U	200 U	180 U	190 UJ	180 U
2,4-Dichlorophenol	18,000	NL	NL	210 U	200 U	180 U	190 UJ	180 U
2,4-Dimethylphenol	120,000	NL	NL	210 U	200 U	180 U	190 U	180 U
2,4-Dinitrophenol	12,000	NL	NL	410 U	390 U	340 U	360 UJ	340 U
2,4-Dinitrotoluene	1,600	NL	NL	210 U	200 U	180 U	190 U	180 U
2,6-Dinitrotoluene	6,100	NL	NL	210 U	200 U	180 U	190 U	180 U
2-Chloronaphthalene	630,000	NL	NL	210 U	200 U	180 U	190 U	180 U
2-Chlorophenol	39,000	NL	NL	210 U	200 U	180 U	190 U	180 U
2-Methylnaphthalene	23,000	NL	NL	210 U	200 U	180 U	190 U	180 U
2-Methylphenol	310,000	100,000	330	210 U	200 U	180 U	190 U	180 U
2-Nitroaniline	61,000	NL	NL	410 U	390 U	340 U	360 UJ	340 U
2-Nitrophenol	NL	NL	NL	210 U	200 U	180 U	190 UJ	180 U
3,3'-Dichlorobenzidine	1,100	NL	NL	210 U	200 U	180 U	190 U	180 U
3-Nitroaniline	NL	NL	NL	410 U	390 U	340 U	360 UJ	340 U
4,6-Dinitro-2-methylphenol	490	NL	NL	410 U	390 U	340 U	360 UJ	340 U
4-Bromophenyl-phenylether	NL	NL	NL	210 U	200 U	180 U	190 U	180 U
4-Chloro-3-methylphenol	610,000	NL	NL	210 U	200 U	180 U	190 UJ	180 U
4-Chloroaniline	2,400	NL	NL	210 U	200 U	180 U	190 U	180 U
4-Chlorophenyl-phenylether	NL	NL	NL	210 U	200 U	180 U	190 U	180 U
4-Methylphenol	610,000	100,000	330	210 U	200 U	180 U	190 U	180 U
4-Nitroaniline	24,000	NL	NL	410 U	390 U	340 U	360 UJ	340 U
4-Nitrophenol	NL	NL	NL	410 U	390 U	340 U	360 UJ	340 U
Acenaphthene	340,000	100,000	20,000	210 U	200 U	180 U	190 U	180 U
Acenaphthylene	340,000	100,000	100,000	210 U	200 U	180 U	190 U	180 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-112				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-112-SS	TP-912-SS	TP-112-E	TP-112-S	TP-112-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1 to 1.5 ft bgs (East Wall)	1 to 1.5 ft bgs (South Wall)	5.5 to 6 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Anthracene	1,700,000	100,000	100,000	210 U	200 U	180 U	190 U	180 U
Atrazine	2,100	NL	NL	210 U	200 U	180 U	190 U	180 U
Benzaldehyde	780,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Benzo(a)anthracene	150	**1,000**	*1,000*	33 J	34 J	180 U	190 U	180 U
Benzo(a)pyrene	15	1,000	1,000	39 J	41 J	180 U	190 U	180 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	63 J	63 J	180 U	190 U	180 U
Benzo(g,h,i)perylene	170,000	100,000	100,000	210 U	10 J	180 U	190 U	180 U
Benzo(k)fluoranthene	1,500	3,900	800	17 J	21 J	180 U	190 U	180 U
Bis(2-chloroethoxy)methane	18,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Bis(2-chloroethyl)ether	210	NL	NL	210 U	200 U	180 U	190 U	180 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Butylbenzylphthalate	260,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Caprolactam	3,100,000	NL	NL	210 U	16 J	180 U	190 U	180 U
Carbazole	NL	NL	NL	210 U	200 U	180 U	190 U	180 U
Chrysene	15,000	3,900	*1,000*	42 J	44 J	180 U	190 U	180 U
Dibenzo(a,h)anthracene	15	330	330	210 U	200 U	180 U	190 U	180 U
Dibenzofuran	7,800	NL	NL	210 U	200 U	180 U	190 U	180 U
Diethylphthalate	4,900,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Dimethylphthalate	NL	NL	NL	210 U	200 U	180 U	190 U	180 U
Di-n-butylphthalate	610,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Di-n-octylphthalate	73,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Fluoranthene	230,000	100,000	100,000	70 J	72 J	180 U	190 U	180 U
Fluorene	230,000	100,000	30,000	210 U	200 U	180 U	190 U	180 U
Hexachlorobenzene	300	NL	NL	210 U	200 U	180 U	190 U	180 U
Hexachlorobutadiene	6,100	NL	NL	210 U	200 U	180 U	190 UJ	180 U
Hexachlorocyclopentadiene	37,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Hexachloroethane	4,300	NL	NL	210 U	200 U	180 U	190 U	180 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	26 J	26 J	180 U	190 U	180 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-112				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-112-SS	TP-912-SS	TP-112-E	TP-112-S	TP-112-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1 to 1.5 ft bgs (East Wall)	1 to 1.5 ft bgs (South Wall)	5.5 to 6 ft bgs (Bottom)
Isophorone	510,000	NL	NL	210 U	200 U	180 U	190 UJ	180 U
Naphthalene	3,600	100,000	12,000	210 U	200 U	180 U	190 U	180 U
Nitrobenzene	4,800	15,000	NL	210 U	200 U	180 U	190 U	180 U
N-Nitroso-di-n-propylamine	69	NL	NL	210 U	200 U	180 U	190 U	180 U
N-Nitrosodiphenylamine	99,000	NL	NL	210 U	200 U	180 U	190 U	180 U
Pentachlorophenol	890	6,700	800	410 U	390 U	340 U	360 UJ	340 U
Phenanthrene	1,700,000	100,000	100,000	26 J	28 J	180 U	190 U	180 U
Phenol	1,800,000	100,000	330	210 U	200 U	180 U	190 U	180 U
Pyrene	170,000	100,000	100,000	62 J	65 J	180 U	190 U	180 U

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6. 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-113		
Sample ID				TP-113-SS	TP-113-E	TP-113-B
Sample Date				12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6.5 to 7 ft bgs (East Wall)	6.5 to 7 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)						
1,1,1-Trichloroethane	637,450	100,000	680	6 R	4 U	82 J
1,1,2,2-Tetrachloroethane	560	NL	NL	6 R	4 U	9 R
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	6 U	4 U	9 R
1,1,2-Trichloroethane	160	NL	NL	6 R	4 U	9 R
1,1-Dichloroethane	3,300	26,000	270	6 U	4 U	9 R
1,1-Dichloroethene	24,000	100,000	330	6 U	4 U	9 R
1,2,3-Trichlorobenzene	4,900	NL	NL	6 R	4 U	9 R
1,2,4-Trichlorobenzene	6,200	NL	NL	6 R	4 U	9 R
1,2-Dibromo-3-chloropropane	5	NL	NL	6 R	4 U	9 R
1,2-Dibromoethane	34	NL	NL	6 R	4 U	9 R
1,2-Dichlorobenzene	190,000	100,000	1,100	6 R	4 U	9 R
1,2-Dichloroethane	430	3,100	20	6 U	4 U	9 R
1,2-Dichloropropane	940	NL	NL	6 R	4 U	9 R
1,3-Dichlorobenzene	NL	49,000	2,400	6 R	4 U	9 R
1,4-Dichlorobenzene	2,400	13,000	1,800	6 R	4 U	9 R
1,4-Dioxane	4,900	13,000	100	110 R	84 R	170 R
2-Butanone	2,800,000	100,000	NL	11 U	8 U	17 R
2-Hexanone	21,000	NL	NL	11 R	8 U	17 R
4-Methyl-2-Pentanone	2,191,304	NL	NL	11 R	8 U	17 R
Acetone	6,100,000	100,000	50	5 J	8 U	4 J
Benzene	1,100	4,800	60	6 R	4 U	9 R
Bromochloromethane	16,000	NL	NL	6 U	4 U	9 R
Bromodichloromethane	270	NL	NL	6 R	4 U	9 R
Bromoform	62,000	NL	NL	6 R	4 U	9 R
Bromomethane	730	NL	NL	6 U	4 U	9 R

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-113		
Sample ID				TP-113-SS	TP-113-E	TP-113-B
Sample Date				12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6.5 to 7 ft bgs (East Wall)	6.5 to 7 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	6 UJ	4 U	9 UJ
Carbon tetrachloride	610	2,400	760	6 R	4 U	9 R
Chlorobenzene	29,000	100,000	1,100	6 R	4 U	9 R
Chloroethane	1,500,000	NL	NL	6 U	4 U	9 R
Chloroform	290	49,000	370	6 U	4 U	17 J
Chloromethane	12,000	NL	NL	6 U	4 U	9 R
cis-1,2-Dichloroethene	16,000	100,000	250	6 U	4 U	9 R
cis-1,3-Dichloropropene	1,700	NL	NL	6 R	4 U	9 R
Cyclohexane	117,000	NL	NL	6 R	4 U	9 R
Dibromochloromethane	680	NL	NL	6 R	4 U	9 R
Dichlorodifluoromethane	9,400	NL	NL	6 U	4 U	9 R
Ethylbenzene	5,400	41,000	1,000	6 R	4 U	9 R
Isopropylbenzene	259,098	NL	NL	6 R	4 U	9 R
m,p-Xylene	59,000	100,000	260	6 R	4 U	9 R
Methyl acetate	7,800,000	NL	NL	6 U	4 U	9 R
Methyl tert-butyl ether	43,000	100,000	930	6 U	4 U	9 R
Methylcyclohexane	NL	NL	NL	6 R	4 U	9 R
Methylene chloride	36,000	100,000	50	6 UJ	4 U	9 R
o-Xylene	69,000	100,000	260	6 R	4 U	9 R
Styrene	822,434	NL	NL	6 R	4 U	9 R
Tetrachloroethene	8,600	19,000	1,300	6 R	4 U	9 R
Toluene	723,996	100,000	700	6 R	4 U	9 UJ
trans-1,2-Dichloroethene	15,000	100,000	190	6 U	4 U	9 R
trans-1,3-Dichloropropene	1,700	NL	NL	6 R	4 U	9 R
Trichloroethene	440	21,000	470	6 R	4 U	9 R
Trichlorofluoromethane	79,000	NL	NL	6 U	4 U	9 R
Vinyl chloride	60	900	20	6 UJ	4 U	9 R

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-113		
Sample ID				TP-113-SS	TP-113-E	TP-113-B
Sample Date				12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6.5 to 7 ft bgs (East Wall)	6.5 to 7 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)						
1,1'-Biphenyl	5,100	NL	NL	230 U	180 U	210 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	230 U	180 U	210 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	230 U	180 U	210 U
2,4,5-Trichlorophenol	610,000	NL	NL	230 U	180 U	210 U
2,4,6-Trichlorophenol	6,100	NL	NL	230 U	180 U	210 U
2,4-Dichlorophenol	18,000	NL	NL	230 U	180 U	210 U
2,4-Dimethylphenol	120,000	NL	NL	230 U	180 U	210 U
2,4-Dinitrophenol	12,000	NL	NL	450 U	360 U	400 U
2,4-Dinitrotoluene	1,600	NL	NL	230 U	180 U	210 U
2,6-Dinitrotoluene	6,100	NL	NL	230 U	180 U	210 U
2-Chloronaphthalene	630,000	NL	NL	230 U	180 U	210 U
2-Chlorophenol	39,000	NL	NL	230 U	180 U	210 U
2-Methylnaphthalene	23,000	NL	NL	230 U	180 U	210 U
2-Methylphenol	310,000	100,000	330	230 U	180 U	210 U
2-Nitroaniline	61,000	NL	NL	450 U	360 U	400 U
2-Nitrophenol	NL	NL	NL	230 U	180 U	210 U
3,3'-Dichlorobenzidine	1,100	NL	NL	230 U	180 U	210 U
3-Nitroaniline	NL	NL	NL	450 U	360 U	400 U
4,6-Dinitro-2-methylphenol	490	NL	NL	450 U	360 U	400 U
4-Bromophenyl-phenylether	NL	NL	NL	230 U	180 U	210 U
4-Chloro-3-methylphenol	610,000	NL	NL	230 U	180 U	210 U
4-Chloroaniline	2,400	NL	NL	230 U	180 U	210 U
4-Chlorophenyl-phenylether	NL	NL	NL	230 U	180 U	210 U
4-Methylphenol	610,000	100,000	330	230 U	180 U	210 U
4-Nitroaniline	24,000	NL	NL	450 U	360 U	400 U
4-Nitrophenol	NL	NL	NL	450 U	360 U	400 U
Acenaphthene	340,000	100,000	20,000	230 U	180 U	210 U
Acenaphthylene	340,000	100,000	100,000	230 U	180 U	210 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-113		
Sample ID				TP-113-SS	TP-113-E	TP-113-B
Sample Date				12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6.5 to 7 ft bgs (East Wall)	6.5 to 7 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	230 U	180 U	210 U
Anthracene	1,700,000	100,000	100,000	230 U	180 U	210 U
Atrazine	2,100	NL	NL	230 U	180 U	210 U
Benzaldehyde	780,000	NL	NL	230 U	180 U	210 U
Benzo(a)anthracene	150	**1,000**	*1,000*	53 J	26 J	10 J
Benzo(a)pyrene	15	1,000	1,000	57 J	28 J	210 UJ
Benzo(b)fluoranthene	150	**1,000**	*1,000*	83 J	41 J	210 UJ
Benzo(g,h,i)perylene	170,000	100,000	100,000	230 U	180 U	210 UJ
Benzo(k)fluoranthene	1,500	3,900	800	30 J	15 J	210 UJ
Bis(2-chloroethoxy)methane	18,000	NL	NL	230 U	180 U	210 U
Bis(2-chloroethyl)ether	210	NL	NL	230 U	180 U	210 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	230 U	180 U	210 U
Butylbenzylphthalate	260,000	NL	NL	230 U	180 U	210 U
Caprolactam	3,100,000	NL	NL	230 U	8 J	210 U
Carbazole	NL	NL	NL	230 U	180 U	210 U
Chrysene	15,000	3,900	*1,000*	64 J	32 J	10 J
Dibenzo(a,h)anthracene	15	330	330	9 J	180 U	210 UJ
Dibenzofuran	7,800	NL	NL	230 U	180 U	210 U
Diethylphthalate	4,900,000	NL	NL	230 U	180 U	210 U
Dimethylphthalate	NL	NL	NL	230 U	180 U	210 U
Di-n-butylphthalate	610,000	NL	NL	230 U	180 U	210 U
Di-n-octylphthalate	73,000	NL	NL	230 U	180 U	210 U
Fluoranthene	230,000	100,000	100,000	120 J	57 J	41 J
Fluorene	230,000	100,000	30,000	230 U	180 U	210 U
Hexachlorobenzene	300	NL	NL	230 U	180 U	210 U
Hexachlorobutadiene	6,100	NL	NL	230 U	180 U	210 U
Hexachlorocyclopentadiene	37,000	NL	NL	230 U	180 U	210 U
Hexachloroethane	4,300	NL	NL	230 U	180 U	210 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	42 J	20 J	210 UJ

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-113					
Sample ID				TP-113-SS		TP-113-E		TP-113-B	
Sample Date				12/11/12		12/11/12		12/11/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)		6.5 to 7 ft bgs (East Wall)		6.5 to 7 ft bgs (Bottom)	
Isophorone	510,000	NL	NL	230	U	180	U	210	U
Naphthalene	3,600	100,000	12,000	230	U	180	U	210	U
Nitrobenzene	4,800	15,000	NL	230	U	180	U	210	U
N-Nitroso-di-n-propylamine	69	NL	NL	230	U	180	U	210	U
N-Nitrosodiphenylamine	99,000	NL	NL	230	U	180	U	210	U
Pentachlorophenol	890	6,700	800	450	U	360	U	400	U
Phenanthrene	1,700,000	100,000	100,000	49	J	24	J	28	J
Phenol	1,800,000	100,000	330	230	U	180	U	210	U
Pyrene	170,000	100,000	100,000	110	J	53	J	38	J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.8 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-114					
Sample ID				TP-114-SS	TP-114-FL	TP-114-CA	TP-114-E	TP-114-S	TP-114-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0 to 2 inches bgs (Fill Sample)	2.5 to 3 ft bgs (Coal Ash Sample)	2.5 to 3 feet (East Wall)	2.5 to 3 feet (South Wall)	6 to 6.5 feet (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)									
1,1,1-Trichloroethane	637,450	100,000	680	5 U	5 U	6 U	4 U	5 U	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
1,1,2-Trichloroethane	160	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
1,1-Dichloroethane	3,300	26,000	270	5 U	5 U	6 U	4 U	5 U	5 U
1,1-Dichloroethene	24,000	100,000	330	5 U	5 U	6 U	4 U	5 U	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
1,2-Dibromoethane	34	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	5 U	5 U	6 U	4 U	5 U	5 U
1,2-Dichloroethane	430	3,100	20	5 U	5 U	6 U	4 U	5 U	5 U
1,2-Dichloropropane	940	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	5 U	5 U	6 U	4 U	5 U	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	5 U	5 U	6 U	4 U	5 U	5 U
1,4-Dioxane	4,900	13,000	100	92 R	100 R	130 R	87 R	92 R	93 R
2-Butanone	2,800,000	100,000	NL	9 U	10 U	13 U	9 U	9 U	9 U
2-Hexanone	21,000	NL	NL	9 U	10 U	13 U	9 U	9 U	9 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	9 U	10 U	13 U	9 U	9 U	9 U
Acetone	6,100,000	100,000	50	9 U	10 U	13 U	9 U	9 U	9 U
Benzene	1,100	4,800	60	5 U	5 U	6 U	4 U	5 U	5 U
Bromochloromethane	16,000	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Bromodichloromethane	270	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Bromoform	62,000	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Bromomethane	730	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U

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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-114					
Sample ID				TP-114-SS	TP-114-FL	TP-114-CA	TP-114-E	TP-114-S	TP-114-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0 to 2 inches bgs (Fill Sample)	2.5 to 3 ft bgs (Coal Ash Sample)	2.5 to 3 feet (East Wall)	2.5 to 3 feet (South Wall)	6 to 6.5 feet (Bottom)
Carbon disulfide	82,000	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Carbon tetrachloride	610	2,400	760	5 U	5 U	6 U	4 U	5 U	5 U
Chlorobenzene	29,000	100,000	1,100	5 U	5 U	6 U	4 U	5 U	5 U
Chloroethane	1,500,000	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Chloroform	290	49,000	370	5 U	5 U	6 U	4 U	5 U	5 U
Chloromethane	12,000	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	5 U	5 U	6 U	4 U	5 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Cyclohexane	117,000	NL	NL	5 U	5 U	1 J	4 U	5 U	5 U
Dibromochloromethane	680	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Ethylbenzene	5,400	41,000	1,000	5 U	5 U	6 U	4 U	5 U	5 U
Isopropylbenzene	259,098	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
m,p-Xylene	59,000	100,000	260	5 U	5 U	6 U	4 U	5 U	5 U
Methyl acetate	7,800,000	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	5 U	5 U	6 U	4 U	5 U	5 U
Methylcyclohexane	NL	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Methylene chloride	36,000	100,000	50	5 U	5 U	0 J	4 U	5 U	5 U
o-Xylene	69,000	100,000	260	5 U	5 U	6 U	4 U	5 U	5 U
Styrene	822,434	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Tetrachloroethene	8,600	19,000	1,300	5 U	5 U	6 U	4 U	5 U	5 U
Toluene	723,996	100,000	700	5 U	5 U	6 U	4 U	5 U	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	5 U	5 U	6 U	4 U	5 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Trichloroethene	440	21,000	470	5 U	5 U	6 U	4 U	5 U	5 U
Trichlorofluoromethane	79,000	NL	NL	5 U	5 U	6 U	4 U	5 U	5 U
Vinyl chloride	60	900	20	5 U	5 U	6 U	4 U	5 U	5 U

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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-114					
Sample ID				TP-114-SS	TP-114-FL	TP-114-CA	TP-114-E	TP-114-S	TP-114-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0 to 2 inches bgs (Fill Sample)	2.5 to 3 ft bgs (Coal Ash Sample)	2.5 to 3 feet (East Wall)	2.5 to 3 feet (South Wall)	6 to 6.5 feet (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)									
1,1'-Biphenyl	5,100	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2,4,5-Trichlorophenol	610,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2,4,6-Trichlorophenol	6,100	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2,4-Dichlorophenol	18,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2,4-Dimethylphenol	120,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2,4-Dinitrophenol	12,000	NL	NL	350 U	360 U	410 U	350 U	350 U	350 U
2,4-Dinitrotoluene	1,600	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2,6-Dinitrotoluene	6,100	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2-Chloronaphthalene	630,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2-Chlorophenol	39,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2-Methylnaphthalene	23,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
2-Methylphenol	310,000	100,000	330	180 U	190 U	210 U	180 U	180 U	180 U
2-Nitroaniline	61,000	NL	NL	350 U	360 U	410 U	350 U	350 U	350 U
2-Nitrophenol	NL	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
3,3'-Dichlorobenzidine	1,100	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
3-Nitroaniline	NL	NL	NL	350 U	360 U	410 U	350 U	350 U	350 U
4,6-Dinitro-2-methylphenol	490	NL	NL	350 U	360 U	410 U	350 U	350 U	350 U
4-Bromophenyl-phenylether	NL	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
4-Chloro-3-methylphenol	610,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
4-Chloroaniline	2,400	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
4-Chlorophenyl-phenylether	NL	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
4-Methylphenol	610,000	100,000	330	180 U	190 U	210 U	180 U	180 U	180 U
4-Nitroaniline	24,000	NL	NL	350 U	360 U	410 U	350 U	350 U	350 U
4-Nitrophenol	NL	NL	NL	350 U	360 U	410 U	350 U	350 U	350 U
Acenaphthene	340,000	100,000	20,000	180 U	190 U	11 J	180 U	180 U	180 U
Acenaphthylene	340,000	100,000	100,000	180 U	190 U	210 U	180 U	180 U	180 U

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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-114					
Sample ID				TP-114-SS	TP-114-FL	TP-114-CA	TP-114-E	TP-114-S	TP-114-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0 to 2 inches bgs (Fill Sample)	2.5 to 3 ft bgs (Coal Ash Sample)	2.5 to 3 feet (East Wall)	2.5 to 3 feet (South Wall)	6 to 6.5 feet (Bottom)
Acetophenone	780,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Anthracene	1,700,000	100,000	100,000	180 U	190 U	41 J	180 U	180 U	180 U
Atrazine	2,100	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Benzaldehyde	780,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Benzo(a)anthracene	150	**1,000**	*1,000*	9 J	44 J	120 J	180 U	23 J	180 U
Benzo(a)pyrene	15	1,000	1,000	8 J	39 J	100 J	180 U	23 J	180 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	11 J	54 J	150 J	180 U	31 J	180 U
Benzo(g,h,i)perylene	170,000	100,000	100,000	180 U	190 U	210 UJ	180 U	180 U	180 U
Benzo(k)fluoranthene	1,500	3,900	800	180 U	18 J	54 J	180 U	11 J	180 U
Bis(2-chloroethoxy)methane	18,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Bis(2-chloroethyl)ether	210	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Butylbenzylphthalate	260,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Caprolactam	3,100,000	NL	NL	180 U	190 U	210 U	180 U	180 U	7 J
Carbazole	NL	NL	NL	180 U	190 U	19 J	180 U	180 U	180 U
Chrysene	15,000	3,900	*1,000*	180 U	45 J	120 J	180 U	20 J	180 U
Dibenzo(a,h)anthracene	15	330	330	180 U	190 U	15 J	180 U	180 U	180 U
Dibenzofuran	7,800	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Diethylphthalate	4,900,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Dimethylphthalate	NL	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Di-n-butylphthalate	610,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Di-n-octylphthalate	73,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Fluoranthene	230,000	100,000	100,000	10 J	57 J	260 J	180 U	39 J	180 U
Fluorene	230,000	100,000	30,000	180 U	190 U	15 J	180 U	180 U	180 U
Hexachlorobenzene	300	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Hexachlorobutadiene	6,100	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Hexachlorocyclopentadiene	37,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Hexachloroethane	4,300	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	180 U	22 J	54 J	180 U	17 J	180 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-114					
Sample ID				TP-114-SS	TP-114-FL	TP-114-CA	TP-114-E	TP-114-S	TP-114-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0 to 2 inches bgs (Fill Sample)	2.5 to 3 ft bgs (Coal Ash Sample)	2.5 to 3 feet (East Wall)	2.5 to 3 feet (South Wall)	6 to 6.5 feet (Bottom)
Isophorone	510,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Naphthalene	3,600	100,000	12,000	180 U	190 U	210 U	180 U	180 U	180 U
Nitrobenzene	4,800	15,000	NL	180 U	190 U	210 U	180 U	180 U	180 U
N-Nitroso-di-n-propylamine	69	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
N-Nitrosodiphenylamine	99,000	NL	NL	180 U	190 U	210 U	180 U	180 U	180 U
Pentachlorophenol	890	6,700	800	350 U	360 U	410 U	350 U	350 U	350 U
Phenanthrene	1,700,000	100,000	100,000	180 U	15 J	170 J	180 U	33 J	180 U
Phenol	1,800,000	100,000	330	180 U	190 U	210 U	180 U	180 U	180 U
Pyrene	170,000	100,000	100,000	11 J	58 J	210 J	180 U	35 J	180 U

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.8 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-115			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e* [3]	TP-115-SS	TP-115-FL	TP-115-W	TP-115-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (West Wall)	8 to 8.5 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)							
1,1,1-Trichloroethane	637,450	100,000	680	7 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	7 U	5 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	7 U	5 U	5 U	5 U
1,1,2-Trichloroethane	160	NL	NL	7 U	5 U	5 U	5 U
1,1-Dichloroethane	3,300	26,000	270	7 U	5 U	5 U	5 U
1,1-Dichloroethene	24,000	100,000	330	7 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	7 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	7 U	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	7 U	5 U	5 U	5 U
1,2-Dibromoethane	34	NL	NL	7 U	5 U	5 U	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	7 U	5 U	5 U	5 U
1,2-Dichloroethane	430	3,100	20	7 U	5 U	5 U	5 U
1,2-Dichloropropane	940	NL	NL	7 U	5 U	5 U	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	7 U	5 U	5 U	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	7 U	5 U	5 U	5 U
1,4-Dioxane	4,900	13,000	100	130 R	98 R	89 R	100 R
2-Butanone	2,800,000	100,000	NL	13 U	10 U	9 U	10 U
2-Hexanone	21,000	NL	NL	13 U	10 U	9 U	10 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	13 U	10 U	9 U	10 U
Acetone	6,100,000	100,000	50	13 U	10 U	9 U	10 U
Benzene	1,100	4,800	60	7 U	5 U	5 U	5 U
Bromochloromethane	16,000	NL	NL	7 U	5 U	5 U	5 U
Bromodichloromethane	270	NL	NL	7 U	5 U	5 U	5 U
Bromoform	62,000	NL	NL	7 U	5 U	5 U	5 U
Bromomethane	730	NL	NL	7 U	5 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-115			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-115-SS	TP-115-FL	TP-115-W	TP-115-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (West Wall)	8 to 8.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	7 U	5 U	5 U	5 U
Carbon tetrachloride	610	2,400	760	7 U	5 U	5 U	5 U
Chlorobenzene	29,000	100,000	1,100	7 U	5 U	5 U	5 U
Chloroethane	1,500,000	NL	NL	7 U	5 U	5 U	5 U
Chloroform	290	49,000	370	7 U	5 U	5 U	5 U
Chloromethane	12,000	NL	NL	7 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	7 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	7 U	5 U	5 U	5 U
Cyclohexane	117,000	NL	NL	7 U	5 U	5 U	5 U
Dibromochloromethane	680	NL	NL	7 U	5 U	5 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	7 U	5 U	5 U	5 U
Ethylbenzene	5,400	41,000	1,000	7 U	5 U	5 U	5 U
Isopropylbenzene	259,098	NL	NL	7 U	5 U	5 U	5 U
m,p-Xylene	59,000	100,000	260	7 U	5 U	5 U	5 U
Methyl acetate	7,800,000	NL	NL	7 U	5 U	5 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	7 U	5 U	5 U	5 U
Methylcyclohexane	NL	NL	NL	7 U	5 U	5 U	5 U
Methylene chloride	36,000	100,000	50	7 U	5 U	1 J	5 U
o-Xylene	69,000	100,000	260	7 U	5 U	5 U	5 U
Styrene	822,434	NL	NL	7 U	5 U	5 U	5 U
Tetrachloroethene	8,600	19,000	1,300	7 U	5 U	5 U	5 U
Toluene	723,996	100,000	700	7 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	7 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	7 U	5 U	5 U	5 U
Trichloroethene	440	21,000	470	7 U	5 U	5 U	5 U
Trichlorofluoromethane	79,000	NL	NL	7 U	5 U	5 U	5 U
Vinyl chloride	60	900	20	7 U	5 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-115			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-115-SS	TP-115-FL	TP-115-W	TP-115-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (West Wall)	8 to 8.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
1,1'-Biphenyl	5,100	NL	NL	190 U	200 U	190 UJ	190 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	190 U	200 U	190 UJ	190 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	190 U	200 U	190 UJ	190 U
2,4,5-Trichlorophenol	610,000	NL	NL	190 U	200 U	190 UJ	190 U
2,4,6-Trichlorophenol	6,100	NL	NL	190 U	200 U	190 UJ	190 U
2,4-Dichlorophenol	18,000	NL	NL	190 U	200 U	190 UJ	190 U
2,4-Dimethylphenol	120,000	NL	NL	190 UJ	200 U	190 UJ	190 U
2,4-Dinitrophenol	12,000	NL	NL	370 U	380 U	370 UJ	360 U
2,4-Dinitrotoluene	1,600	NL	NL	190 U	200 U	190 UJ	190 U
2,6-Dinitrotoluene	6,100	NL	NL	190 U	200 U	190 UJ	190 U
2-Chloronaphthalene	630,000	NL	NL	190 U	200 U	190 UJ	190 U
2-Chlorophenol	39,000	NL	NL	190 U	200 U	190 UJ	190 U
2-Methylnaphthalene	23,000	NL	NL	190 U	200 U	190 UJ	190 U
2-Methylphenol	310,000	100,000	330	190 UJ	200 U	190 UJ	190 U
2-Nitroaniline	61,000	NL	NL	370 U	380 U	370 UJ	360 U
2-Nitrophenol	NL	NL	NL	190 U	200 U	190 UJ	190 U
3,3'-Dichlorobenzidine	1,100	NL	NL	190 UJ	200 U	190 UJ	190 U
3-Nitroaniline	NL	NL	NL	370 U	380 U	370 UJ	360 U
4,6-Dinitro-2-methylphenol	490	NL	NL	370 U	380 U	370 UJ	360 U
4-Bromophenyl-phenylether	NL	NL	NL	190 U	200 U	190 UJ	190 U
4-Chloro-3-methylphenol	610,000	NL	NL	190 U	200 U	190 UJ	190 U
4-Chloroaniline	2,400	NL	NL	190 UJ	200 U	190 UJ	190 U
4-Chlorophenyl-phenylether	NL	NL	NL	190 U	200 U	190 UJ	190 U
4-Methylphenol	610,000	100,000	330	190 UJ	200 U	190 UJ	190 U
4-Nitroaniline	24,000	NL	NL	370 U	380 U	370 UJ	360 U
4-Nitrophenol	NL	NL	NL	370 U	380 U	370 UJ	360 U
Acenaphthene	340,000	100,000	20,000	190 U	200 U	190 UJ	190 U
Acenaphthylene	340,000	100,000	100,000	190 U	200 U	190 UJ	190 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-115			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-115-SS	TP-115-FL	TP-115-W	TP-115-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (West Wall)	8 to 8.5 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	190 U	200 U	190 UJ	190 U
Anthracene	1,700,000	100,000	100,000	190 U	200 U	190 UJ	190 U
Atrazine	2,100	NL	NL	190 U	200 U	190 UJ	190 U
Benzaldehyde	780,000	NL	NL	190 U	200 U	190 UJ	190 U
Benzo(a)anthracene	150	**1,000**	*1,000*	22 J	17 J	190 UJ	190 U
Benzo(a)pyrene	15	1,000	1,000	25 J	15 J	190 UJ	190 U
Benzo(b)fluoranthene	150	**1,000**	*1,000*	42 J	28 J	190 UJ	190 U
Benzo(g,h,i)perylene	170,000	100,000	100,000	190 U	200 U	190 UJ	190 U
Benzo(k)fluoranthene	1,500	3,900	800	14 J	8 J	190 UJ	190 U
Bis(2-chloroethoxy)methane	18,000	NL	NL	190 U	200 U	190 UJ	190 U
Bis(2-chloroethyl)ether	210	NL	NL	190 U	200 U	190 UJ	190 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	190 U	200 U	190 UJ	190 U
Butylbenzylphthalate	260,000	NL	NL	190 U	200 U	190 UJ	190 U
Caprolactam	3,100,000	NL	NL	190 U	200 U	190 UJ	190 U
Carbazole	NL	NL	NL	190 U	200 U	190 UJ	190 U
Chrysene	15,000	3,900	*1,000*	28 J	19 J	190 UJ	190 U
Dibenzo(a,h)anthracene	15	330	330	190 U	200 U	190 UJ	190 U
Dibenzofuran	7,800	NL	NL	190 U	200 U	190 UJ	190 U
Diethylphthalate	4,900,000	NL	NL	190 U	200 U	190 UJ	190 U
Dimethylphthalate	NL	NL	NL	190 U	200 U	190 UJ	190 U
Di-n-butylphthalate	610,000	NL	NL	190 U	200 U	190 UJ	190 U
Di-n-octylphthalate	73,000	NL	NL	190 U	200 U	190 UJ	190 U
Fluoranthene	230,000	100,000	100,000	52 J	27 J	8 J	190 U
Fluorene	230,000	100,000	30,000	190 U	200 U	190 UJ	190 U
Hexachlorobenzene	300	NL	NL	190 U	200 U	190 UJ	190 U
Hexachlorobutadiene	6,100	NL	NL	190 U	200 U	190 UJ	190 U
Hexachlorocyclopentadiene	37,000	NL	NL	190 UJ	200 U	190 UJ	190 U
Hexachloroethane	4,300	NL	NL	190 U	200 U	190 UJ	190 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	21 J	9 J	190 UJ	190 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e* [3]	TP-115			
Sample ID				TP-115-SS	TP-115-FL	TP-115-W	TP-115-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (West Wall)	8 to 8.5 ft bgs (Bottom)
Isophorone	510,000	NL	NL	190 U	200 U	190 UJ	190 U
Naphthalene	3,600	100,000	12,000	190 U	200 U	190 UJ	190 U
Nitrobenzene	4,800	15,000	NL	190 U	200 U	190 UJ	190 U
N-Nitroso-di-n-propylamine	69	NL	NL	190 UJ	200 UJ	190 UJ	190 UJ
N-Nitrosodiphenylamine	99,000	NL	NL	190 U	200 U	190 UJ	190 U
Pentachlorophenol	890	6,700	800	370 U	380 U	370 UJ	360 U
Phenanthrene	1,700,000	100,000	100,000	14 J	18 J	190 UJ	190 U
Phenol	1,800,000	100,000	330	190 U	200 U	7 J	190 U
Pyrene	170,000	100,000	100,000	46 J	28 J	8 J	190 U

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.. 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-116			
Sample ID				TP-116-SS	TP-116-E	TP-116-CA	TP-116-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (East Wall)	10 to 10.5 ft bgs (Coal Ash Sample)	11 to 11.5 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)							
1,1,1-Trichloroethane	637,450	100,000	680	6 U	5 U	11 R	4 U
1,1,2,2-Tetrachloroethane	560	NL	NL	6 U	5 U	11 R	4 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	6 U	5 U	11 R	4 U
1,1,2-Trichloroethane	160	NL	NL	6 U	5 U	11 R	4 U
1,1-Dichloroethane	3,300	26,000	270	6 U	5 U	11 R	4 U
1,1-Dichloroethene	24,000	100,000	330	6 U	5 U	11 R	4 U
1,2,3-Trichlorobenzene	4,900	NL	NL	6 U	5 U	11 R	4 U
1,2,4-Trichlorobenzene	6,200	NL	NL	6 U	5 U	11 R	4 U
1,2-Dibromo-3-chloropropane	5	NL	NL	6 U	5 U	11 R	4 U
1,2-Dibromoethane	34	NL	NL	6 U	5 U	11 R	4 U
1,2-Dichlorobenzene	190,000	100,000	1,100	6 U	5 U	11 R	4 U
1,2-Dichloroethane	430	3,100	20	6 U	5 U	11 R	4 U
1,2-Dichloropropane	940	NL	NL	6 U	5 U	11 R	4 U
1,3-Dichlorobenzene	NL	49,000	2,400	6 U	5 U	11 R	4 U
1,4-Dichlorobenzene	2,400	13,000	1,800	6 U	5 U	11 R	4 U
1,4-Dioxane	4,900	13,000	100	110 R	95 R	220 R	85 R
2-Butanone	2,800,000	100,000	NL	11 U	10 U	22 R	9 U
2-Hexanone	21,000	NL	NL	11 U	10 U	22 R	9 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	11 U	10 U	22 R	9 U
Acetone	6,100,000	100,000	50	11 U	10 U	22 R	9 U
Benzene	1,100	4,800	60	6 U	5 U	11 R	4 U
Bromochloromethane	16,000	NL	NL	6 U	5 U	11 R	4 U
Bromodichloromethane	270	NL	NL	6 U	5 U	11 R	4 U
Bromoform	62,000	NL	NL	6 U	5 U	11 R	4 U
Bromomethane	730	NL	NL	6 U	5 U	11 R	4 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-116			
Sample ID				TP-116-SS	TP-116-E	TP-116-CA	TP-116-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (East Wall)	10 to 10.5 ft bgs (Coal Ash Sample)	11 to 11.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	6 U	5 U	11 R	4 U
Carbon tetrachloride	610	2,400	760	6 U	5 U	11 R	4 U
Chlorobenzene	29,000	100,000	1,100	6 U	5 U	11 R	4 U
Chloroethane	1,500,000	NL	NL	6 U	5 U	11 R	4 U
Chloroform	290	49,000	370	6 U	5 U	11 R	4 U
Chloromethane	12,000	NL	NL	6 U	5 U	11 R	4 U
cis-1,2-Dichloroethene	16,000	100,000	250	6 U	5 U	11 R	4 U
cis-1,3-Dichloropropene	1,700	NL	NL	6 U	5 U	11 R	4 U
Cyclohexane	117,000	NL	NL	6 U	5 U	11 R	4 U
Dibromochloromethane	680	NL	NL	6 U	5 U	11 R	4 U
Dichlorodifluoromethane	9,400	NL	NL	6 U	5 U	11 R	4 U
Ethylbenzene	5,400	41,000	1,000	6 U	5 U	11 R	4 U
Isopropylbenzene	259,098	NL	NL	6 U	5 U	11 R	4 U
m,p-Xylene	59,000	100,000	260	6 U	5 U	11 R	4 U
Methyl acetate	7,800,000	NL	NL	6 U	5 U	11 R	4 U
Methyl tert-butyl ether	43,000	100,000	930	6 U	5 U	11 R	4 U
Methylcyclohexane	NL	NL	NL	6 U	5 U	11 R	4 U
Methylene chloride	36,000	100,000	50	6 U	5 U	3 J	4 U
o-Xylene	69,000	100,000	260	6 U	5 U	11 R	4 U
Styrene	822,434	NL	NL	6 U	5 U	11 R	4 U
Tetrachloroethene	8,600	19,000	1,300	6 U	5 U	11 R	4 U
Toluene	723,996	100,000	700	6 U	5 U	11 R	4 U
trans-1,2-Dichloroethene	15,000	100,000	190	6 U	5 U	11 R	4 U
trans-1,3-Dichloropropene	1,700	NL	NL	6 U	5 U	11 R	4 U
Trichloroethene	440	21,000	470	6 U	5 U	11 R	4 U
Trichlorofluoromethane	79,000	NL	NL	6 U	5 U	11 R	4 U
Vinyl chloride	60	900	20	6 U	5 U	11 R	4 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-116			
Sample ID				TP-116-SS	TP-116-E	TP-116-CA	TP-116-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (East Wall)	10 to 10.5 ft bgs (Coal Ash Sample)	11 to 11.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
1,1'-Biphenyl	5,100	NL	NL	200 U	190 UJ	210 UJ	200 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	200 U	190 UJ	210 UJ	200 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	200 U	190 UJ	210 UJ	200 U
2,4,5-Trichlorophenol	610,000	NL	NL	200 U	190 UJ	210 UJ	200 U
2,4,6-Trichlorophenol	6,100	NL	NL	200 U	190 UJ	210 UJ	200 U
2,4-Dichlorophenol	18,000	NL	NL	200 U	190 UJ	210 UJ	200 U
2,4-Dimethylphenol	120,000	NL	NL	200 U	190 UJ	210 UJ	200 U
2,4-Dinitrophenol	12,000	NL	NL	380 U	360 UJ	410 UJ	400 U
2,4-Dinitrotoluene	1,600	NL	NL	200 U	190 UJ	210 UJ	200 U
2,6-Dinitrotoluene	6,100	NL	NL	200 U	190 UJ	210 UJ	200 U
2-Chloronaphthalene	630,000	NL	NL	200 U	190 UJ	210 UJ	200 U
2-Chlorophenol	39,000	NL	NL	200 U	190 UJ	210 UJ	200 U
2-Methylnaphthalene	23,000	NL	NL	200 U	190 UJ	210 UJ	200 U
2-Methylphenol	310,000	100,000	330	200 U	190 UJ	210 UJ	200 U
2-Nitroaniline	61,000	NL	NL	380 U	360 UJ	410 UJ	400 U
2-Nitrophenol	NL	NL	NL	200 U	190 UJ	210 UJ	200 U
3,3'-Dichlorobenzidine	1,100	NL	NL	200 U	190 UJ	210 UJ	200 U
3-Nitroaniline	NL	NL	NL	380 U	360 UJ	410 UJ	400 U
4,6-Dinitro-2-methylphenol	490	NL	NL	380 U	360 UJ	410 UJ	400 U
4-Bromophenyl-phenylether	NL	NL	NL	200 U	190 UJ	210 UJ	200 U
4-Chloro-3-methylphenol	610,000	NL	NL	200 U	190 UJ	210 UJ	200 U
4-Chloroaniline	2,400	NL	NL	200 U	190 UJ	210 UJ	200 U
4-Chlorophenyl-phenylether	NL	NL	NL	200 U	190 UJ	210 UJ	200 U
4-Methylphenol	610,000	100,000	330	200 U	190 UJ	210 UJ	200 U
4-Nitroaniline	24,000	NL	NL	380 U	360 UJ	410 UJ	400 U
4-Nitrophenol	NL	NL	NL	380 U	360 UJ	410 UJ	400 U
Acenaphthene	340,000	100,000	20,000	200 U	190 UJ	210 UJ	200 U
Acenaphthylene	340,000	100,000	100,000	200 U	190 UJ	210 UJ	200 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-116			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-116-SS	TP-116-E	TP-116-CA	TP-116-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (East Wall)	10 to 10.5 ft bgs (Coal Ash Sample)	11 to 11.5 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Anthracene	1,700,000	100,000	100,000	10 J	190 UJ	210 UJ	200 U
Atrazine	2,100	NL	NL	200 U	190 UJ	210 UJ	200 U
Benzaldehyde	780,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Benzo(a)anthracene	150	**1,000**	*1,000*	58 J	47 J	210 UJ	21 J
Benzo(a)pyrene	15	1,000	1,000	56 J	47 J	210 UJ	19 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	96 J	65 J	210 UJ	30 J
Benzo(g,h,i)perylene	170,000	100,000	100,000	15 J	14 J	210 UJ	200 U
Benzo(k)fluoranthene	1,500	3,900	800	32 J	22 J	210 UJ	10 J
Bis(2-chloroethoxy)methane	18,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Bis(2-chloroethyl)ether	210	NL	NL	200 U	190 UJ	210 UJ	200 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Butylbenzylphthalate	260,000	NL	NL	200 U	8 J	210 UJ	200 U
Caprolactam	3,100,000	NL	NL	200 U	190 UJ	14 J	200 U
Carbazole	NL	NL	NL	9 J	190 UJ	210 UJ	200 U
Chrysene	15,000	3,900	*1,000*	71 J	54 J	210 UJ	22 J
Dibenzo(a,h)anthracene	15	330	330	12 J	10 J	210 UJ	200 U
Dibenzofuran	7,800	NL	NL	200 U	190 UJ	210 UJ	200 U
Diethylphthalate	4,900,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Dimethylphthalate	NL	NL	NL	200 U	190 UJ	210 UJ	200 U
Di-n-butylphthalate	610,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Di-n-octylphthalate	73,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Fluoranthene	230,000	100,000	100,000	140 J	96 J	210 UJ	51 J
Fluorene	230,000	100,000	30,000	200 U	190 UJ	210 UJ	200 U
Hexachlorobenzene	300	NL	NL	200 U	190 UJ	210 UJ	200 U
Hexachlorobutadiene	6,100	NL	NL	200 U	190 UJ	210 UJ	200 U
Hexachlorocyclopentadiene	37,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Hexachloroethane	4,300	NL	NL	200 U	190 UJ	210 UJ	200 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	53 J	38 J	210 UJ	11 J

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Analytical Soil Results - VOCs and SVOCs
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Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-116			
Sample ID				TP-116-SS	TP-116-E	TP-116-CA	TP-116-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (East Wall)	10 to 10.5 ft bgs (Coal Ash Sample)	11 to 11.5 ft bgs (Bottom)
Isophorone	510,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Naphthalene	3,600	100,000	12,000	200 U	190 UJ	210 UJ	200 U
Nitrobenzene	4,800	15,000	NL	200 U	190 UJ	210 UJ	200 U
N-Nitroso-di-n-propylamine	69	NL	NL	200 UJ	190 UJ	210 UJ	200 UJ
N-Nitrosodiphenylamine	99,000	NL	NL	200 U	190 UJ	210 UJ	200 U
Pentachlorophenol	890	6,700	800	380 U	360 UJ	410 UJ	400 U
Phenanthrene	1,700,000	100,000	100,000	71 J	41 J	210 UJ	22 J
Phenol	1,800,000	100,000	330	200 U	190 UJ	210 UJ	200 U
Pyrene	170,000	100,000	100,000	110 J	89 J	210 UJ	41 J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-117			
Sample ID				TP-117-SS	TP-117-CA	TP-117-B	TP-917-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	7 to 7.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs	(Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)							
1,1,1-Trichloroethane	637,450	100,000	680	5 U	26 J	220 J	19 J
1,1,2,2-Tetrachloroethane	560	NL	NL	5 U	9 R	7 R	9 R
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	5 U	9 R	7 R	9 U
1,1,2-Trichloroethane	160	NL	NL	5 U	9 R	7 R	9 R
1,1-Dichloroethane	3,300	26,000	270	5 U	9 R	7 R	9 U
1,1-Dichloroethene	24,000	100,000	330	5 U	9 R	7 R	9 U
1,2,3-Trichlorobenzene	4,900	NL	NL	5 R	9 R	7 R	9 R
1,2,4-Trichlorobenzene	6,200	NL	NL	5 R	9 R	7 R	9 R
1,2-Dibromo-3-chloropropane	5	NL	NL	5 R	9 R	7 R	9 R
1,2-Dibromoethane	34	NL	NL	5 U	9 R	7 R	9 R
1,2-Dichlorobenzene	190,000	100,000	1,100	5 R	9 R	7 R	9 R
1,2-Dichloroethane	430	3,100	20	5 U	9 R	7 R	9 U
1,2-Dichloropropane	940	NL	NL	5 U	9 R	7 R	9 R
1,3-Dichlorobenzene	NL	49,000	2,400	5 R	9 R	7 R	9 R
1,4-Dichlorobenzene	2,400	13,000	1,800	5 R	9 R	7 R	9 R
1,4-Dioxane	4,900	13,000	100	92 R	180 R	140 R	170 R
2-Butanone	2,800,000	100,000	NL	9 U	18 R	14 R	17 U
2-Hexanone	21,000	NL	NL	9 U	18 R	14 R	17 R
4-Methyl-2-Pentanone	2,191,304	NL	NL	9 U	18 R	14 R	17 R
Acetone	6,100,000	100,000	50	9 U	18 R	14 R	17 U
Benzene	1,100	4,800	60	5 U	9 R	7 R	9 R
Bromochloromethane	16,000	NL	NL	5 U	9 R	7 R	9 U
Bromodichloromethane	270	NL	NL	5 U	9 R	7 R	9 R
Bromoform	62,000	NL	NL	5 R	9 R	7 R	9 R
Bromomethane	730	NL	NL	5 U	9 R	7 R	9 U

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Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-117			
Sample ID				TP-117-SS	TP-117-CA	TP-117-B	TP-917-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	7 to 7.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs	(Bottom)
Carbon disulfide	82,000	NL	NL	5 U	9 R	7 R	9 U
Carbon tetrachloride	610	2,400	760	5 U	9 R	7 R	9 R
Chlorobenzene	29,000	100,000	1,100	5 U	9 R	7 R	9 R
Chloroethane	1,500,000	NL	NL	5 U	9 R	7 R	9 U
Chloroform	290	49,000	370	5 U	9 R	7 R	9 U
Chloromethane	12,000	NL	NL	5 U	9 R	7 R	9 U
cis-1,2-Dichloroethene	16,000	100,000	250	5 U	9 R	7 R	9 U
cis-1,3-Dichloropropene	1,700	NL	NL	5 U	9 R	7 R	9 R
Cyclohexane	117,000	NL	NL	5 U	9 R	8 J	9 R
Dibromochloromethane	680	NL	NL	5 U	9 R	7 R	9 R
Dichlorodifluoromethane	9,400	NL	NL	5 U	9 R	7 R	9 U
Ethylbenzene	5,400	41,000	1,000	5 U	9 R	7 R	9 R
Isopropylbenzene	259,098	NL	NL	5 U	9 R	7 R	9 R
m,p-Xylene	59,000	100,000	260	5 U	9 R	7 R	9 R
Methyl acetate	7,800,000	NL	NL	5 U	9 R	7 R	9 U
Methyl tert-butyl ether	43,000	100,000	930	5 U	9 R	7 R	9 U
Methylcyclohexane	NL	NL	NL	5 U	9 R	7 R	9 R
Methylene chloride	36,000	100,000	50	2 J	1 J	18 J	9 U
o-Xylene	69,000	100,000	260	5 U	9 R	7 R	9 R
Styrene	822,434	NL	NL	5 U	9 R	7 R	9 R
Tetrachloroethene	8,600	19,000	1,300	5 U	9 R	7 R	9 R
Toluene	723,996	100,000	700	5 U	9 R	7 UJ	9 R
trans-1,2-Dichloroethene	15,000	100,000	190	5 U	9 R	7 R	9 U
trans-1,3-Dichloropropene	1,700	NL	NL	5 U	9 R	7 R	9 R
Trichloroethene	440	21,000	470	5 U	9 R	7 R	9 R
Trichlorofluoromethane	79,000	NL	NL	5 U	9 R	1 J	9 U
Vinyl chloride	60	900	20	5 U	9 R	7 R	9 U

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Analytical Soil Results - VOCs and SVOCs
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Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-117			
Sample ID				TP-117-SS	TP-117-CA	TP-117-B	TP-917-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	7 to 7.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs	(Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)							
1,1'-Biphenyl	5,100	NL	NL	190 U	190 U	220 U	220 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	190 U	190 U	220 U	220 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	190 U	190 U	220 U	220 U
2,4,5-Trichlorophenol	610,000	NL	NL	190 U	190 U	220 U	220 U
2,4,6-Trichlorophenol	6,100	NL	NL	190 U	190 U	220 U	220 U
2,4-Dichlorophenol	18,000	NL	NL	190 U	190 U	220 U	220 U
2,4-Dimethylphenol	120,000	NL	NL	190 U	190 UJ	220 UJ	220 UJ
2,4-Dinitrophenol	12,000	NL	NL	380 U	380 U	420 U	430 U
2,4-Dinitrotoluene	1,600	NL	NL	190 U	190 U	220 U	220 U
2,6-Dinitrotoluene	6,100	NL	NL	190 U	190 U	220 U	220 U
2-Chloronaphthalene	630,000	NL	NL	190 U	190 U	220 U	220 U
2-Chlorophenol	39,000	NL	NL	190 U	190 U	220 U	220 U
2-Methylnaphthalene	23,000	NL	NL	190 U	190 U	10 J	11 J
2-Methylphenol	310,000	100,000	330	190 U	190 UJ	220 UJ	220 UJ
2-Nitroaniline	61,000	NL	NL	380 U	380 U	420 U	430 U
2-Nitrophenol	NL	NL	NL	190 U	190 U	220 U	220 U
3,3'-Dichlorobenzidine	1,100	NL	NL	190 U	190 U	220 U	220 U
3-Nitroaniline	NL	NL	NL	380 U	380 U	420 U	430 U
4,6-Dinitro-2-methylphenol	490	NL	NL	380 U	380 U	420 U	430 U
4-Bromophenyl-phenylether	NL	NL	NL	190 U	190 U	220 U	220 U
4-Chloro-3-methylphenol	610,000	NL	NL	190 U	190 U	220 U	220 U
4-Chloroaniline	2,400	NL	NL	190 U	190 U	220 U	220 U
4-Chlorophenyl-phenylether	NL	NL	NL	190 U	190 U	220 U	220 U
4-Methylphenol	610,000	100,000	330	190 U	190 UJ	220 UJ	220 UJ
4-Nitroaniline	24,000	NL	NL	380 U	380 U	420 U	430 U
4-Nitrophenol	NL	NL	NL	380 U	380 U	420 U	430 U
Acenaphthene	340,000	100,000	20,000	190 U	190 U	220 U	220 U
Acenaphthylene	340,000	100,000	100,000	190 U	190 U	220 U	220 U

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Analytical Soil Results - VOCs and SVOCs
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Sample Location				TP-117			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-117-SS	TP-117-CA	TP-117-B	TP-917-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	7 to 7.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs	(Bottom)
Acetophenone	780,000	NL	NL	190 U	190 U	220 U	220 U
Anthracene	1,700,000	100,000	100,000	190 U	190 U	220 U	220 U
Atrazine	2,100	NL	NL	190 U	190 U	220 U	220 U
Benzaldehyde	780,000	NL	NL	190 U	190 U	220 U	220 U
Benzo(a)anthracene	150	**1,000**	*1,000*	20 J	190 UJ	220 UJ	220 UJ
Benzo(a)pyrene	15	1,000	1,000	20 J	190 UJ	220 UJ	220 UJ
Benzo(b)fluoranthene	150	**1,000**	*1,000*	36 J	190 UJ	220 UJ	220 UJ
Benzo(g,h,i)perylene	170,000	100,000	100,000	6 J	190 UJ	220 UJ	220 UJ
Benzo(k)fluoranthene	1,500	3,900	800	11 J	190 UJ	220 UJ	220 UJ
Bis(2-chloroethoxy)methane	18,000	NL	NL	190 U	190 U	220 U	220 U
Bis(2-chloroethyl)ether	210	NL	NL	190 U	190 U	220 U	220 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	190 U	190 U	220 U	220 U
Butylbenzylphthalate	260,000	NL	NL	9 J	8 J	220 U	11 J
Caprolactam	3,100,000	NL	NL	190 U	12 J	220 U	220 U
Carbazole	NL	NL	NL	190 U	190 U	220 U	220 U
Chrysene	15,000	3,900	*1,000*	25 J	190 UJ	220 UJ	220 UJ
Dibenzo(a,h)anthracene	15	330	330	190 U	190 UJ	220 UJ	220 UJ
Dibenzofuran	7,800	NL	NL	190 U	190 U	220 U	220 U
Diethylphthalate	4,900,000	NL	NL	190 U	190 U	220 U	220 U
Dimethylphthalate	NL	NL	NL	190 U	190 U	220 U	220 U
Di-n-butylphthalate	610,000	NL	NL	190 U	190 U	220 U	220 U
Di-n-octylphthalate	73,000	NL	NL	190 U	190 U	220 U	220 U
Fluoranthene	230,000	100,000	100,000	43 J	190 UJ	220 UJ	220 UJ
Fluorene	230,000	100,000	30,000	190 U	190 U	220 U	220 U
Hexachlorobenzene	300	NL	NL	190 U	190 U	220 U	220 U
Hexachlorobutadiene	6,100	NL	NL	190 U	190 U	220 U	220 U
Hexachlorocyclopentadiene	37,000	NL	NL	190 U	190 U	220 U	220 U
Hexachloroethane	4,300	NL	NL	190 U	190 U	220 U	220 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	17 J	190 UJ	220 UJ	220 UJ

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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-117			
Sample ID				TP-117-SS	TP-117-CA	TP-117-B	TP-917-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	7 to 7.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs	(Bottom)
Isophorone	510,000	NL	NL	190 U	190 U	220 U	220 U
Naphthalene	3,600	100,000	12,000	190 U	190 U	13 J	15 J
Nitrobenzene	4,800	15,000	NL	190 U	190 U	220 U	220 U
N-Nitroso-di-n-propylamine	69	NL	NL	190 U	190 U	220 U	220 U
N-Nitrosodiphenylamine	99,000	NL	NL	190 U	190 U	220 U	220 U
Pentachlorophenol	890	6,700	800	380 U	380 U	420 U	430 U
Phenanthrene	1,700,000	100,000	100,000	17 J	190 U	220 U	10 J
Phenol	1,800,000	100,000	330	190 U	190 U	220 U	220 U
Pyrene	170,000	100,000	100,000	35 J	190 UJ	220 UJ	220 UJ

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-118					
Sample ID				TP-118-SS	TP-118-FL	TP-118-S	TP-118-W	TP-118-CA	TP-118-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (South Wall)	1 to 1.5 ft bgs (West Wall)	5 to 5.5 ft bgs (Coal Ash Sample)	8 to 8.5 ft bgs (Bottom)
Volatile Organic Compounds (VOCs) (µg/kg)									
1,1,1-Trichloroethane	637,450	100,000	680	7 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	560	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	909,640	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	160	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	3,300	26,000	270	7 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	24,000	100,000	330	7 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	4,900	NL	NL	7 R	5 U	5 R	5 U	5 R	5 U
1,2,4-Trichlorobenzene	6,200	NL	NL	7 R	5 U	5 R	5 U	5 R	5 U
1,2-Dibromo-3-chloropropane	5	NL	NL	7 R	5 U	5 R	5 U	5 R	5 U
1,2-Dibromoethane	34	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	190,000	100,000	1,100	7 R	5 U	5 R	5 U	5 R	5 U
1,2-Dichloroethane	430	3,100	20	7 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	940	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	NL	49,000	2,400	7 R	5 U	5 R	5 U	5 R	5 U
1,4-Dichlorobenzene	2,400	13,000	1,800	7 R	5 U	5 R	5 U	5 R	5 U
1,4-Dioxane	4,900	13,000	100	140 R	90 R	93 R	96 R	110 R	98 R
2-Butanone	2,800,000	100,000	NL	14 U	9 U	9 U	10 U	11 U	10 U
2-Hexanone	21,000	NL	NL	14 U	9 U	9 U	10 U	11 U	10 U
4-Methyl-2-Pentanone	2,191,304	NL	NL	14 U	9 U	9 U	10 U	11 U	10 U
Acetone	6,100,000	100,000	50	14 U	9 U	9 U	10 U	11 U	10 U
Benzene	1,100	4,800	60	7 U	5 U	5 U	5 U	5 U	5 U
Bromochloromethane	16,000	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	270	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Bromoform	62,000	NL	NL	7 R	5 U	5 R	5 U	5 R	5 U
Bromomethane	730	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-118					
Sample ID				TP-118-SS	TP-118-FL	TP-118-S	TP-118-W	TP-118-CA	TP-118-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (South Wall)	1 to 1.5 ft bgs (West Wall)	5 to 5.5 ft bgs (Coal Ash Sample)	8 to 8.5 ft bgs (Bottom)
Carbon disulfide	82,000	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	610	2,400	760	7 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	29,000	100,000	1,100	7 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	1,500,000	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Chloroform	290	49,000	370	7 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	12,000	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	16,000	100,000	250	7 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	1,700	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Cyclohexane	117,000	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	680	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	9,400	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5,400	41,000	1,000	7 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	259,098	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
m,p-Xylene	59,000	100,000	260	7 U	5 U	5 U	5 U	5 U	5 U
Methyl acetate	7,800,000	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Methyl tert-butyl ether	43,000	100,000	930	7 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane	NL	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	36,000	100,000	50	1 J	5 U	5 U	0 J	1 J	1 J
o-Xylene	69,000	100,000	260	7 U	5 U	5 U	5 U	5 U	5 U
Styrene	822,434	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	8,600	19,000	1,300	7 U	5 U	5 U	5 U	5 U	5 U
Toluene	723,996	100,000	700	7 UJ	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	15,000	100,000	190	7 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	1,700	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	440	21,000	470	7 U	5 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	79,000	NL	NL	7 U	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	60	900	20	7 U	5 U	5 U	5 U	5 U	5 U

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-118					
Sample ID				TP-118-SS	TP-118-FL	TP-118-S	TP-118-W	TP-118-CA	TP-118-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (South Wall)	1 to 1.5 ft bgs (West Wall)	5 to 5.5 ft bgs (Coal Ash Sample)	8 to 8.5 ft bgs (Bottom)
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)									
1,1'-Biphenyl	5,100	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
1,2,4,5-Tetrachlorobenzene	1,800	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2,2'-Oxybis(1-chloropropane)	4,600	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2,4,5-Trichlorophenol	610,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2,4,6-Trichlorophenol	6,100	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2,4-Dichlorophenol	18,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2,4-Dimethylphenol	120,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 UJ	380 U
2,4-Dinitrophenol	12,000	NL	NL	2,200 U	1,900 U	11,000 U	7,200 U	790 U	740 U
2,4-Dinitrotoluene	1,600	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2,6-Dinitrotoluene	6,100	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2-Chloronaphthalene	630,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2-Chlorophenol	39,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2-Methylnaphthalene	23,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
2-Methylphenol	310,000	100,000	330	1,100 U	980 U	5,600 U	3,700 U	400 UJ	380 U
2-Nitroaniline	61,000	NL	NL	2,200 U	1,900 U	11,000 U	7,200 U	790 U	740 U
2-Nitrophenol	NL	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
3,3'-Dichlorobenzidine	1,100	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
3-Nitroaniline	NL	NL	NL	2,200 U	1,900 U	11,000 U	7,200 U	790 U	740 U
4,6-Dinitro-2-methylphenol	490	NL	NL	2,200 U	1,900 U	11,000 U	7,200 U	790 U	740 U
4-Bromophenyl-phenylether	NL	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
4-Chloro-3-methylphenol	610,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
4-Chloroaniline	2,400	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
4-Chlorophenyl-phenylether	NL	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
4-Methylphenol	610,000	100,000	330	1,100 U	980 U	5,600 U	3,700 U	400 UJ	380 U
4-Nitroaniline	24,000	NL	NL	2,200 U	1,900 U	11,000 U	7,200 U	790 U	740 U
4-Nitrophenol	NL	NL	NL	2,200 U	1,900 U	11,000 U	7,200 U	790 U	740 U
Acenaphthene	340,000	100,000	20,000	1,100 U	980 U	5,600 U	3,700 U	17 J	33 J
Acenaphthylene	340,000	100,000	100,000	46 J	71 J	5,600 U	3,700 U	37 J	54 J

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-118					
Sample ID				TP-118-SS	TP-118-FL	TP-118-S	TP-118-W	TP-118-CA	TP-118-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (South Wall)	1 to 1.5 ft bgs (West Wall)	5 to 5.5 ft bgs (Coal Ash Sample)	8 to 8.5 ft bgs (Bottom)
Acetophenone	780,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Anthracene	1,700,000	100,000	100,000	48 J	60 J	5,600 U	3,700 U	67 J	150 J
Atrazine	2,100	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Benzaldehyde	780,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Benzo(a)anthracene	150	**1,000**	*1,000*	280 J	290 J	5,600 U	260 J	310 J	760
Benzo(a)pyrene	15	1,000	1,000	240 J	230 J	5,600 U	200 J	250 J	610 J
Benzo(b)fluoranthene	150	**1,000**	*1,000*	360 J	340 J	5,600 U	230 J	380 J	880 J
Benzo(g,h,i)perylene	170,000	100,000	100,000	62 J	980 U	5,600 U	3,700 U	24 J	120 J
Benzo(k)fluoranthene	1,500	3,900	800	120 J	130 J	5,600 U	3,700 U	150 J	300 J
Bis(2-chloroethoxy)methane	18,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Bis(2-chloroethyl)ether	210	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Bis(2-ethylhexyl)phthalate	35,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Butylbenzylphthalate	260,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Caprolactam	3,100,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Carbazole	NL	NL	NL	1,100 U	980 U	5,600 U	3,700 U	19 J	27 J
Chrysene	15,000	3,900	*1,000*	280 J	270 J	5,600 U	280 J	310 J	720
Dibenzo(a,h)anthracene	15	330	330	52 J	48 J	5,600 U	3,700 U	45 J	97 J
Dibenzofuran	7,800	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Diethylphthalate	4,900,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Dimethylphthalate	NL	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Di-n-butylphthalate	610,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Di-n-octylphthalate	73,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Fluoranthene	230,000	100,000	100,000	380 J	390 J	5,600 U	320 J	590	1,300
Fluorene	230,000	100,000	30,000	1,100 U	980 U	5,600 U	3,700 U	21 J	41 J
Hexachlorobenzene	300	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Hexachlorobutadiene	6,100	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Hexachlorocyclopentadiene	37,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Hexachloroethane	4,300	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Indeno(1,2,3-cd)pyrene	150	**500**	*500*	180 J	150 J	5,600 U	3,700 U	140 J	380 J

Appendix D-1
Analytical Soil Results - VOCs and SVOCs
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective*[3]	TP-118					
Sample ID				TP-118-SS	TP-118-FL	TP-118-S	TP-118-W	TP-118-CA	TP-118-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (South Wall)	1 to 1.5 ft bgs (West Wall)	5 to 5.5 ft bgs (Coal Ash Sample)	8 to 8.5 ft bgs (Bottom)
Isophorone	510,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Naphthalene	3,600	100,000	12,000	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Nitrobenzene	4,800	15,000	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
N-Nitroso-di-n-propylamine	69	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
N-Nitrosodiphenylamine	99,000	NL	NL	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Pentachlorophenol	890	6,700	800	2,200 U	1,900 U	11,000 U	7,200 U	790 U	740 U
Phenanthrene	1,700,000	100,000	100,000	96 J	96 J	5,600 U	240 J	250 J	510
Phenol	1,800,000	100,000	330	1,100 U	980 U	5,600 U	3,700 U	400 U	380 U
Pyrene	170,000	100,000	100,000	400 J	410 J	5,600 U	410 J	520	1,200

Notes:

1. United States Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Cc
Screening value for 1,3-dichloropropene is applied to *cis* -1,3-dichloropropene and *trans* -1,3-dichloropr
Screening value for m-xylene is applied to m,p-xylene.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a
3. NYSDEC Subpart 375-6: Table 375-6.3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil C
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective fc
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanu
** m-xylene and p-xylene reported as one compound under S0M01.2.
*** Xylene (total) was used for o-xylene criteria when the criteria is not listed.

Acronyms:

VOC = volatile organic compound
SVOC = semivolatile organic compound
ID = identification
EPA = United States Environmental Protect
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-100			TP-101		
Sample ID				TP-100-SS	TP-100-N	TP-100-B	TP-101-SS	TP-101-W	TP-101-B
Sample Date				12/17/12	12/17/12	12/17/12	12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (North Wall)	1.5 to 2 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (West Wall)	2 to 2.5 ft bgs (Bottom)
Pesticides (µg/kg)									
4,4'-DDD	2,000	13,000	*3.3*	7.80 U	4.20 U	3.60 U	54.00 U	4.20 U	4.10 U
4,4'-DDE	1,400	8,900	*3.3*	*5.30 J*	1.30 J	3.60 U	*5.40 J*	4.20 U	0.03 J
4,4'-DDT	1,700	900	*3.3*	*11.00*	4.20 U	3.60 U	54.00 U	4.20 U	4.10 U
Aldrin	29	97	5	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 U
alpha-BHC	77	480	20	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 U
alpha-Chlordane	1,600	4,200	*94*	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 U
beta-BHC	270	360	36	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 U
delta-BHC	77	100,000	40	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 U
Dieldrin	30	200	*5*	7.80 U	4.20 U	3.60 U	54.00 U	4.20 U	4.10 UJ
Endosulfan I	37,000	24,000	2,400	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 U
Endosulfan II	37,000	24,000	2,400	7.80 U	4.20 U	3.60 U	54.00 U	4.20 U	4.10 U
Endosulfan sulfate	37,000	24,000	2,400	7.80 U	4.20 U	3.60 U	54.00 U	4.20 U	4.10 U
Endrin	1,800	11,000	14	7.80 U	4.20 U	3.60 U	2.40 J	4.20 U	4.10 U
Endrin aldehyde	1,800	NL	NL	7.80 U	4.20 U	3.60 U	54.00 U	4.20 U	4.10 U
Endrin ketone	1,800	NL	NL	7.80 U	4.20 U	3.60 U	54.00 U	4.20 U	4.10 U
gamma-BHC (Lindane)	520	13,000	100	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 U
gamma-Chlordane	1,600	NL	NL	4.00 U	0.13 J	1.80 U	28.00 U	0.14 J	2.10 U
Heptachlor	110	21,000	42	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 U
Heptachlor epoxide	53	NL	NL	4.00 U	2.10 U	1.80 U	28.00 U	2.20 U	2.10 UJ
Methoxychlor	31,000	NL	NL	40.00 UJ	21.00 U	18.00 U	280.00 U	22.00 U	21.00 U
Toxaphene	440	NL	NL	400.00 U	210.00 U	180.00 U	2,800.00 U	220.00 U	210.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)									
Aroclor-1016	390	1,000	100	78 U	42 U	36 U	540 U	42 U	41 U
Aroclor-1221	140	1,000	100	78 U	42 U	36 U	540 U	42 U	41 U
Aroclor-1232	140	1,000	100	78 U	42 U	36 U	540 U	42 U	41 U
Aroclor-1242	220	1,000	100	78 U	42 U	36 U	540 U	42 U	41 U
Aroclor-1248	220	1,000	100	78 U	42 U	36 U	540 U	42 U	41 U
Aroclor-1254	110	**1,000**	*100*	78 U	42 U	36 U	540 U	42 U	41 U
Aroclor-1260	220	1,000	*100*	78 U	42 U	36 U	540 U	42 U	41 U
Aroclor-1262	220	1,000	100	78 U	42 U	36 U	540 U	42 U	41 U
Aroclor-1268	220	1,000	100	78 U	42 U	36 U	540 U	42 U	41 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-100			TP-101		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e [3]*	TP-100-SS	TP-100-N	TP-100-B	TP-101-SS	TP-101-W	TP-101-B
Sample Date				12/17/12	12/17/12	12/17/12	12/17/12	12/17/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (North Wall)	1.5 to 2 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (West Wall)	2 to 2.5 ft bgs (Bottom)
Metals (mg/kg)									
Aluminum	7,700	NL	NL	2,120 J	1,990	1,300	3,830	3,260	1,750
Antimony	3.1	NL	NL	10.90 UJ	6.00 U	5.20 J	6.60 J	6.00 U	5.60 J
Arsenic	0.39	**16**	*13*	4.50 J	3.00 U	0.97 J	4.20	3.00 U	1.30 J
Barium	1,500	**400**	*350*	55.00 J	30.10 U	25.90 U	49.60	30.00 U	28.20 U
Beryllium	16	72	7.2	5.40 UJ	3.00 U	2.60 U	3.30 U	3.00 U	2.80 U
Cadmium	7	4.3	2.5	5.40 UJ	3.00 U	2.60 U	3.30 U	3.00 U	2.80 U
Calcium	NL	NL	NL	9,250.00 J	373.00 J	62.50 J	2,590.00	365.00 J	283.00 J
Chromium	0.29	180	*30*	*45.10 J*	5.10 J	5.20 U	*37.90*	9.30	6.40
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	2.50 R	*2.40 J-*	*0.64 J*	*23.00 J*	*1.60 J-*	1.20 UJ
Cobalt	2.3	NL	NL	5.40 UJ	3.00 U	2.60 U	3.30 U	3.00 U	2.80 U
Copper	310	270	*50*	23.90 J	3.60 J	5.20 U	21.60	5.70 J	5.60 U
Cyanide	2.2	27	27	0.59 J	0.61 U	0.54 U	0.28 J	0.61 U	0.59 U
Iron	5,500	NL	NL	4,920 J	11,000	3,090	8,430	8,400	10,100
Lead	40	400	*63*	*149.00 J*	18.30	2.60 U	*296.00*	36.00	4.00
Magnesium	NL	NL	NL	3,000 J	596	266 J	1,390	757	500
Manganese	180	2,000	1,600	562.00 J	67.60	159.00	272.00	136.00	120.00
Mercury	2.3	0.81	*0.18*	0.13 J	0.00 J	0.10 U	0.13	0.08 J	0.10 U
Nickel	150	310	*30*	24.10 J	3.30	3.30	10.20	6.70	5.80
Potassium	NL	NL	NL	1,100 UJ	558 U	405 U	720	435	494 U
Selenium	39	180	3.9	27.20 UJ	0.11 J	12.90 U	16.60 U	0.11 J	14.10 U
Silver	39	180	2	5.40 UJ	3.00 U	2.60 U	3.30 U	3.00 U	2.80 U
Sodium	NL	NL	NL	4,630 J	558 U	405 U	1,100	419 U	494 U
Thallium	0.078	NL	NL	5.40 UJ	3.00 U	2.60 U	3.30 U	3.00 U	2.80 U
Vanadium	39	NL	NL	16.20 J	8.10 J	6.10 J	18.20	9.60 J	6.80 J
Zinc	2,300	10,000	*109*	*132.00 J*	15.70	8.10	102.00	26.40	12.80

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (November 2012) for residential soil, adjusted to cancer risk of 1E-6 and hazard quotient of 0.1.
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives, http://www.dec.ny.gov/regs/15507.html#15513 (375). December14, 2006.
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil Cleanup Objectives, http://www.dec.ny.gov/regs/15507.html#15513 (375). December14, 2006.
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that compound.
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Objective for that compound.

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protection Agency
NYSDEC = New York State Department of Environmental Conservation
ft = feet
µg/kg = microgram per kilogram
NL = Not listed
bgs = below ground surface

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-102			TP-103		
Sample ID				TP-102-SS	TP-102-S	TP-102-B	TP-103-SS	TP-103-N	TP-103-B
Sample Date				12/17/12	12/17/12	12/17/12	12/10/12	12/10/12	12/10/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (West Wall)	4 to 4.5 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	3 to 3.5 ft bgs (North Wall)	6 to 6.5 ft bgs (Bottom)
Pesticides (µg/kg)									
4,4'-DDD	2,000	13,000	*3.3*	47.00 U	*4.90*	3.80 U	39.00 U	3.80 U	3.60 U
4,4'-DDE	1,400	8,900	*3.3*	47.00 U	*5.70*	0.87 J	3.10 J	3.80 UJ	3.60 U
4,4'-DDT	1,700	900	*3.3*	47.00 UJ	*6.20*	3.80 U	39.00 U	*5.60*	3.60 U
Aldrin	29	97	5	24.00 U	2.00 U	1.90 U	20.00 U	1.90 U	1.90 U
alpha-BHC	77	480	20	24.00 U	2.00 U	1.90 U	20.00 U	1.90 U	1.90 U
alpha-Chlordane	1,600	4,200	*94*	24.00 U	5.00 NJ	1.90 U	20.00 U	8.70 JN	1.90 U
beta-BHC	270	360	36	24.00 U	2.00 U	1.90 U	20.00 U	1.90 U	1.90 U
delta-BHC	77	100,000	40	24.00 U	2.00 U	1.90 U	20.00 U	1.90 U	1.90 U
Dieldrin	30	200	*5*	47.00 U	3.90 U	3.80 U	39.00 U	2.10 J	0.25 J
Endosulfan I	37,000	24,000	2,400	24.00 U	2.00 U	1.90 U	20.00 U	1.90 U	1.90 U
Endosulfan II	37,000	24,000	2,400	47.00 U	3.90 U	3.80 UJ	39.00 U	3.80 U	3.60 U
Endosulfan sulfate	37,000	24,000	2,400	47.00 U	3.90 U	3.80 U	39.00 U	3.80 U	3.60 U
Endrin	1,800	11,000	14	47.00 U	3.90 U	3.80 U	39.00 U	3.80 U	3.60 U
Endrin aldehyde	1,800	NL	NL	47.00 U	3.90 U	3.80 U	39.00 U	3.80 U	3.60 U
Endrin ketone	1,800	NL	NL	47.00 U	3.90 U	3.80 UJ	2.80 J	3.80 U	3.60 U
gamma-BHC (Lindane)	520	13,000	100	24.00 U	2.00 U	1.90 U	20.00 U	1.90 U	1.90 U
gamma-Chlordane	1,600	NL	NL	24.00 U	3.60 J	1.90 U	25.00	8.70	1.90 U
Heptachlor	110	21,000	42	24.00 U	2.00 U	1.90 U	20.00 U	0.17 J	1.90 U
Heptachlor epoxide	53	NL	NL	24.00 U	2.00 U	1.90 U	20.00 UJ	1.90 U	1.90 U
Methoxychlor	31,000	NL	NL	240.00 U	20.00 U	19.00 U	200.00 U	19.00 U	19.00 U
Toxaphene	440	NL	NL	2,400.00 U	200.00 U	190.00 U	2,000.00 U	190.00 U	190.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)									
Aroclor-1016	390	1,000	100	470 U	39 U	38 U	390 U	38 U	36 U
Aroclor-1221	140	1,000	100	470 U	39 U	38 U	390 U	38 U	36 U
Aroclor-1232	140	1,000	100	470 U	39 U	38 U	390 U	38 U	36 U
Aroclor-1242	220	1,000	100	470 U	39 U	38 U	390 U	38 U	36 U
Aroclor-1248	220	1,000	100	470 U	39 U	38 U	390 U	38 U	36 U
Aroclor-1254	110	**1,000**	*100*	470 U	39 U	38 U	390 U	38 U	36 U
Aroclor-1260	220	1,000	*100*	470 U	39 U	38 U	390 U	38 U	36 U
Aroclor-1262	220	1,000	100	470 U	39 U	38 U	390 U	38 U	36 U
Aroclor-1268	220	1,000	100	470 U	39 U	38 U	390 U	38 U	36 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-102						TP-103					
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-102-SS		TP-102-S		TP-102-B		TP-103-SS		TP-103-N		TP-103-B	
Sample Date				12/17/12		12/17/12		12/17/12		12/10/12		12/10/12		12/10/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)		3 to 3.5 ft bgs (West Wall)		4 to 4.5 ft bgs (Bottom)		0 to 2 inches bgs (Surface Soil)		3 to 3.5 ft bgs (North Wall)		6 to 6.5 ft bgs (Bottom)	
Metals (mg/kg)															
Aluminum	7,700	NL	NL	5,530		7,110		3,060		6,940		9,190		8,060	
Antimony	3.1	NL	NL	6.90	J	5.90	U	5.80	J	5.80	U	5.40	U	5.30	U
Arsenic	0.39	**16**	*13*	***18.20***		***16.20***		8.80		6.20		3.90		2.10	
Barium	1,500	**400**	*350*	134.00		126.00		63.80		33.80		40.70		25.30	J
Beryllium	16	72	7.2	3.50	U	2.90	U	2.90	U	2.90	U	2.70	U	2.60	U
Cadmium	7	4.3	2.5	3.50	U	2.90	U	2.90	U	0.15	J	2.70	U	2.60	U
Calcium	NL	NL	NL	29,600.00		2,770.00		1,050.00		18,900.00		14,500.00		1,290.00	
Chromium	0.29	180	*30*	*36.50*		12.10		8.40		11.10		15.60		15.70	
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	1.40	R	*2.20*	*J-*	0.90	J	*2.00*	*J-*	*2.00*	*J-*	*1.90*	*J-*
Cobalt	2.3	NL	NL	4.70		3.80		2.90	U	4.20		4.50		3.40	
Copper	310	270	*50*	29.40		14.30		10.60		21.30		13.60		8.20	
Cyanide	2.2	27	27	0.34	J	0.59	U	0.16	J	0.16	J	0.56	U	0.54	U
Iron	5,500	NL	NL	11,800		18,700		9,790		13,400		14,500		13,600	
Lead	40	400	*63*	*253.00*		44.90		44.30		54.80		40.70		10.70	
Magnesium	NL	NL	NL	16,100		1,310		739		11,200		8,630		2,080	
Manganese	180	2,000	1,600	183.00		133.00		105.00		215.00		215.00		116.00	
Mercury	2.3	0.81	*0.18*	0.14		0.06	J	0.05	J	0.12		0.12		0.10	U
Nickel	150	310	*30*	16.20		12.00		7.80		9.30		10.80		7.60	
Potassium	NL	NL	NL	605	U	750		466	U	615		535	U	637	
Selenium	39	180	3.9	17.40	U	0.44	J	14.40	U	0.34	J	0.48	J	0.16	J
Silver	39	180	2	3.50	U	2.90	U	2.90	U	0.09	J	0.07	J	0.04	J
Sodium	NL	NL	NL	1,670		885		466	U	410	U	535	U	521	U
Thallium	0.078	NL	NL	3.50	U	2.90	U	2.90	U	2.90	U	2.70	U	2.60	U
Vanadium	39	NL	NL	34.20		42.70		20.10		26.90		27.50		21.60	
Zinc	2,300	10,000	*109*	*175.00*		53.90		43.20		50.30		41.00		22.30	

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Object

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protec
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-104				TP-105		
Sample ID				TP-104-SS	TP-104-N	TP-104-B	TP-104-BR	TP-105-SS	TP-105-B	TP-105-BR
Sample Date				12/10/12	12/10/12	12/10/12	12/13/12	12/10/12	12/10/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2.5 to 3 ft bgs (North Wall)	5.5 to 6 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	6 to 6.5 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Pesticides (µg/kg)										
4,4'-DDD	2,000	13,000	*3.3*	3.90 U	*44.00*	3.70 U	43.00 U	3.90 R	*15.00 NJ*	38.00 U
4,4'-DDE	1,400	8,900	*3.3*	*20.00 J*	*27.00*	2.10 J	43.00 U	*26.00 J*	*9.70*	*6.40 J*
4,4'-DDT	1,700	900	*3.3*	*15.00 J*	*34.00*	3.70 U	*51.00 NJ*	*16.00*	*9.40 J*	38.00 U
Aldrin	29	97	5	2.00 U	1.90 U	1.90 U	22.00 U	2.00 U	1.90 U	20.00 U
alpha-BHC	77	480	20	2.00 U	1.90 U	1.90 U	22.00 U	2.00 U	1.90 U	20.00 U
alpha-Chlordane	1,600	4,200	*94*	63.00 JN	66.00 J	7.20 NJ	*100.00 J*	*170.00 J*	46.00 J	20.00 U
beta-BHC	270	360	36	2.00 U	1.90 U	1.90 U	22.00 U	2.00 U	0.32 J	20.00 U
delta-BHC	77	100,000	40	2.00 U	1.90 U	1.90 U	4.40 J	3.60	1.90 U	20.00 U
Dieldrin	30	200	*5*	*7.50 J*	*7.70 J*	0.80 J	*34.00 J*	*28.00*	*7.50*	38.00 U
Endosulfan I	37,000	24,000	2,400	2.00 U	1.90 U	1.90 U	22.00 U	2.00 U	1.90 U	20.00 U
Endosulfan II	37,000	24,000	2,400	3.90 U	3.80 U	3.70 U	43.00 U	3.90 U	3.70 U	38.00 U
Endosulfan sulfate	37,000	24,000	2,400	3.90 U	3.80 U	3.70 U	43.00 U	3.90 U	3.70 U	38.00 U
Endrin	1,800	11,000	14	3.90 U	3.80 U	3.70 U	43.00 U	3.90 U	3.70 U	38.00 U
Endrin aldehyde	1,800	NL	NL	3.90 U	3.80 U	3.70 UJ	43.00 U	3.90 U	3.70 U	38.00 U
Endrin ketone	1,800	NL	NL	3.90 U	3.80 U	3.70 U	43.00 U	3.90 U	3.70 U	38.00 U
gamma-BHC (Lindane)	520	13,000	100	2.00 U	1.90 U	1.90 U	22.00 U	2.00 U	1.90 U	20.00 U
gamma-Chlordane	1,600	NL	NL	39.00	50.00	6.70	97.00	140.00	37.00	20.00 UJ
Heptachlor	110	21,000	42	0.57 J	0.40 J	1.90 U	2.30 J	3.20	1.90 U	20.00 U
Heptachlor epoxide	53	NL	NL	12.00	5.00 JN	1.90 U	22.00 U	27.00	3.00 JN	20.00 U
Methoxychlor	31,000	NL	NL	20.00 U	19.00 U	19.00 U	220.00 U	20.00 U	19.00 U	200.00 U
Toxaphene	440	NL	NL	200.00 U	190.00 U	190.00 U	2,200.00 U	200.00 U	190.00 U	2,000.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)										
Aroclor-1016	390	1,000	100	39 U	38 U	37 U	430 U	39 U	37 U	380 U
Aroclor-1221	140	1,000	100	39 U	38 U	37 U	430 U	39 U	37 U	380 U
Aroclor-1232	140	1,000	100	39 U	38 U	37 U	430 U	39 U	37 U	380 U
Aroclor-1242	220	1,000	100	39 U	38 U	37 U	430 U	39 U	37 U	380 U
Aroclor-1248	220	1,000	100	39 U	38 U	37 U	430 U	39 U	37 U	380 U
Aroclor-1254	110	**1,000**	*100*	39 U	38 U	37 U	430 U	39 U	37 U	380 U
Aroclor-1260	220	1,000	*100*	39 U	38 U	37 U	430 U	39 U	37 U	380 U
Aroclor-1262	220	1,000	100	39 U	38 U	37 U	430 U	39 U	37 U	380 U
Aroclor-1268	220	1,000	100	39 U	38 U	37 U	430 U	39 U	37 U	380 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-104				TP-105		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-104-SS	TP-104-N	TP-104-B	TP-104-BR	TP-105-SS	TP-105-B	TP-105-BR
Sample Date				12/10/12	12/10/12	12/10/12	12/13/12	12/10/12	12/10/12	12/17/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2.5 to 3 ft bgs (North Wall)	5.5 to 6 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	6 to 6.5 ft bgs (Fill Sample)	14 to 14.5 ft bgs (Bottom)
Metals (mg/kg)										
Aluminum	7,700	NL	NL	10,300	8,310	7,250	8,540	9,480	6,950	4,080
Antimony	3.1	NL	NL	5.80 U	5.90 U	5.50 U	5.90 J	5.80 U	5.40 U	5.30 J
Arsenic	0.39	**16**	*13*	4.50	*15.00*	5.90	9.00	5.00	4.10	12.30
Barium	1,500	**400**	*350*	53.30	57.40	30.70	142.00	88.50	69.00	26.30 U
Beryllium	16	72	7.2	2.90 U	3.00 U	2.70 U	2.90 U	2.90 U	2.70 U	2.60 U
Cadmium	7	4.3	2.5	0.25 J	3.00 U	0.08 J	2.90 U	0.41 J	0.32 J	2.60 U
Calcium	NL	NL	NL	1,510.00	12,400.00	34,200.00	14,000.00	3,480.00	7,080.00	21,600.00
Chromium	0.29	180	*30*	20.20	15.50	9.80	*38.20*	19.20	12.70	7.40
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*2.80 J-*	*5.70 J-*	0.89 J-	1.20 UJ	*4.40 J-*	0.96 J-	0.32 J
Cobalt	2.3	NL	NL	5.40	4.90	4.50	5.90	5.30	3.90	2.90
Copper	310	270	*50*	17.70	21.80	13.70	*50.10*	26.00	12.20	12.20
Cyanide	2.2	27	27	0.60 U	0.61 U	0.56 U	0.60 U	0.59 U	0.57 U	0.55 U
Iron	5,500	NL	NL	14,200	14,000	12,400	20,500	15,200	12,700	8,620
Lead	40	400	*63*	*64.60*	*79.00*	*113.00*	*316.00*	*174.00*	*134.00*	35.90
Magnesium	NL	NL	NL	2,050	4,770	19,300	5,800	2,330	3,590	10,400
Manganese	180	2,000	1,600	246.00	313.00	186.00	506.00	232.00	193.00	121.00
Mercury	2.3	0.81	*0.18*	0.16	0.10 J	0.10 U	*0.29*	0.14	0.14	0.04 J
Nickel	150	310	*30*	13.70	11.00	8.70	24.80	14.50	8.70	8.50
Potassium	NL	NL	NL	826	698	593	743	698	443	450
Selenium	39	180	3.9	0.44 J	0.31 J	0.22 J	14.60 U	0.42 J	0.35 J	13.20 U
Silver	39	180	2	0.17 J	0.15 J	0.08 J	2.90 U	0.50 J	0.10 J	2.60 U
Sodium	NL	NL	NL	510 U	481 U	405 U	498 U	422 U	385 U	419 U
Thallium	0.078	NL	NL	2.90 U	3.00 U	2.70 U	2.90 U	2.90 U	2.70 U	2.60 U
Vanadium	39	NL	NL	27.40	26.60	27.30	27.00	27.80	20.70	17.70
Zinc	2,300	10,000	*109*	69.70	72.20	39.20	*324.00*	*125.00*	65.00	38.10

Notes:

1. United States Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Objec

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protec
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-106				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e [3]*	TP-106-SS	TP-906-SS	TP-106-S	TP-106-CA	TP-106-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		2.5 to 3 ft bgs (South Wall)	3.5 to 4ft bgs (Coal Ash Sample)	5.5 to 6 ft bgs (Bottom)
Pesticides (µg/kg)								
4,4'-DDD	2,000	13,000	*3.3*	4.00 U	4.10 U	*320.00*	*16.00 J*	*6.90*
4,4'-DDE	1,400	8,900	*3.3*	*56.00 J*	*54.00 J*	*48.00*	*8.10 J*	2.90 J
4,4'-DDT	1,700	900	*3.3*	*21.00 NJ*	*19.00 J*	*64.00*	*11.00*	*3.30 J*
Aldrin	29	97	5	2.10 U	2.10 U	1.80 U	2.00 U	1.80 U
alpha-BHC	77	480	20	2.10 U	2.10 U	1.80 U	2.00 U	1.80 U
alpha-Chlordane	1,600	4,200	*94*	*590.00 J*	*510.00 J*	8.10 NJ	2.50 NJ	7.00 NJ
beta-BHC	270	360	36	2.10 U	2.10 U	1.80 U	2.00 U	1.80 U
delta-BHC	77	100,000	40	2.60 JN	2.60 NJ	1.80 U	2.00 U	1.80 U
Dieldrin	30	200	*5*	*43.00*	*24.00 J*	3.60 U	4.00 U	3.60 U
Endosulfan I	37,000	24,000	2,400	2.10 U	2.10 U	1.80 U	2.00 U	1.80 U
Endosulfan II	37,000	24,000	2,400	4.70 NJ	4.60 J	3.60 U	4.00 U	3.60 U
Endosulfan sulfate	37,000	24,000	2,400	0.49 J	0.32 J	3.60 U	4.00 U	3.60 U
Endrin	1,800	11,000	14	4.00 R	4.10 R	3.60 U	4.00 U	3.60 U
Endrin aldehyde	1,800	NL	NL	3.20 J	4.10 U	3.60 U	4.00 U	0.76 J
Endrin ketone	1,800	NL	NL	4.00 U	4.10 U	3.60 U	4.00 U	3.60 U
gamma-BHC (Lindane)	520	13,000	100	2.10 U	2.10 U	1.80 U	2.00 U	1.80 U
gamma-Chlordane	1,600	NL	NL	390.00	370.00	9.10	3.30 J	5.60
Heptachlor	110	21,000	42	6.10 J	4.40	1.80 U	2.00 U	1.80 U
Heptachlor epoxide	53	NL	NL	59.00 J	53.00 J	1.80 R	2.00 U	1.80 U
Methoxychlor	31,000	NL	NL	21.00 U	21.00 U	18.00 U	20.00 U	18.00 U
Toxaphene	440	NL	NL	210.00 U	210.00 U	180.00 U	200.00 U	180.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)								
Aroclor-1016	390	1,000	100	40 U	41 U	36 U	40 U	36 U
Aroclor-1221	140	1,000	100	40 U	41 U	36 U	40 U	36 U
Aroclor-1232	140	1,000	100	40 U	41 U	36 U	40 U	36 U
Aroclor-1242	220	1,000	100	40 U	41 U	36 U	40 U	36 U
Aroclor-1248	220	1,000	100	40 U	41 U	36 U	40 U	36 U
Aroclor-1254	110	**1,000**	*100*	40 U	41 U	36 U	40 U	36 U
Aroclor-1260	220	1,000	*100*	40 U	41 U	36 U	40 U	36 U
Aroclor-1262	220	1,000	100	40 U	41 U	36 U	40 U	36 U
Aroclor-1268	220	1,000	100	40 U	41 U	36 U	40 U	36 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e* [3]	TP-106				
Sample ID				TP-106-SS	TP-906-SS	TP-106-S	TP-106-CA	TP-106-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		2.5 to 3 ft bgs (South Wall)	3.5 to 4ft bgs (Coal Ash Sample)	5.5 to 6 ft bgs (Bottom)
Metals (mg/kg)								
Aluminum	7,700	NL	NL	14,400	13,100	4,180	4,470	4,710
Antimony	3.1	NL	NL	7.20 U	6.20 U	5.60 U	5.80 U	5.50 UJ
Arsenic	0.39	**16**	*13*	8.00	7.20	2.80 U	*48.40*	2.10 J
Barium	1,500	**400**	*350*	143.00	129.00	28.20 U	51.40	17.00 J
Beryllium	16	72	7.2	3.60 U	3.10 U	2.80 U	2.90 U	2.70 U
Cadmium	7	4.3	2.5	0.85 J	3.10 U	2.80 U	2.90 U	0.03 J
Calcium	NL	NL	NL	3,790.00	3,560.00	4,600.00	1,800.00	840.00
Chromium	0.29	180	*30*	*33.10*	26.00	9.90	21.20	8.10
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*5.50 J-*	*8.80 J-*	1.10 UJ	1.20 UJ	*1.40 J-*
Cobalt	2.3	NL	NL	8.50	6.00	3.50	8.20	2.80
Copper	310	270	*50*	40.20	36.60	9.50	29.50	7.80 J
Cyanide	2.2	27	27	0.72 U	0.21 J	0.57 U	0.59 U	0.55 U
Iron	5,500	NL	NL	20,900	18,700	9,320	19,200	10,400
Lead	40	400	*63*	*300.00*	*242.00*	37.00	*103.00*	10.40 J
Magnesium	NL	NL	NL	3,060	2,980	2,760	892	1,100
Manganese	180	2,000	1,600	370.00	295.00	124.00	96.90	115.00 J
Mercury	2.3	0.81	*0.18*	*0.35*	*0.35*	0.04 J	*0.19*	0.10 U
Nickel	150	310	*30*	20.70	18.20	9.40	21.10	5.60 J
Potassium	NL	NL	NL	1,040	992	575 U	480 U	407
Selenium	39	180	3.9	0.78 J	0.55 J	0.29 J	3.30 J	0.20 J
Silver	39	180	2	0.18 J	3.10 U	0.04 J	0.08 J	0.08 J
Sodium	NL	NL	NL	527 U	493 U	575 U	480 U	402 U
Thallium	0.078	NL	NL	3.60 U	3.10 U	2.80 U	2.90 U	2.70 U
Vanadium	39	NL	NL	42.60	37.20	14.70	55.50	10.10 J
Zinc	2,300	10,000	*109*	*185.00*	*182.00*	33.30	72.50	13.10 J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamina
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil (
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Object

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protec
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ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-107				TP-108		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-107-SS	TP-107-W	TP-107-CA	TP-107-B	TP-108-SS	TP-108-CA	TP-108-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (West Wall)	6 to 6.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs (Bottom)
Pesticides (µg/kg)										
4,4'-DDD	2,000	13,000	*3.3*	3.90 U	3.60 UJ	4.10 U	*5.10*	4.30 U	4.10 U	3.50 U
4,4'-DDE	1,400	8,900	*3.3*	*5.70*	*6.80*	4.10 UJ	*11.00*	*7.60*	4.10 U	*4.40*
4,4'-DDT	1,700	900	*3.3*	*4.20 JN*	*6.70*	*5.50*	*13.00*	*6.80*	0.14 J	*6.90 J*
Aldrin	29	97	5	2.00 U	1.80 U	2.10 U	2.10 U	2.20 U	2.10 U	1.80 U
alpha-BHC	77	480	20	2.00 U	1.80 U	2.10 U	2.10 U	2.20 U	2.10 UJ	1.80 U
alpha-Chlordane	1,600	4,200	*94*	26.00 J	2.70 NJ	2.10 U	2.40 J	20.00 NJ	2.10 U	1.80 U
beta-BHC	270	360	36	2.00 U	1.80 U	2.10 U	2.10 U	2.20 U	2.10 U	1.80 U
delta-BHC	77	100,000	40	2.00 U	1.80 U	2.10 UJ	2.10 U	2.20 U	2.10 U	1.80 U
Dieldrin	30	200	*5*	3.20 J	3.60 U	4.10 U	4.00 U	*5.40*	4.10 U	3.50 U
Endosulfan I	37,000	24,000	2,400	2.00 U	1.80 U	2.10 U	2.10 U	2.20 U	2.10 U	1.80 U
Endosulfan II	37,000	24,000	2,400	3.90 U	3.60 U	4.10 U	4.00 U	4.30 U	4.10 U	3.50 U
Endosulfan sulfate	37,000	24,000	2,400	3.90 U	3.60 U	4.10 U	4.00 U	4.30 U	4.10 U	3.50 U
Endrin	1,800	11,000	14	3.90 U	3.60 U	4.10 U	4.00 U	4.30 U	4.10 U	3.50 U
Endrin aldehyde	1,800	NL	NL	3.90 U	3.60 U	4.10 U	4.00 U	4.30 U	4.10 U	3.50 U
Endrin ketone	1,800	NL	NL	3.90 U	3.60 U	4.10 U	4.00 U	4.30 U	4.10 U	3.50 U
gamma-BHC (Lindane)	520	13,000	100	2.00 U	1.80 U	2.10 U	2.10 U	2.20 U	2.10 U	1.80 U
gamma-Chlordane	1,600	NL	NL	18.00	2.00	2.10 U	2.50	13.00	2.10 U	4.80
Heptachlor	110	21,000	42	0.32 J	1.80 U	2.10 U	0.20 J	2.20 U	2.10 U	1.80 U
Heptachlor epoxide	53	NL	NL	4.60	1.80 U	2.10 U	2.10 U	4.00	2.10 U	1.80 U
Methoxychlor	31,000	NL	NL	20.00 U	18.00 U	21.00 U	21.00 U	22.00 U	21.00 U	18.00 U
Toxaphene	440	NL	NL	200.00 U	180.00 U	210.00 U	210.00 U	220.00 U	210.00 U	180.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)										
Aroclor-1016	390	1,000	100	39 U	36 U	41 U	40 U	43 U	41 U	35 U
Aroclor-1221	140	1,000	100	39 U	36 U	41 U	40 U	43 U	41 U	35 U
Aroclor-1232	140	1,000	100	39 U	36 U	41 U	40 U	43 U	41 U	35 U
Aroclor-1242	220	1,000	100	39 U	36 U	41 U	40 U	43 U	41 U	35 U
Aroclor-1248	220	1,000	100	39 U	36 U	41 U	40 U	43 U	41 U	35 U
Aroclor-1254	110	**1,000**	*100*	39 U	36 U	41 U	40 U	43 U	41 U	35 U
Aroclor-1260	220	1,000	*100*	39 U	36 U	41 U	40 U	43 U	41 U	35 U
Aroclor-1262	220	1,000	100	39 U	36 U	41 U	40 U	43 U	41 U	35 U
Aroclor-1268	220	1,000	100	39 U	36 U	41 U	40 U	43 U	41 U	35 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-107				TP-108		
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-107-SS	TP-107-W	TP-107-CA	TP-107-B	TP-108-SS	TP-108-CA	TP-108-B
Sample Date				12/11/12	12/11/12	12/11/12	12/11/12	12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (West Wall)	6 to 6.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs (Bottom)
Metals (mg/kg)										
Aluminum	7,700	NL	NL	5,280	5,900	13,500	9,780	4,280	20,500	6,180
Antimony	3.1	NL	NL	6.00 U	5.30 U	6.10 U	5.80 U	5.80 U	6.60 J	5.20 U
Arsenic	0.39	**16**	*13*	7.30	7.50	***39.00***	12.70	2.90 U	***178.00***	4.00
Barium	1,500	**400**	*350*	71.00	41.70	***725.00***	157.00	28.90 U	***627.00***	41.10
Beryllium	16	72	7.2	3.00 U	2.70 U	3.10 U	2.90 U	2.90 U	5.60	2.60 U
Cadmium	7	4.3	2.5	3.00 U	2.70 U	3.10 U	2.90 U	2.90 U	3.30 U	2.60 U
Calcium	NL	NL	NL	19,600.00	887.00	14,600.00	2,370.00	11,200.00	23,500.00	1,900.00
Chromium	0.29	180	*30*	12.70	10.50	22.00	17.60	4.90 J	*35.40*	9.20
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*3.70 J-*	0.30 J-	1.20 UJ	*6.30 J-*	2.50 UJ	1.30 UJ	2.80 UJ
Cobalt	2.3	NL	NL	3.90	3.10	8.20	4.60	2.90 U	11.90	3.90
Copper	310	270	*50*	12.10	8.70	24.60	12.50	4.60 J	38.90	7.50
Cyanide	2.2	27	27	0.61 U	0.56 U	0.21 J	0.59 U	0.59 U	0.67 U	0.53 U
Iron	5,500	NL	NL	10,500	9,910	46,200	16,300	7,420	55,900	13,100
Lead	40	400	*63*	25.50	20.70	17.30	25.70	8.00	41.20	17.50
Magnesium	NL	NL	NL	11,500	1,150	1,540	1,550	1,020	1,580	1,700
Manganese	180	2,000	1,600	192.00	149.00	128.00	134.00	71.20	114.00	198.00
Mercury	2.3	0.81	*0.18*	0.16	0.06 J	0.13	0.10 U	0.11 U	*0.18*	0.11 U
Nickel	150	310	*30*	11.00	7.60	28.40	12.10	3.70	*35.80*	7.50
Potassium	NL	NL	NL	465	550 U	929	561	519	1,700	501
Selenium	39	180	3.9	0.31 J	0.38 J	1.40 J	0.41 J	14.40 U	16.50 U	0.21 J
Silver	39	180	2	3.00 U	0.04 J	0.04 J	2.90 U	2.90 U	3.30 U	2.60 U
Sodium	NL	NL	NL	429 U	550 U	596 U	490 U	427 U	647 U	467 U
Thallium	0.078	NL	NL	3.00 U	2.70 U	3.10 U	2.90 U	2.90 U	5.00	2.60 U
Vanadium	39	NL	NL	21.90	16.90	112.00	26.60	7.00 J	98.90	14.60
Zinc	2,300	10,000	*109*	34.50	28.70	31.90	46.50	14.50	97.70	24.20

Notes:

1. United States Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
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Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-109				TP-110	
Sample ID				TP-109-SS	TP-109-S	TP-109-CA	TP-109-B	TP-110-SS	TP-110-B
Sample Date				12/12/12	12/12/12	12/12/12	12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1.5 ft bgs (South Wall)	1.5 to 2.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)
Pesticides (µg/kg)									
4,4'-DDD	2,000	13,000	*3.3*	45.00 U	*8.90*	4.20 U	3.70 UJ	3.60 U	4.50 U
4,4'-DDE	1,400	8,900	*3.3*	45.00 U	*5.40 J*	*11.00*	3.70 U	3.60 UJ	4.50 U
4,4'-DDT	1,700	900	*3.3*	*24.00 J*	*8.30*	*5.50 J*	1.70 J	3.60 U	4.50 U
Aldrin	29	97	5	23.00 U	2.00 U	2.20 U	1.90 U	1.90 U	2.30 U
alpha-BHC	77	480	20	23.00 U	2.00 U	2.20 U	1.90 U	1.90 U	2.30 U
alpha-Chlordane	1,600	4,200	*94*	23.00 U	2.80 JN	2.20 U	1.90 U	1.90 U	2.30 U
beta-BHC	270	360	36	23.00 U	2.00 U	2.20 U	1.90 U	0.15 J	2.30 U
delta-BHC	77	100,000	40	23.00 U	2.00 U	2.20 U	1.90 U	1.90 U	2.30 U
Dieldrin	30	200	*5*	45.00 U	2.50 J	4.20 U	3.70 U	2.00 J	0.18 J
Endosulfan I	37,000	24,000	2,400	23.00 U	2.00 U	2.20 U	1.90 U	1.90 U	2.30 U
Endosulfan II	37,000	24,000	2,400	45.00 U	3.90 U	4.20 U	3.70 U	3.60 U	4.50 U
Endosulfan sulfate	37,000	24,000	2,400	45.00 U	3.90 U	4.20 U	3.70 U	3.60 U	4.50 U
Endrin	1,800	11,000	14	45.00 U	3.90 U	4.20 U	0.28 J	3.60 U	4.50 U
Endrin aldehyde	1,800	NL	NL	45.00 U	3.90 U	4.20 U	3.70 U	3.60 U	4.50 U
Endrin ketone	1,800	NL	NL	45.00 U	3.90 U	4.20 U	3.70 U	3.60 U	4.50 U
gamma-BHC (Lindane)	520	13,000	100	23.00 U	2.00 U	2.20 U	1.90 U	1.90 U	2.30 U
gamma-Chlordane	1,600	NL	NL	23.00 U	3.70	2.20 U	1.90 U	4.00	2.30 U
Heptachlor	110	21,000	42	23.00 U	0.41 J	2.20 U	1.90 U	1.90 U	2.30 U
Heptachlor epoxide	53	NL	NL	23.00 U	2.00 UJ	2.20 UJ	1.90 U	1.90 UJ	2.30 U
Methoxychlor	31,000	NL	NL	230.00 U	20.00 U	22.00 U	19.00 U	19.00 U	23.00 U
Toxaphene	440	NL	NL	2,300.00 U	200.00 U	220.00 U	190.00 U	190.00 U	230.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)									
Aroclor-1016	390	1,000	100	440 U	39 U	42 U	37 U	36 U	45 U
Aroclor-1221	140	1,000	100	440 U	39 U	42 U	37 U	36 U	45 U
Aroclor-1232	140	1,000	100	440 U	39 U	42 U	37 U	36 U	45 U
Aroclor-1242	220	1,000	100	440 U	39 U	42 U	37 U	36 U	45 U
Aroclor-1248	220	1,000	100	440 U	39 U	42 U	37 U	36 U	45 U
Aroclor-1254	110	**1,000**	*100*	440 U	39 U	42 U	37 U	36 U	45 U
Aroclor-1260	220	1,000	*100*	440 U	39 U	42 U	37 U	36 U	45 U
Aroclor-1262	220	1,000	100	440 U	39 U	42 U	37 U	36 U	45 U
Aroclor-1268	220	1,000	100	440 U	39 U	42 U	37 U	36 U	45 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-109				TP-110	
Sample ID				TP-109-SS	TP-109-S	TP-109-CA	TP-109-B	TP-110-SS	TP-110-B
Sample Date				12/12/12	12/12/12	12/12/12	12/12/12	12/12/12	12/12/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1.5 ft bgs (South Wall)	1.5 to 2.5 ft bgs (Coal Ash Sample)	6.5 to 7 ft bgs (Bottom)	0 to 2 inches bgs (Surface Soil)	14 to 14.5 ft bgs (Coal Ash Sample)
Metals (mg/kg)									
Aluminum	7,700	NL	NL	4,200	6,500	11,800	8,720	5,480	20,300
Antimony	3.1	NL	NL	5.90 U	5.80 U	6.10 U	5.50 U	5.40 U	6.90 UJ
Arsenic	0.39	**16**	*13*	3.80	6.50	***25.20*** J	2.90 J	3.70	***81.70*** J
Barium	1,500	**400**	*350*	29.40 U	60.40	189.00	40.50	36.20	***787.00***
Beryllium	16	72	7.2	2.90 U	2.90 U	3.00 U	2.70 U	2.70 U	3.50 U
Cadmium	7	4.3	2.5	2.90 U	2.90 U	3.00 U	2.70 U	2.70 U	3.50 U
Calcium	NL	NL	NL	3,650.00	6,940.00	4,550.00	1,200.00	1,180.00	20,700.00
Chromium	0.29	180	*30*	9.30	11.80	16.20	15.50	13.50	*30.60*
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*13.00 J-*	1.20 UJ	1.30 UJ	*5.10 J-*	2.60 UJ	3.30 UJ
Cobalt	2.3	NL	NL	2.90 U	4.00	5.90	5.20	3.10	10.80
Copper	310	270	*50*	18.70	18.50	15.40	10.40	9.20	31.00
Cyanide	2.2	27	27	0.15 J	0.58 U	0.61 U	0.56 U	0.54 U	0.70 U
Iron	5,500	NL	NL	9,170	13,100	29,000	15,700	10,800	51,500
Lead	40	400	*63*	59.40	51.10	26.70	10.90	15.90	23.40
Magnesium	NL	NL	NL	1,520	2,190	1,970	2,530	1,210	1,990
Manganese	180	2,000	1,600	144.00	202.00	269.00	238.00	152.00	112.00
Mercury	2.3	0.81	*0.18*	0.10 U	0.09 J	0.14	0.10 U	0.10 U	*0.23*
Nickel	150	310	*30*	8.60	12.20	14.50	10.40	8.20	*32.40*
Potassium	NL	NL	NL	551 U	520	954	911	550	1,520
Selenium	39	180	3.9	0.29 J	0.33 J	0.44 J	0.21 J	0.19 J	2.90 J-
Silver	39	180	2	2.90 U	0.08 J	0.05 J	2.70 U	2.70 U	0.09 J
Sodium	NL	NL	NL	551 U	431 U	468 U	523 U	386 U	777
Thallium	0.078	NL	NL	2.90 U	2.90 U	3.00 U	2.70 U	2.70 U	3.50 U
Vanadium	39	NL	NL	24.40	29.80	42.80	22.40	14.00	135.00
Zinc	2,300	10,000	*109*	57.00	56.10	35.10	26.70	25.80	47.20 J

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Object

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protec
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-111				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e [3]*	TP-111-SS	TP-911-SS	TP-111-N	TP-111-CA	TP-111-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1.5 to 2 ft bgs (North Wall)	12.5 to 13 ft bgs (Coal Ash Sample)	12.5 to 13 ft bgs (Bottom)
Pesticides (µg/kg)								
4,4'-DDD	2,000	13,000	*3.3*	3.60 U	4.60 U	3.60 U	3.90 U	4.10 U
4,4'-DDE	1,400	8,900	*3.3*	*9.60*	*14.00*	0.54 J	0.53 J	4.10 U
4,4'-DDT	1,700	900	*3.3*	*11.00*	*67.00 J*	3.60 U	3.90 UJ	4.10 U
Aldrin	29	97	5	1.90 U	2.40 U	1.90 U	2.00 U	2.10 U
alpha-BHC	77	480	20	1.90 U	2.40 U	1.90 U	2.00 U	2.10 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	2.40 U	1.90 U	2.00 U	2.10 U
beta-BHC	270	360	36	1.90 U	2.40 U	1.90 U	2.00 U	2.10 U
delta-BHC	77	100,000	40	1.90 U	2.40 U	1.90 U	2.00 U	2.10 UJ
Dieldrin	30	200	*5*	3.60 UJ	4.60 U	3.60 U	3.90 U	4.10 U
Endosulfan I	37,000	24,000	2,400	1.90 U	2.40 U	1.90 U	2.00 U	2.10 U
Endosulfan II	37,000	24,000	2,400	3.60 U	4.60 U	3.60 U	3.90 U	4.10 U
Endosulfan sulfate	37,000	24,000	2,400	3.60 U	4.60 U	3.60 U	3.90 U	4.10 U
Endrin	1,800	11,000	14	0.33 J	4.60 U	3.60 U	3.90 U	4.10 U
Endrin aldehyde	1,800	NL	NL	3.60 U	4.60 U	3.60 U	3.90 U	4.10 U
Endrin ketone	1,800	NL	NL	3.60 U	4.60 U	3.60 U	3.90 U	4.10 U
gamma-BHC (Lindane)	520	13,000	100	1.90 U	2.40 U	1.90 U	2.00 U	2.10 U
gamma-Chlordane	1,600	NL	NL	1.90	2.40 UJ	1.90 U	0.51 J	2.10 U
Heptachlor	110	21,000	42	1.90 U	2.40 U	1.90 U	2.00 U	2.10 U
Heptachlor epoxide	53	NL	NL	1.90 U	2.40 UJ	1.90 U	2.00 U	2.10 U
Methoxychlor	31,000	NL	NL	19.00 U	24.00 U	19.00 U	20.00 U	21.00 U
Toxaphene	440	NL	NL	190.00 U	240.00 U	190.00 U	200.00 U	210.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)								
Aroclor-1016	390	1,000	100	36 U	46 U	36 U	39 U	41 U
Aroclor-1221	140	1,000	100	36 U	46 U	36 U	39 U	41 U
Aroclor-1232	140	1,000	100	36 U	46 U	36 U	39 U	41 U
Aroclor-1242	220	1,000	100	36 U	46 U	36 U	39 U	41 U
Aroclor-1248	220	1,000	100	36 U	46 U	36 U	39 U	41 U
Aroclor-1254	110	**1,000**	*100*	36 U	46 U	36 U	39 U	41 U
Aroclor-1260	220	1,000	*100*	36 U	46 U	36 U	39 U	41 U
Aroclor-1262	220	1,000	100	36 U	46 U	36 U	39 U	41 U
Aroclor-1268	220	1,000	100	36 U	46 U	36 U	39 U	41 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-111				
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e [3]*	TP-111-SS	TP-911-SS	TP-111-N	TP-111-CA	TP-111-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1.5 to 2 ft bgs (North Wall)	12.5 to 13 ft bgs (Coal Ash Sample)	12.5 to 13 ft bgs (Bottom)
Metals (mg/kg)								
Aluminum	7,700	NL	NL	8,730	7,470	6,220	17,100	7,550
Antimony	3.1	NL	NL	6.20 J	6.40 J	5.50 U	6.00 U	5.30 UJ
Arsenic	0.39	**16**	*13*	5.90	6.60	2.70 U	4.80	3.20
Barium	1,500	**400**	*350*	44.90	48.70	34.20	73.00	26.50 U
Beryllium	16	72	7.2	3.10 U	3.20 U	2.70 U	3.00 U	2.60 U
Cadmium	7	4.3	2.5	3.10 U	3.20 U	2.70 U	3.00 U	2.60 U
Calcium	NL	NL	NL	994.00	996.00	574.00	15,100.00	289.00 J
Chromium	0.29	180	*30*	12.00	12.40	9.70	16.30	12.60
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	1.20 R	1.20 R	1.10 UJ	0.98 J-	1.10 UJ
Cobalt	2.3	NL	NL	3.60	4.00	3.70	4.30	5.20
Copper	310	270	*50*	13.40	14.70	7.90	9.40	8.30
Cyanide	2.2	27	27	0.63 U	0.67 U	0.55 U	0.61 U	0.55 U
Iron	5,500	NL	NL	12,200	11,200	11,300	58,200	11,800
Lead	40	400	*63*	40.30	43.40	8.60	20.20	6.30
Magnesium	NL	NL	NL	1,370	1,310	1,490	1,240	1,220
Manganese	180	2,000	1,600	195.00	220.00	209.00	193.00	200.00 J
Mercury	2.3	0.81	*0.18*	0.17	0.13	0.02 J	0.13	0.01 J
Nickel	150	310	*30*	9.40	10.10	8.80	11.30	8.50
Potassium	NL	NL	NL	736	706	866	1,000	463 U
Selenium	39	180	3.9	15.60 U	16.10 U	0.17 J	0.15 J	13.20 U
Silver	39	180	2	3.10 U	3.20 U	2.70 U	3.00 U	2.60 U
Sodium	NL	NL	NL	517 U	457 U	407 U	800	463 U
Thallium	0.078	NL	NL	3.10 U	3.20 U	2.70 U	3.00 U	2.60 U
Vanadium	39	NL	NL	22.00	24.00	13.10 J	26.50	22.00
Zinc	2,300	10,000	*109*	39.10	41.00	17.30	31.40	17.70

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamina
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil (
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Object

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protec
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-112									
Sample ID				TP-112-SS		TP-912-SS		TP-112-E		TP-112-S		TP-112-B	
Sample Date				12/13/12		12/13/12		12/13/12		12/13/12		12/13/12	
Sample Depth				0 to 2 inches bgs (Surface Soil)				1 to 1.5 ft bgs (East Wall)		1 to 1.5 ft bgs (South Wall)		5.5 to 6 ft bgs (Bottom)	
Pesticides (µg/kg)													
4,4'-DDD	2,000	13,000	*3.3*	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U
4,4'-DDE	1,400	8,900	*3.3*	*6.30*		*4.40*		3.50	U	3.70	U	3.40	U
4,4'-DDT	1,700	900	*3.3*	*5.40*	*J*	3.90	U	3.50	U	3.70	U	3.40	U
Aldrin	29	97	5	2.10	U	2.00	U	1.80	U	1.90	U	1.80	U
alpha-BHC	77	480	20	2.10	U	2.00	U	1.80	U	1.90	U	1.80	U
alpha-Chlordane	1,600	4,200	*94*	2.10	U	2.00	U	1.80	U	1.90	U	1.80	U
beta-BHC	270	360	36	2.10	U	2.00	U	1.80	U	1.90	U	1.80	U
delta-BHC	77	100,000	40	2.10	U	2.00	U	1.80	U	1.90	UJ	1.80	U
Dieldrin	30	200	*5*	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U
Endosulfan I	37,000	24,000	2,400	2.10	U	2.00	U	1.80	U	1.90	U	1.80	U
Endosulfan II	37,000	24,000	2,400	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U
Endosulfan sulfate	37,000	24,000	2,400	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U
Endrin	1,800	11,000	14	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U
Endrin aldehyde	1,800	NL	NL	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U
Endrin ketone	1,800	NL	NL	4.10	U	3.90	U	3.50	U	3.70	U	3.40	U
gamma-BHC (Lindane)	520	13,000	100	2.10	U	2.00	U	1.80	U	1.90	U	1.80	U
gamma-Chlordane	1,600	NL	NL	3.50	NJ	2.60		1.80	U	1.90	U	1.80	U
Heptachlor	110	21,000	42	2.10	U	0.01	J	1.80	U	1.90	U	1.80	U
Heptachlor epoxide	53	NL	NL	2.10	U	2.00	U	1.80	U	1.90	U	1.80	U
Methoxychlor	31,000	NL	NL	21.00	U	20.00	U	18.00	U	19.00	U	18.00	U
Toxaphene	440	NL	NL	210.00	U	200.00	U	180.00	U	190.00	U	180.00	U
Polychlorinated Biphenyls (PCBs) (µg/kg)													
Aroclor-1016	390	1,000	100	41	U	39	U	35	U	37	U	34	U
Aroclor-1221	140	1,000	100	41	U	39	U	35	U	37	U	34	U
Aroclor-1232	140	1,000	100	41	U	39	U	35	U	37	U	34	U
Aroclor-1242	220	1,000	100	41	U	39	U	35	U	37	U	34	U
Aroclor-1248	220	1,000	100	41	U	39	U	35	U	37	U	34	U
Aroclor-1254	110	**1,000**	*100*	41	U	39	U	35	U	37	U	34	U
Aroclor-1260	220	1,000	*100*	41	U	39	U	35	U	37	U	34	U
Aroclor-1262	220	1,000	100	41	U	39	U	35	U	37	U	34	U
Aroclor-1268	220	1,000	100	41	U	39	U	35	U	37	U	34	U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-112				
Sample ID				TP-112-SS	TP-912-SS	TP-112-E	TP-112-S	TP-112-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)		1 to 1.5 ft bgs (East Wall)	1 to 1.5 ft bgs (South Wall)	5.5 to 6 ft bgs (Bottom)
Metals (mg/kg)								
Aluminum	7,700	NL	NL	10,600	8,940	3,280	8,770	1,750
Antimony	3.1	NL	NL	6.00 U	5.80 U	5.30 U	5.40 U	5.30 U
Arsenic	0.39	**16**	*13*	***99.30***	***74.70***	2.70 U	2.70 U	2.60 U
Barium	1,500	**400**	*350*	38.30	38.60	26.60 U	26.90 U	26.30 U
Beryllium	16	72	7.2	3.00 U	2.90 U	2.70 U	2.70 U	2.60 U
Cadmium	7	4.3	2.5	3.00 U	2.90 U	2.70 U	2.70 U	2.60 U
Calcium	NL	NL	NL	491.00 J	476.00 J	71.40 J	344.00 J	50.10 J
Chromium	0.29	180	*30*	16.30	14.30	3.90	11.40	4.20
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*6.00 J-*	1.20 UJ	1.10 UJ	1.10 UJ	1.00 UJ
Cobalt	2.3	NL	NL	4.00	4.10	2.70 U	4.00	2.60 U
Copper	310	270	*50*	19.80	17.40	2.70 J	5.30 J	2.80 J
Cyanide	2.2	27	27	0.18 J	0.60 U	0.54 U	0.55 U	0.53 U
Iron	5,500	NL	NL	13,000	11,500	5,010	12,300	5,760
Lead	40	400	*63*	*120.00*	*78.70*	2.70 U	4.90	2.60 U
Magnesium	NL	NL	NL	1,730	1,480	401 J	1,450	233 J
Manganese	180	2,000	1,600	242.00	239.00	56.90	126.00	47.70
Mercury	2.3	0.81	*0.18*	*0.38*	*0.31*	0.09 U	0.01 J	0.10 U
Nickel	150	310	*30*	10.30	9.60	2.90	7.30	2.30
Potassium	NL	NL	NL	580 U	526 U	440 U	523 U	510 U
Selenium	39	180	3.9	0.56 J	0.55 J	0.13 J	0.17 J	0.13 J
Silver	39	180	2	0.19 J	0.14 J	2.70 U	0.02 J	0.01 J
Sodium	NL	NL	NL	580 U	526 U	440 U	523 U	510 U
Thallium	0.078	NL	NL	3.00 U	2.90 U	2.70 U	2.70 U	2.60 U
Vanadium	39	NL	NL	32.20	26.10	6.70	18.20	13.10 U
Zinc	2,300	10,000	*109*	38.30	36.00	9.70	16.50	5.30 U

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Objec

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protec
NYSDEC = New York State Department of
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-113		
Sample ID				TP-113-SS	TP-113-E	TP-113-B
Sample Date				12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6.5 to 7 ft bgs (East Wall)	6.5 to 7 ft bgs (Bottom)
Pesticides (µg/kg)						
4,4'-DDD	2,000	13,000	*3.3*	4.40 U	3.60 U	4.10 U
4,4'-DDE	1,400	8,900	*3.3*	4.40 U	3.60 U	4.10 U
4,4'-DDT	1,700	900	*3.3*	4.40 U	3.60 U	4.10 U
Aldrin	29	97	5	2.30 U	1.80 U	2.10 U
alpha-BHC	77	480	20	2.30 U	1.80 U	2.10 U
alpha-Chlordane	1,600	4,200	*94*	2.30 U	1.80 U	2.10 U
beta-BHC	270	360	36	2.30 U	1.80 U	2.10 U
delta-BHC	77	100,000	40	2.30 U	1.80 U	2.10 U
Dieldrin	30	200	*5*	4.40 U	3.60 U	4.10 U
Endosulfan I	37,000	24,000	2,400	2.30 U	1.80 U	2.10 U
Endosulfan II	37,000	24,000	2,400	4.40 U	3.60 U	4.10 U
Endosulfan sulfate	37,000	24,000	2,400	4.40 U	3.60 U	4.10 U
Endrin	1,800	11,000	14	4.40 U	3.60 U	4.10 U
Endrin aldehyde	1,800	NL	NL	4.40 U	3.60 U	4.10 U
Endrin ketone	1,800	NL	NL	4.40 U	3.60 U	4.10 U
gamma-BHC (Lindane)	520	13,000	100	2.30 U	1.80 U	2.10 U
gamma-Chlordane	1,600	NL	NL	2.30 U	1.80 U	2.10 U
Heptachlor	110	21,000	42	2.30 U	1.80 U	2.10 U
Heptachlor epoxide	53	NL	NL	2.30 U	1.80 U	2.10 U
Methoxychlor	31,000	NL	NL	23.00 U	18.00 U	21.00 U
Toxaphene	440	NL	NL	230.00 U	180.00 U	210.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)						
Aroclor-1016	390	1,000	100	44 U	36 U	41 U
Aroclor-1221	140	1,000	100	44 U	36 U	41 U
Aroclor-1232	140	1,000	100	44 U	36 U	41 U
Aroclor-1242	220	1,000	100	44 U	36 U	41 U
Aroclor-1248	220	1,000	100	44 U	36 U	41 U
Aroclor-1254	110	**1,000**	*100*	44 U	36 U	41 U
Aroclor-1260	220	1,000	*100*	44 U	36 U	41 U
Aroclor-1262	220	1,000	100	44 U	36 U	41 U
Aroclor-1268	220	1,000	100	44 U	36 U	41 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-113		
Sample ID				TP-113-SS	TP-113-E	TP-113-B
Sample Date				12/11/12	12/11/12	12/11/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	6.5 to 7 ft bgs (East Wall)	6.5 to 7 ft bgs (Bottom)
Metals (mg/kg)						
Aluminum	7,700	NL	NL	13,900	7,100	18,900
Antimony	3.1	NL	NL	6.10 U	5.30 J	6.70 U
Arsenic	0.39	**16**	*13*	***45.00***	7.20	***64.90***
Barium	1,500	**400**	*350*	346.00	65.80	***602***
Beryllium	16	72	7.2	3.10 U	2.70 U	3.40 U
Cadmium	7	4.3	2.5	3.10 U	2.70 U	3.40 U
Calcium	NL	NL	NL	6,710.00	807.00	18,100
Chromium	0.29	180	*30*	18.40	12.70	27.80
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*3.90 J-*	1.10 UJ	*4.70 J-*
Cobalt	2.3	NL	NL	6.60	4.50	9.20
Copper	310	270	*50*	20.00	10.00	27.50
Cyanide	2.2	27	27	0.63 U	0.56 U	0.34 J
Iron	5,500	NL	NL	35,900	13,500	60,300
Lead	40	400	*63*	20.50	18.80	18.60
Magnesium	NL	NL	NL	1,290	1,250	1,640
Manganese	180	2,000	1,600	91.30	191.00	89.20
Mercury	2.3	0.81	*0.18*	0.13	0.03 J	*0.20*
Nickel	150	310	*30*	18.80	11.40	*31.50*
Potassium	NL	NL	NL	969	514 U	1,270
Selenium	39	180	3.9	1.00 J	13.30 U	2.20 J
Silver	39	180	2	3.10 U	2.70 U	3.40 U
Sodium	NL	NL	NL	463 U	514 U	614
Thallium	0.078	NL	NL	3.10 U	2.70 U	3.40 U
Vanadium	39	NL	NL	62.90	21.20	137.00
Zinc	2,300	10,000	*109*	32.20	27.70	37.10

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Objec

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
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Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-114					
Sample ID				TP-114-SS	TP-114-FL	TP-114-CA	TP-114-E	TP-114-S	TP-114-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0 to 2 inches bgs (Fill Sample)	2.5 to 3 ft bgs (Coal Ash Sample)	2.5 to 3 feet (East Wall)	2.5 to 3 feet (South Wall)	6 to 6.5 feet (Bottom)
Pesticides (µg/kg)									
4,4'-DDD	2,000	13,000	*3.3*	3.60 U	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
4,4'-DDE	1,400	8,900	*3.3*	*28.00*	3.60 U	4.10 U	3.50 U	3.50 UJ	3.50 U
4,4'-DDT	1,700	900	*3.3*	3.60 U	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
Aldrin	29	97	5	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
alpha-BHC	77	480	20	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
alpha-Chlordane	1,600	4,200	*94*	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
beta-BHC	270	360	36	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
delta-BHC	77	100,000	40	1.80 U	1.90 U	2.10 U	1.80 U	1.80 UJ	1.80 U
Dieldrin	30	200	*5*	3.60 R	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
Endosulfan I	37,000	24,000	2,400	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
Endosulfan II	37,000	24,000	2,400	3.60 R	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
Endosulfan sulfate	37,000	24,000	2,400	3.60 U	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
Endrin	1,800	11,000	14	3.60 U	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
Endrin aldehyde	1,800	NL	NL	7.20 J	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
Endrin ketone	1,800	NL	NL	3.60 U	3.60 U	4.10 U	3.50 U	3.50 U	3.50 U
gamma-BHC (Lindane)	520	13,000	100	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
gamma-Chlordane	1,600	NL	NL	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
Heptachlor	110	21,000	42	1.80 U	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
Heptachlor epoxide	53	NL	NL	1.80 R	1.90 U	2.10 U	1.80 U	1.80 U	1.80 U
Methoxychlor	31,000	NL	NL	18.00 UJ	19.00 U	21.00 U	18.00 U	18.00 U	18.00 U
Toxaphene	440	NL	NL	180.00 U	190.00 U	210.00 U	180.00 U	180.00 U	180.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)									
Aroclor-1016	390	1,000	100	36 U	36 U	41 U	35 U	35 U	35 U
Aroclor-1221	140	1,000	100	36 U	36 U	41 U	35 U	35 U	35 U
Aroclor-1232	140	1,000	100	36 U	36 U	41 U	35 U	35 U	35 U
Aroclor-1242	220	1,000	100	36 U	36 U	41 U	35 U	35 U	35 U
Aroclor-1248	220	1,000	100	36 U	36 U	41 U	35 U	35 U	35 U
Aroclor-1254	110	**1,000**	*100*	***1,100***	79	45 J	35 U	27 J	35 U
Aroclor-1260	220	1,000	*100*	*410*	36 U	37 J	35 U	35 U	35 U
Aroclor-1262	220	1,000	100	36 U	36 U	41 U	35 U	35 U	35 U
Aroclor-1268	220	1,000	100	36 U	36 U	41 U	35 U	35 U	35 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-114					
Sample ID				TP-114-SS	TP-114-FL	TP-114-CA	TP-114-E	TP-114-S	TP-114-B
Sample Date				12/13/12	12/13/12	12/13/12	12/13/12	12/13/12	12/13/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0 to 2 inches bgs (Fill Sample)	2.5 to 3 ft bgs (Coal Ash Sample)	2.5 to 3 feet (East Wall)	2.5 to 3 feet (South Wall)	6 to 6.5 feet (Bottom)
Metals (mg/kg)									
Aluminum	7,700	NL	NL	3,150	3,160	9,800	2,140	3,870	3,220
Antimony	3.1	NL	NL	5.40 U	5.40 U	6.10 U	5.20 U	5.10 U	5.30 U
Arsenic	0.39	**16**	*13*	3.70	3.20	***28.10***	2.60 U	2.50 U	3.70
Barium	1,500	**400**	*350*	26.80 U	27.20 U	293	26 U	31.70	26.30 U
Beryllium	16	72	7.2	2.70 U	2.70 U	3.10 U	2.60 U	2.50 U	2.60 U
Cadmium	7	4.3	2.5	2.70 U	2.70 U	3.10 U	2.60 U	2.50 U	2.60 U
Calcium	NL	NL	NL	550	490	3,990	231 J	464	446 J
Chromium	0.29	180	*30*	7.50	6.70	17.00	4.90	6.20	5.80
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	1.10 UJ	1.10 UJ	1.20 UJ	1.10 UJ	1.10 UJ	0.30 J-
Cobalt	2.3	NL	NL	2.70	2.70 U	6.30	2.60 U	2.50 U	2.60 U
Copper	310	270	*50*	6.10	5.00 J	18.20	3.20 J	3.50 J	4.00 J
Cyanide	2.2	27	27	0.54 U	0.56 U	0.63 U	0.53 U	0.53 U	0.54 U
Iron	5,500	NL	NL	5,800	6,360	24,500	5,160	6,660	6,320
Lead	40	400	*63*	14.00	8.10	24.40	2.60 U	3.90	6.30
Magnesium	NL	NL	NL	711	696	1,260	428	491	564
Manganese	180	2,000	1,600	127	112	151	57.40	96.30	80.90
Mercury	2.3	0.81	*0.18*	0.01 J	0.01 J	0.09 J	0.10 U	0.01 J	0.01 J
Nickel	150	310	*30*	5.80	4.80	18.50	3.50	4.30	3.90
Potassium	NL	NL	NL	370 U	394 U	656	364 U	361 U	479 U
Selenium	39	180	3.9	0.21 J	0.21 J	0.72 J	13.00 U	0.24 J	0.16 J
Silver	39	180	2	0.03 J	0.02 J	0.05 J	0.01 J	0.02 J	0.02 J
Sodium	NL	NL	NL	370 U	394 U	626 U	364 U	361 U	479 U
Thallium	0.078	NL	NL	2.70 U	2.70 U	3.10 U	2.60 U	2.50 U	2.60 U
Vanadium	39	NL	NL	13.40 U	13.60 U	67.70	13.00 U	12.70 U	13.10 U
Zinc	2,300	10,000	*109*	17.20	14.50	35.30	5.80	12.50	11.90

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Object

Acronyms:

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Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-115			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective e* [3]	TP-115-SS	TP-115-FL	TP-115-W	TP-115-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (West Wall)	8 to 8.5 ft bgs (Bottom)
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	3.70 U	3.80 U	3.70 U	3.60 U
4,4'-DDE	1,400	8,900	*3.3*	0.55 J	0.18 J	0.28 J	3.60 U
4,4'-DDT	1,700	900	*3.3*	3.70 U	3.80 U	3.70 UJ	3.60 U
Aldrin	29	97	5	1.90 U	2.00 U	1.90 U	1.90 U
alpha-BHC	77	480	20	1.90 U	2.00 U	1.90 U	1.90 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	2.00 U	1.90 U	1.90 U
beta-BHC	270	360	36	1.90 U	2.00 U	1.90 U	1.90 U
delta-BHC	77	100,000	40	1.90 U	2.00 U	1.90 U	1.90 U
Dieldrin	30	200	*5*	3.70 U	3.80 U	3.70 U	3.60 U
Endosulfan I	37,000	24,000	2,400	1.90 U	2.00 U	1.90 U	1.90 U
Endosulfan II	37,000	24,000	2,400	3.70 U	3.80 U	3.70 U	3.60 U
Endosulfan sulfate	37,000	24,000	2,400	3.70 U	3.80 U	3.70 U	3.60 U
Endrin	1,800	11,000	14	3.70 U	3.80 U	3.70 U	3.60 U
Endrin aldehyde	1,800	NL	NL	3.70 U	3.80 U	3.70 U	3.60 U
Endrin ketone	1,800	NL	NL	3.70 U	3.80 U	3.70 U	3.60 U
gamma-BHC (Lindane)	520	13,000	100	1.90 U	2.00 U	1.90 U	1.90 U
gamma-Chlordane	1,600	NL	NL	1.90 U	2.00 U	1.90 U	1.90 U
Heptachlor	110	21,000	42	1.90 U	2.00 U	1.90 U	1.90 U
Heptachlor epoxide	53	NL	NL	1.90 U	2.00 U	1.90 U	1.90 U
Methoxychlor	31,000	NL	NL	19.00 U	20.00 U	19.00 U	19.00 U
Toxaphene	440	NL	NL	190.00 U	200.00 U	190.00 U	190.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)							
Aroclor-1016	390	1,000	100	37 U	38 U	37 U	36 U
Aroclor-1221	140	1,000	100	37 U	38 U	37 U	36 U
Aroclor-1232	140	1,000	100	37 U	38 U	37 U	36 U
Aroclor-1242	220	1,000	100	37 U	38 U	37 U	36 U
Aroclor-1248	220	1,000	100	37 U	38 U	37 U	36 U
Aroclor-1254	110	**1,000**	*100*	37 U	38 U	37 U	36 U
Aroclor-1260	220	1,000	*100*	37 U	38 U	37 U	36 U
Aroclor-1262	220	1,000	100	37 U	38 U	37 U	36 U
Aroclor-1268	220	1,000	100	37 U	38 U	37 U	36 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-115			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective e [3]*	TP-115-SS	TP-115-FL	TP-115-W	TP-115-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (West Wall)	8 to 8.5 ft bgs (Bottom)
Metals (mg/kg)							
Aluminum	7,700	NL	NL	6,520	8,390	4,770	6,960
Antimony	3.1	NL	NL	6.10 J	5.80 J	5.40 U	5.30 J
Arsenic	0.39	**16**	*13*	12.10	3.70	3.20	2.30 J
Barium	1,500	**400**	*350*	32.70	36.20	28.70	26.60 U
Beryllium	16	72	7.2	3.10 U	2.90 U	2.70 U	2.70 U
Cadmium	7	4.3	2.5	3.10 U	2.90 U	2.70 U	2.70 U
Calcium	NL	NL	NL	836	349 J	486	205 J
Chromium	0.29	180	*30*	11.90	11.30	10.00	10.30
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*2.10 J*	0.80 J	*1.50 J-*	0.52 J
Cobalt	2.3	NL	NL	3.70	3.10	3.20	4.70
Copper	310	270	*50*	12.30	9.20	7.30	5.70
Cyanide	2.2	27	27	0.62 U	0.59 U	0.56 U	0.55 U
Iron	5,500	NL	NL	11,200	10,800	8,090	9,310
Lead	40	400	*63*	29.20	22.50	12.30	6.50
Magnesium	NL	NL	NL	1,320	1,330	1,000	1,210
Manganese	180	2,000	1,600	182	219	148	126
Mercury	2.3	0.81	*0.18*	0.05 J	0.08 J	0.02 J	0.01 J
Nickel	150	310	*30*	9.10	7.70	7.10	6.60
Potassium	NL	NL	NL	700	441 U	415 U	565
Selenium	39	180	3.9	15.30 U	14.50 U	0.28 J	13.30 U
Silver	39	180	2	3.10 U	2.90 U	2.70 U	2.70 U
Sodium	NL	NL	NL	546 U	441 U	415 U	465 U
Thallium	0.078	NL	NL	3.10 U	2.90 U	2.70 U	2.70 U
Vanadium	39	NL	NL	20.40	16.30	15.80	15.30
Zinc	2,300	10,000	*109*	37.60	21.10	21.20	15.10

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Objec

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protec
NYSDEC = New York State Department of
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-116			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-116-SS	TP-116-E	TP-116-CA	TP-116-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (East Wall)	10 to 10.5 ft bgs (Coal Ash Sample)	11 to 11.5 ft bgs (Bottom)
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	3.80 U	3.60 U	4.00 U	4.00 U
4,4'-DDE	1,400	8,900	*3.3*	*12.00*	0.77 J	0.40 J	2.40 J
4,4'-DDT	1,700	900	*3.3*	*8.80*	3.60 UJ	4.00 UJ	4.00 U
Aldrin	29	97	5	1.90 U	1.90 U	2.10 U	2.00 U
alpha-BHC	77	480	20	1.90 U	1.90 U	2.10 U	2.00 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	1.90 U	2.10 U	2.00 U
beta-BHC	270	360	36	1.90 U	1.90 U	2.10 U	2.00 U
delta-BHC	77	100,000	40	1.90 U	1.90 UJ	2.10 U	2.00 UJ
Dieldrin	30	200	*5*	3.80 U	3.60 U	4.00 U	4.00 U
Endosulfan I	37,000	24,000	2,400	1.90 U	1.90 U	2.10 U	2.00 U
Endosulfan II	37,000	24,000	2,400	3.80 U	3.60 U	4.00 U	4.00 U
Endosulfan sulfate	37,000	24,000	2,400	3.80 U	3.60 U	4.00 U	0.08 J
Endrin	1,800	11,000	14	0.33 J	3.60 U	4.00 U	4.00 U
Endrin aldehyde	1,800	NL	NL	3.80 U	3.60 U	4.00 U	4.00 U
Endrin ketone	1,800	NL	NL	3.80 UJ	3.60 U	4.00 U	4.00 U
gamma-BHC (Lindane)	520	13,000	100	1.90 U	1.90 U	2.10 U	2.00 U
gamma-Chlordane	1,600	NL	NL	1.90 U	1.90 U	2.10 U	2.00 U
Heptachlor	110	21,000	42	1.90 U	1.90 U	2.10 U	2.00 U
Heptachlor epoxide	53	NL	NL	1.90 U	1.90 U	2.10 U	2.00 U
Methoxychlor	31,000	NL	NL	19.00 U	19.00 U	21.00 U	20.00 U
Toxaphene	440	NL	NL	190.00 U	190.00 U	210.00 U	200.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)							
Aroclor-1016	390	1,000	100	38 U	36 U	40 U	40 U
Aroclor-1221	140	1,000	100	38 U	36 U	40 U	40 U
Aroclor-1232	140	1,000	100	38 U	36 U	40 U	40 U
Aroclor-1242	220	1,000	100	38 U	36 U	40 U	40 U
Aroclor-1248	220	1,000	100	38 U	36 U	40 U	40 U
Aroclor-1254	110	**1,000**	*100*	38 U	36 U	40 U	40 U
Aroclor-1260	220	1,000	*100*	38 U	36 U	40 U	40 U
Aroclor-1262	220	1,000	100	38 U	36 U	40 U	40 U
Aroclor-1268	220	1,000	100	38 U	36 U	40 U	40 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-116			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective e [3]*	TP-116-SS	TP-116-E	TP-116-CA	TP-116-B
Sample Date				12/18/12	12/18/12	12/18/12	12/18/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	2 to 2.5 ft bgs (East Wall)	10 to 10.5 ft bgs (Coal Ash Sample)	11 to 11.5 ft bgs (Bottom)
Metals (mg/kg)							
Aluminum	7,700	NL	NL	5,510	6,040	15,800	7,430
Antimony	3.1	NL	NL	6.00 J	5.40 U	6.20 U	5.40 J
Arsenic	0.39	**16**	*13*	3.20	***29.30***	***52.80***	1.60 J
Barium	1,500	**400**	*350*	53.60	***457***	***624***	30.40
Beryllium	16	72	7.2	3.00 U	2.70 U	3.10 U	2.70 U
Cadmium	7	4.3	2.5	3.00 U	2.70 U	3.10 U	2.70 U
Calcium	NL	NL	NL	2,400	539	20,300	699
Chromium	0.29	180	*30*	14.20	17.80	23.10	8.90
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*4.10 J*	*2.90 J-*	1.20 UJ	*1.10 J*
Cobalt	2.3	NL	NL	4.20	6.30	9.80	3.10
Copper	310	270	*50*	13.40	19.10	26.50	6.60
Cyanide	2.2	27	27	0.14 J	0.56 U	0.62 U	0.56 U
Iron	5,500	NL	NL	10,100	10,200	60,200	11,900
Lead	40	400	*63*	36.70	14.60	14.90	7.20
Magnesium	NL	NL	NL	1,560	1,210	1,540	1,570
Manganese	180	2,000	1,600	275	141	111	152
Mercury	2.3	0.81	*0.18*	0.05 J	0.02 J	0.16	0.04 J
Nickel	150	310	*30*	11.20	19.20	*31.00*	7.70
Potassium	NL	NL	NL	823	533	1,180	794
Selenium	39	180	3.9	15.00 U	0.59 J	1.90 J	13.40 U
Silver	39	180	2	3.00 U	2.70 U	3.10 U	2.70 U
Sodium	NL	NL	NL	492 U	515 U	595	521 U
Thallium	0.078	NL	NL	3.00 U	2.70 U	3.10 U	2.70 U
Vanadium	39	NL	NL	18.60	70.60	106	12.70 J
Zinc	2,300	10,000	*109*	44.60	23.20	34	20.20

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
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Sea Cliff Site - Targeted Brownfields Assessment
Village of Sea Cliff, NY

Sample Location				TP-117			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-117-SS	TP-117-CA	TP-117-B	TP-917-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	7 to 7.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs	(Bottom)
Pesticides (µg/kg)							
4,4'-DDD	2,000	13,000	*3.3*	3.80 U	3.80 U	4.20 U	4.30 U
4,4'-DDE	1,400	8,900	*3.3*	1.90 J	3.80 U	4.20 U	4.30 U
4,4'-DDT	1,700	900	*3.3*	3.80 U	3.80 U	4.20 U	4.30 U
Aldrin	29	97	5	1.90 U	1.90 U	2.20 U	2.20 U
alpha-BHC	77	480	20	1.90 U	1.90 U	2.20 U	2.20 U
alpha-Chlordane	1,600	4,200	*94*	1.90 U	1.90 U	2.20 U	2.20 U
beta-BHC	270	360	36	1.90 U	1.90 U	2.20 U	2.20 U
delta-BHC	77	100,000	40	1.90 U	1.90 U	2.20 U	2.20 U
Dieldrin	30	200	*5*	3.80 U	3.80 U	4.20 U	4.30 U
Endosulfan I	37,000	24,000	2,400	1.90 U	1.90 U	2.20 U	2.20 U
Endosulfan II	37,000	24,000	2,400	3.80 U	3.80 U	4.20 U	4.30 U
Endosulfan sulfate	37,000	24,000	2,400	3.80 U	3.80 U	4.20 U	4.30 U
Endrin	1,800	11,000	14	3.80 U	3.80 U	4.20 U	4.30 U
Endrin aldehyde	1,800	NL	NL	3.80 U	3.80 U	4.20 U	4.30 U
Endrin ketone	1,800	NL	NL	3.80 U	3.80 U	4.20 U	4.30 U
gamma-BHC (Lindane)	520	13,000	100	1.90 U	1.90 U	2.20 U	2.20 U
gamma-Chlordane	1,600	NL	NL	1.90 U	1.90 U	0.14 J	2.20 U
Heptachlor	110	21,000	42	1.90 U	1.90 U	2.20 U	2.20 U
Heptachlor epoxide	53	NL	NL	1.90 U	1.90 U	2.20 U	2.20 U
Methoxychlor	31,000	NL	NL	19.00 U	19.00 U	22.00 U	0.15 J
Toxaphene	440	NL	NL	190.00 U	190.00 U	220.00 U	220.00 U
Polychlorinated Biphenyls (PCBs) (µg/kg)							
Aroclor-1016	390	1,000	100	38 U	38 U	42 U	43 U
Aroclor-1221	140	1,000	100	38 U	38 U	42 U	43 U
Aroclor-1232	140	1,000	100	38 U	38 U	42 U	43 U
Aroclor-1242	220	1,000	100	38 U	38 U	42 U	43 U
Aroclor-1248	220	1,000	100	38 U	38 U	42 U	43 U
Aroclor-1254	110	**1,000**	*100*	38 U	38 U	42 U	43 U
Aroclor-1260	220	1,000	*100*	38 U	38 U	42 U	43 U
Aroclor-1262	220	1,000	100	38 U	38 U	42 U	43 U
Aroclor-1268	220	1,000	100	38 U	38 U	42 U	43 U

Appendix D-2
Analytical Soil Results - Pesticides, PCBs, Metals
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Village of Sea Cliff, NY

Sample Location				TP-117			
Sample ID	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objectiv e*[3]	TP-117-SS	TP-117-CA	TP-117-B	TP-917-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	7 to 7.5 ft bgs (Coal Ash Sample)	14 to 14.5 ft bgs	(Bottom)
Metals (mg/kg)							
Aluminum	7,700	NL	NL	8,990	16,800	18,200	13,700
Antimony	3.1	NL	NL	5.70 UJ	5.90 U	6.40 U	5.40 U
Arsenic	0.39	**16**	*13*	4.90 J	***65.00***	***52.10***	***45.50***
Barium	1,500	**400**	*350*	53.40	***694.00***	***688.00***	***612.00***
Beryllium	16	72	7.2	2.90 U	3.00 U	3.20 U	2.70 U
Cadmium	7	4.3	2.5	2.90 U	3.00 U	3.20 U	2.70 U
Calcium	NL	NL	NL	473.00	8,680.00	19,300.00	15,500.00
Chromium	0.29	180	*30*	15.50	22.00	24.60	20.40
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*8.10 J-*	*1.00 J-*	1.30 UJ	*1.60 J-*
Cobalt	2.3	NL	NL	4.70	8.70	8.80	7.60
Copper	310	270	*50*	15.30	25.20	25.20	21.20
Cyanide	2.2	27	27	0.59 U	0.60 U	0.34 J	0.32 J
Iron	5,500	NL	NL	13,200	53,100	53,200	43,000
Lead	40	400	*63*	*73*	16.40	14.80	12.70
Magnesium	NL	NL	NL	1,470	1,310	1,670	1,280
Manganese	180	2,000	1,600	295	63.50	95.50	97.30
Mercury	2.3	0.81	*0.18*	0.07 J	*0.22*	0.15	0.12
Nickel	150	310	*30*	11.80	26.20	*38.10*	*30.00*
Potassium	NL	NL	NL	544	1,070	1,330	954
Selenium	39	180	3.9	0.50 J	2.50 J	2.20 J	1.70 J
Silver	39	180	2	2.90 U	3.00 U	3.20 U	2.70 U
Sodium	NL	NL	NL	462 U	543	808	602
Thallium	0.078	NL	NL	2.90 U	3.00 U	3.20 U	2.70 U
Vanadium	39	NL	NL	27.00	76.90	194.00	150.00
Zinc	2,300	10,000	*109*	51.80	34.70	32.10	27.40

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-118					
Sample ID				TP-118-SS	TP-118-FL	TP-118-S	TP-118-W	TP-118-CA	TP-118-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (South Wall)	1 to 1.5 ft bgs (West Wall)	5 to 5.5 ft bgs (Coal Ash Sample)	8 to 8.5 ft bgs (Bottom)
Pesticides (µg/kg)									
4,4'-DDD	2,000	13,000	*3.3*	4.40 U	38 U	36 U	36 U	3.90 U	3.70 U
4,4'-DDE	1,400	8,900	*3.3*	*26.00*	*110*	1.20 J	36 U	2.30 J	*8.80*
4,4'-DDT	1,700	900	*3.3*	*15.00 NJ*	*93 NJ*	36 U	36 U	*7.20 J*	*12*
Aldrin	29	97	5	2.30 U	20 U	19 U	18 U	2 U	2 U
alpha-BHC	77	480	20	2.30 U	20 U	19 U	18 U	2 U	2 U
alpha-Chlordane	1,600	4,200	*94*	42.00 NJ	*640 NJ*	19 U	18 U	2 U	4 NJ
beta-BHC	270	360	36	2.30 U	20 U	19 U	18 U	2 U	2 U
delta-BHC	77	100,000	40	2.30 U	20 U	19 U	18 U	2 U	2 U
Dieldrin	30	200	*5*	4.40 U	38 U	36 U	36 U	4 U	4 U
Endosulfan I	37,000	24,000	2,400	2.30 U	20 U	19 U	18 U	2 U	2 U
Endosulfan II	37,000	24,000	2,400	4.40 U	38 U	36 U	36 U	4 U	4 U
Endosulfan sulfate	37,000	24,000	2,400	4.40 U	38 U	36 U	36 U	4 U	0 J
Endrin	1,800	11,000	14	4.40 U	38 U	36 U	36 U	4 U	4 U
Endrin aldehyde	1,800	NL	NL	4.40 U	38 U	36 U	36 U	4 U	4 U
Endrin ketone	1,800	NL	NL	4.40 U	38 U	36 U	36 U	4 U	4 U
gamma-BHC (Lindane)	520	13,000	100	2.30 U	20 U	19 U	18 U	2 U	2 U
gamma-Chlordane	1,600	NL	NL	34.00	530	19 U	18 U	2 U	3
Heptachlor	110	21,000	42	2.30 U	8.60 J	19 U	0 J	2 U	2 U
Heptachlor epoxide	53	NL	NL	14.00	150	19 U	18 U	2 U	2 U
Methoxychlor	31,000	NL	NL	23.00 U	200 U	190 U	180 U	20 U	19 U
Toxaphene	440	NL	NL	230.00 U	2,000 U	1,900 U	1,800 U	200 U	190 U
Polychlorinated Biphenyls (PCBs) (µg/kg)									
Aroclor-1016	390	1,000	100	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1221	140	1,000	100	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1232	140	1,000	100	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1242	220	1,000	100	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1248	220	1,000	100	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1254	110	**1,000**	*100*	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1260	220	1,000	*100*	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1262	220	1,000	100	44 U	38 U	360 U	360 U	39 U	37 U
Aroclor-1268	220	1,000	100	44 U	38 U	360 U	360 U	39 U	37 U

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Analytical Soil Results - Pesticides, PCBs, Metals
Sea Cliff Site - Targeted Brownfields Assessment
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Sample Location	EPA Regional Screening Levels for Residential Soils[1]	NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective[2]	*NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective[3]*	TP-118					
Sample ID				TP-118-SS	TP-118-FL	TP-118-S	TP-118-W	TP-118-CA	TP-118-B
Sample Date				12/19/12	12/19/12	12/19/12	12/19/12	12/19/12	12/19/12
Sample Depth				0 to 2 inches bgs (Surface Soil)	0.5 to 1 ft bgs (Fill Sample)	1 to 1.5 ft bgs (South Wall)	1 to 1.5 ft bgs (West Wall)	5 to 5.5 ft bgs (Coal Ash Sample)	8 to 8.5 ft bgs (Bottom)
Metals (mg/kg)									
Aluminum	7,700	NL	NL	8,830	8,260	3,290	2,940	10,200	9,180
Antimony	3.1	NL	NL	6.60 U	5.90 U	5.30 U	5.30 U	5.80 U	5.80 U
Arsenic	0.39	**16**	*13*	*14.30*	8.00	2.70 U	2.70 U	***31.10***	10.70
Barium	1,500	**400**	*350*	111.00	41.10	16.50 J	17.90 J	249	106
Beryllium	16	72	7.2	3.30 U	2.90 U	2.70 U	2.70 U	2.90 U	2.90 U
Cadmium	7	4.3	2.5	3.30 U	2.90 U	2.70 U	2.70 U	2.90 U	2.90 U
Calcium	NL	NL	NL	5,660.00	25,500.00	2,170.00	8,990.00	6,300.00	3,160.00
Chromium	0.29	180	*30*	14.80	14.40	6.80	5.80	16.70	12.90
CHROMIUM (HEXAVALENT COMPOUNDS)	0.29	110	*1*	*13.00 J-*	*3.50 J-*	1.10 UJ	*1.40 J-*	*4.20 J-*	*2.80 J-*
Cobalt	2.3	NL	NL	4.60	5.10	2.70 U	3.40	5.20	3.90
Copper	310	270	*50*	17.30	15.60	9.50	32.60	15.90	9.60
Cyanide	2.2	27	27	0.67 U	0.59 U	0.55 U	0.54 U	0.60 U	0.58 U
Iron	5,500	NL	NL	20,700	12,300	5,990	7,160	22,100	21,100
Lead	40	400	*63*	34.00	43.30	42.90	23.00	23.40	16.90
Magnesium	NL	NL	NL	2,220	14,900	1,160	5,100	1,670	1,520
Manganese	180	2,000	1,600	180	248	119	115	168	127
Mercury	2.3	0.81	*0.18*	0.08 J	0.11	0.03 J	0.02 J	0.12	0.07 J
Nickel	150	310	*30*	11.70	11.90	6.90	5.90	14.30	9.70
Potassium	NL	NL	NL	818	474 U	403 U	368 U	668	685
Selenium	39	180	3.9	0.46 J	0.39 J	0.15 J	0.19 J	0.59 J	0.39 J
Silver	39	180	2	3.30 U	2.90 U	2.70 U	2.70 U	2.90 U	2.90 U
Sodium	NL	NL	NL	488 U	474 U	403 U	368 U	542 U	486 U
Thallium	0.078	NL	NL	3.30 U	2.90 U	2.70 U	2.70 U	2.90 U	2.90 U
Vanadium	39	NL	NL	28.00	25.20	22.50	21.80	37.80	21.40
Zinc	2,300	10,000	*109*	59.50	64.10	24.10	22.40	36.10	24.70

Notes:

1. United State Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for Chemical Contamin
2. New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6: Table 375-6.8(a): Unres
3. NYSDEC Subpart 375-6: Table 375-6.8(b): Res 3. NYSDEC Subpart 375-6: Table 375-6.8(b): Restricted Use Soil
4. Results in shaded cells exceede EPA Regional Screening Levels for Residential Soils
5. Results in bold exceed the NYSDEC Subpart 375-6 Restricted Residential Use Soil Cleanup Objective for that c
6. Results italicized and pink exceed the NYSDEC Subpart 375-6 Unrestricted Residential Use Soil Cleanup Object

Acronyms:

mg/kg = milligrams per kilogram
ID = identification
EPA = United States Environmental Protec
NYSDEC = New York State Department of E
ft = feet

Qualifiers:

U = Analyte was analyzed for but not detected.
J = Estimated data value due to exceeded quality control criteria.
R = Data is rejected.

Appendix E
Data Evaluation Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 43179
Site: SEA CLIFF
Number of Samples: 18 (Soil)
Analysis: VOA**,** BNA, Pest, PCB

SDG No.: BAM42
Laboratory: ALS Environmental
Sampling dates: 12/17/2012-12/19/2012

QAPP
HWSS #: Not available.
Contractor Document #: Not available.

SUMMARY:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings: VOA: Samples BAM54, BAMF2, BAMF3RE, BAMF4, BAMF6, BAMF7, BAMF8, BAMF9, BAMG1RE, BAMG3 have analytes that have been qualified "R".

Major Findings: VOA: Samples BAM54, BAMF2, BAMF3RE, BAMF7, BAMF8, BAMF9, BAMG1RE have analytes that have been qualified "J".
BNA: Samples BAM42, BAM51, BAM54, BAMA6, BAMD3, BAMF2, BAMF3, BAMF5, BAMF6, BAMF7, BAMF8, BAMG0, BAMG1 have analytes that have been qualified "J".
Pest: Samples BAM54, BAMA6, BAMD3, BAMF2, BAMF4, BAMF5, BAMF6, BAMF7, BAMF9, BAMG0, BAMG1, BAMG2 have analytes that have been qualified "J".

Minor Findings: VOA: RRF for 1, 4-Dioxane and 1,4-Dioxane-d8 is below limits.

COMMENT: None

Reviewer Name(s): Dorina Christina Alliu/Archana Mirle

Approver's Signature: **Date: 01/31/13**

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	**Explanation**		
	INORGANICS	**ORGANICS**	**CHLORINATED DIOXIN/FURAN**
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.		
J–	The result is an estimated quantity, but the result may be biased low.		
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		*The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".*	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: VOA

The current SOP HW-33/VOA (Revision 2) November 2008, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report. Tentatively Indentified Compounds (TICS) for VOA organic fraction is not validated.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. DEUTERATED MONITORING COMPOUNDS (DMCs):

All samples are spiked with surrogate compounds (DMC's) prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are not qualified.

Toluene-d8 BAM54, BAM54RE, BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMF9, BAMF9RE, BAMG1, BAMG1RE

Ethylbenzene, Isopropylbenzene, Styrene, Tetrachloroethene, Toluene, Trichloroethene, m,p-Xylene, o-Xylene

1,2-Dichlorobenzene-d4 BAMF2, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF8

1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Chlorobenzene

1,2-Dichloropropane-d6 BAM54, BAM54RE, BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMF9, BAMF9RE, BAMG1, BAMG1RE, BAMG3RE

1,2-Dichloropropane, Bromodichloromethane, Cyclohexane, Methylcyclohexane

1,1-Dichloroethene-d2 BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF7, BAMF7RE, BAMF8, BAMF8RE

1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene

1,4-Dioxane-d8 BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE

1,4-Dioxane

trans-1,3-Dichloropropene-d4 BAM54, BAM54RE, BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMG1, BAMG1RE

1,1,2-Trichloroethane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene

Chloroethane-d5 BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMF9RE, BAMG1, BAMG1RE

Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane

Benzene-d6 BAM54, BAM54RE, BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF4RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMF9, BAMF9RE, BAMG1, BAMG1RE, BAMG3, BAMG3RE

Benzene

Vinyl chloride-d3 BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMG1, BAMG1RE

Vinyl chloride

1,1,2,2-Tetrachloroethane-d2 BAM54, BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMG1, BAMG1RE

1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

2-Hexanone-d5 BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMG1

2-Hexanone, 4-Methyl-2-Pentanone

1,2-Dichloroethane-d4 BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMG1, BAMG1RE

1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane

2-Butanone-d5 BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMG1

2-Butanone, Acetone

Chloroform-d BAM54, BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMG1, BAMG1RE

1,1-Dichloroethane, Bromochloromethane, Bromoform, Chloroform, Dibromochloromethane

3. MATRIX SPIKE/MATRIX SPIKE DUPLIC ATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 1 times the blank contaminant level (2 times for common contaminants), the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

No problems were found for this criterion.

B) Field or rinse blank contamination:

The following volatile samples have analyte concentrations reported less than the CRQL. The associated field blank concentration is less than the concentration criteria. Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Toluene BAM54, BAM54RE, BAMF3RE, BAMF4, BAMF4RE, BAMF9, BAMG0

C) Trip blank contamination for VOA aqueous samples:

Not applicable.

D) Storage Blank associated with VOA samples only:

No problems were found for this criterion.

E) Tics "R" rejected:

Tentatively Indentified Compounds (TICS) for VOA organic fraction is not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene. If the mass calibration is in error, all associated data will

be classified as unusable "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05, and ≥ 0.01 for the twenty-two analytes with poor response in both the initial and continuing calibrations. A value < 0.05, or < 0.01 for the poor performers indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

The following volatile samples are associated with an initial/continuing calibration with average relative response factors (mean RRF)/relative response factors (RRF50) outside criteria. Detected compounds are qualified J. Nondetected compounds are qualified R.

1,4-Dioxane, **1,4-Dioxane-d8** BAM42, BAM51, BAM54, BAM54RE, BAMA6, BAMD3, BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF4, BAMF4RE, BAMF5, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMF9, BAMF9RE, BAMG0, BAMG1, BAMG1RE, BAMG2, BAMG3, BAMG3RE, BAMG4, VBLKS1, VBLKS2, VHBLKS1

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. %D must be < 25%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria (> 90%), non-detects data may be qualified "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +200%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than □30 seconds from the associated

continuing calibration standard. If the area count is outside the (-50% to +200%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity. If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. Qualifications were applied to the samples and analytes as shown below.

The following volatile samples have internal standard area counts that are outside the lower limit of primary criteria. Detected compounds are qualified J. Nondetected compounds are qualified R.

1,4-Difluorobenzene BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE

1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1,4-Dioxane, 2-Butanone, Acetone, Bromochloromethane, Bromomethane, Carbon disulfide, Chloroethane, Chloroform, Chloromethane, Dichlorodifluoromethane, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane, Vinyl chloride, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene

Chlorobenzene-d5 BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMF9RE, BAMG1

1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2-Dibromoethane, 1,2-Dichloropropane, 2-Hexanone, 4-Methyl-2-Pentanone, Benzene, Bromodichloromethane, Carbon tetrachloride, Chlorobenzene, Cyclohexane, Dibromochloromethane, Ethylbenzene, Isopropylbenzene, Methylcyclohexane, Styrene, Tetrachloroethene, Toluene, Trichloroethene, cis-1,3-Dichloropropene, m,p-Xylene, o-Xylene, trans-1,3-Dichloropropene

1,4-Dichlorobenzene-d4 BAM54, BAM54RE, BAMF2, BAMF2RE, BAMF3, BAMF3RE, BAMF4, BAMF4RE, BAMF6, BAMF6RE, BAMF7, BAMF7RE, BAMF8, BAMF8RE, BAMF9, BAMF9RE, BAMG1, BAMG1RE, BAMG3, BAMG3RE

1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Bromoform

8. COMPOUND IDENTIFICATION:

Target compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within a window of 0.06 RRT units of the standard compound and have ion spectra which have a ratio of the primary and secondary m/z intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

Initial calibration relative response factor (RRF) is outside criteria for the following analytes:

1,4-Dioxane ,1,4-Dioxane-d8

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

None.

12. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified not to be used

BAM54RE, BAMF2RE, BAMF3, BAMF4RE, BAMF6RE, BAMF7RE, BAMF8RE, BAMF9RE, BAMG1, BAMG3RE.

ANALYSIS: BNA

The current SOP HW-35/SVOA (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report. Tentatively Indentified Compounds (TICS) for BNA organic fraction is not validated.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

The following semivolatile soil samples are outside primary extraction holding time criteria. Detected compounds are qualified J. Nondetected compounds are qualified UJ.

BAM42, BAM51, BAMA6, BAMD3, BAMF5, BAMF6, BAMF7, BAM54

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following semivolatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ.

Benzo(a)pyrene-d12 BAMF2, BAMF3, BAMF6, BAMF7, BAMF8

Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene

2-Chlorophenol-d4 BAMF7

2-Chlorophenol

Pyrene-d10 BAMF2, BAMF3, BAMF6, BAMF7, BAMF8

Benzo(a)anthracene, Chrysene, Fluoranthene, Pyrene

Fluorene-d10 BAMF7

4-Bromophenyl-phenylether, 4-Chlorophenyl-phenylether, Carbazole, Dibenzofuran, Fluorene

2,4-Dichlorophenol-d3 BAMF7

1,2,4,5-Tetrachlorobenzene, 2,3,4,6-Tetrachlorophenol, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 4-Chloro-3-methylphenol, Hexachlorobutadiene, Pentachlorophenol

4-Methylphenol-d8 BAMF2, BAMF3, BAMF6, BAMF7, BAMF8

2,4-Dimethylphenol, 2-Methylphenol, 4-Methylphenol

Phenol-d5 BAMF7

Benzaldehyde, Phenol

The following diluted semivolatile samples with dilution factors less than or equal to 5 have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Nondetected compounds are qualified UJ.

Benzo(a)pyrene-d12 BAM54, BAMG0, BAMG1

Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene

4-Methylphenol-d8 BAMG1

2,4-Dimethylphenol, 2-Methylphenol, 4-Methylphenol

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

The following semivolatile samples have common contaminant concentrations reported less than 5x the CRQL. The associated method blank concentration is less than 5x the concentration criteria. Detected compounds are qualified U. Nondetected compounds are not qualified. Sample concentrations have been reported at CRQL.

Bis(2-ethylhexyl)phthalate BAM42, BAM51, BAMA6, BAMD3, BAMF2, BAMF3, BAMF4, BAMF5, BAMF6, BAMF7, BAMF8, BAMF9, BAMG0, BAMG1, BAMG2, BAMG4

The following semivolatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Benzaldehyde BAM42, BAM51, BAM54, BAMA6, BAMD3, BAMF2, BAMF3, BAMF4, BAMF5, BAMF6, BAMF7, BAMF8, BAMF9, BAMG0, BAMG1, BAMG2

B) Field or rinse blank contamination:

The following semivolatile samples have analyte concentrations reported less than the CRQL. The associated field blank concentration is less than the concentration criteria. Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Acetophenone BAM42, BAM51, BAMA6, BAMD3, BAMF2, BAMF3, BAMF4, BAMF6, BAMF7, BAMF8, BAMG0, BAMG1, BAMG2

Di-n-butylphthalate BAM42, BAM51, BAMA6, BAMD3, BAMF2, BAMF3, BAMF4, BAMF5, BAMF6, BAMF7, BAMF8, BAMG0, BAMG1

Dimethylphthalate BAMA6

C) Trip blank contamination for VOA aqueous samples:

Not applicable.

D) Storage Blank associated with VOA samples only:

Not applicable.

.

E) Tics "R" rejected:

Tentatively Indentified Compounds (TICS) for BNA organic fraction is not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP). If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than □30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity. If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION:

A) Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within □ 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

Sample # BAMF7

Sample #BAMF7: More than 4 DMC percent recoveries were outside limits and no reanalysis was performed.

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

None.

12. DILUTIONS, RE-EXTRACTIONS and REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified as not to be used

None.

ANALYSIS: PESTICIDES

The current SOP HW-36 (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. LABORATORY CONTROL RECOVERY (LCS):

The LCS data is generated to determine the long-term precision and accuracy of the analytical method. The LCS may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or

field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method/Instrument blank contamination:

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan I BAM51, BAMD3, BAMF8

Aldrin BAM51, BAMF5, BAMF9, BAMG0, BAMG2, BAMG2DL, PLCSS1

delta-BHC BAM42, BAM51, BAM54, BAMA6, BAMD3, BAMF2, BAMF3, BAMF4, BAMF4MS, BAMF4MSD, BAMF5, BAMF6, BAMF7, BAMF8, BAMF9, BAMG2, BAMG2DL, PLCSS1

Endrin ketone BAM42, BAMD3, BAMF4MS, BAMF4MSD, BAMG2, BAMG3

Endrin BAM42, BAM51, BAMF4, BAMF7, BAMF9, BAMG0, BAMG1, BAMG2, BAMG2DL, BAMG4

Endrin aldehyde BAM51, BAM54, BAMF4, BAMF5, BAMF9, BAMG2, BAMG2DL, PLCSS1

beta-BHC BAM42, BAMD3, BAMF2, BAMF3, BAMF9, BAMG0, BAMG4

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated initial instrument blank / continuing instrument concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan II BAM42, BAM51, BAM54, BAMF2, BAMF4, BAMF4MS, BAMF4MSD, BAMF5, BAMF6, BAMF7, BAMG1, BAMG2

4,4'-DDT BAM42, BAM51, BAMA6, BAMD3, BAMF2, BAMF3, BAMF4, BAMF5, BAMF6, BAMF7

4,4'-DDD BAMF4MS, BAMF4MSD, BAMG0, BAMG2DL

gamma-Chlordane BAMG3

alpha-BHC BAM42, BAM51, BAM54, BAMA6, BAMD3, BAMF4, BAMF4MS, BAMF4MSD, BAMF5, BAMF6, BAMF7, BAMF8, BAMG0

Heptachlor epoxide BAM42, BAM51, BAM54, BAMD3, BAMF2, BAMF3, BAMF4, BAMF4MS, BAMF4MSD, BAMF5, BAMF6, BAMF7, BAMG0, BAMG1, BAMG2DL, BAMG3

alpha-Chlordane BAMG1

B) Field or rinse blank contamination:

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated rinse blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Dieldrin BAMF9, BAMG0, BAMG1, BAMG3, BAM51, BAMF4, BAMF6

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

For the PESTICIDE fraction, if %RSD exceeds 20% for all analytes except alpha-BHC and delta-BHC 25%, for the two surrogates and Toxaphene 30%, qualify all associated positive results "J" and non-detects are not qualified. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) The Percent Difference (%D) for each of the SCP and surrogate in the PEM used for CCV must be greater than or equal to-25% and less than or equal to 25.0%. The Percent Difference (%D) between the calibration Factor (CF) for each of the SCP and surrogate in the Calibration Verification Standard (CS3) and the mean calibration factor from the initial calibration must be greater than or equal to-20% and less than or equal to 20.0%. The Percent Difference not within limits, detected associated compounds are qualified "J" and non-detected associated compounds are qualified "UJ". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. COMPOUND IDENTIFICATION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

The following pesticide samples have percent differences between analyte results in the range of 26-50%. Detected compounds are qualified J.

4,4'-DDE BAMA6, BAMF4, BAMF6, BAMF7, BAMG1, BAMG2DL

4,4'-DDT BAMD3, BAMF5, BAMF6, BAMF7, BAMG1

gamma-Chlordane BAM54

Dieldrin PLCSS1

Methoxychlor BAMF2

Endrin ketone BAMF4MSD

delta-BHC BAMF5

alpha-BHC BAMF4MS

The following pesticide samples have percent differences between analyte results in the range of 51-100%. Detected compounds are qualified NJ.

alpha-Chlordane BAM54, BAMF9, BAMG0, BAMG2, BAMG2DL

4,4'-DDT BAMF9, BAMG2

The following pesticide samples have percent differences between analyte results exceeding 50% and the results are below CRQL. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan II BAM42, BAM51, BAM54, BAMF2, BAMF4, BAMF4MS, BAMF4MSD, BAMF5, BAMF6, BAMF7, BAMG1

Endosulfan I BAM51, BAMD3, BAMF8

4,4'-DDT BAMF3, BAMG2DL, BAMG3, BAMG4

gamma-BHC (Lindane) BAM51, BAMF2, BAMF3

Aldrin BAMF5, BAMF9, BAMG0, PLCSS1

Dieldrin BAM51, BAMF4, BAMF6, BAMF9, BAMG2, BAMG3

delta-BHC BAM42, BAM51, BAM54, BAMD3, BAMF2, BAMF3, BAMF4, BAMF4MS, BAMF6, BAMF7, BAMF8, BAMF9, BAMG2, BAMG2DL, PLCSS1

Endrin aldehyde BAM51, BAM54, BAMF4, BAMF5, BAMF9, BAMG2, BAMG2DL, PLCSS1

beta-BHC BAM42, BAMD3, BAMF2, BAMF3, BAMF9, BAMG0, BAMG4

alpha-Chlordane BAM51, BAMD3, BAMF6

4,4'-DDE BAM51, BAMF2, BAMF3, BAMF8

4,4'-DDD BAMG0, BAMG2DL

gamma-Chlordane BAMF4, BAMF4MS

Heptachlor BAM51, BAM54, BAMD3, BAMF4, BAMF9, BAMG0

Endrin ketone BAM42, BAMD3, BAMG2, BAMG3

Methoxychlor BAMF9, BAMG0, BAMG1, BAMG2, BAMG3, BAMG4

Endrin BAM42, BAM51, BAMF7, BAMF9, BAMG0, BAMG1, BAMG2, BAMG2DL, BAMG4

Heptachlor epoxide BAM42, BAM54, BAMD3, BAMF2, BAMF3, BAMF4, BAMF4MS, BAMF4MSD, BAMF5, BAMF7, BAMG1, BAMG3

alpha-BHC BAM42, BAM51, BAM54, BAMA6, BAMF4, BAMF4MSD, BAMF5, BAMF7, BAMF8, BAMG0

8. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

9. FIELD DOCUMENTATION:

No problems were identified.

10. OTHER PROBLEMS:

None.

11. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked not to be used. The following reports were identified as not to be used

BAMG2DL

ANALYSIS: PCB

The current SOP HW-37 (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied.

1. HOLDING TIME：

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. Laboratory Control Samples (LCS):

The LCSs data provides information on the accuracy of the analytical method and laboratory performance. If LCS recoveries fell outside of the acceptable limits, qualifications were applied to the associated samples and compounds as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects U. Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

No problems were found for this criterion.

B) Field or rinse blank contamination:

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD):

For the PCB fraction, if %RSD exceeds 20% for all analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ".

No problems were found for this criterion.

B) Percent Difference (%D):

For closing CCV, if %D exceeds 50% for all analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ".

No problems were found for this criterion.

7. COMPOUND IDENTIFICATION:

A) PCB Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

8. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

9. FIELD DOCUMENTATION:

No problems were identified.

10. OTHER PROBLEMS:

None.

11. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified as not to be used

None.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 43179
Site: SEA CLIFF
Number of Samples: 20 (Soil)
Analysis: VOA**,** BNA, Pest, PCB

SDG No.: BAM57
Laboratory: ALS Environmental
Sampling dates: 12/10/2012-12/13/2012

QAPP
HWSS #: Not available.
Contractor Document #: Not available.

SUMMARY:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings: VOA: Samples BAM76, BAM81, BAM82RE, BAM85, BAM88, BAM92, BAM93RE, BAM98, BAM99, BAMB7RE, BAMC2RE, BAMD7, BAME4, BAME6, have analytes that have been qualified "R".
Pest: Samples BAM70, BAM76, BAMD7 have analytes that have been qualified "R".

Major Findings: VOA: Samples BAM82RE, BAM93RE, BAMB7RE, BAMC2RE, BAME4, BAME6, have analytes that have been qualified "J".
BNA: Samples BAM63, BAMC2, BAME4, have analytes that have been qualified "J".
Pest: Samples BAM57, BAM65, BAM69, BAM70, BAM75, BAM76, BAM81, BAM82, BAM85, BAM88, BAM92, BAM93, BAM98, BAM99, BAMD7, BAME4, BAME6, have analytes that have been qualified "J".

Minor Findings: VOA: RRF for 1, 4-Dioxane and 1,4-Dioxane-d8 is below limits.

COMMENT: None

Reviewer Name(s): Dorina Christina Alliu

Approver's Signature: Narendra Kumar **Date: 01/24/2013**

Name: Narendra Kumar

Affiliation: USEPA/R2/HWSB/HWSS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	**Explanation**		
	INORGANICS	**ORGANICS**	**CHLORINATED DIOXIN/FURAN**
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.		
J–	The result is an estimated quantity, but the result may be biased low.		
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		*The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".*	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: VOA

The current SOP HW-33/VOA (Revision 2) November 2008, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report. Tentatively Indentified Compounds (TICS) for VOA organic fraction is not validated.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. DEUTERATED MONITORING COMPOUNDS (DMCs):

All samples are spiked with surrogate compounds (DMC's) prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are not qualified.

Toluene-d8 BAMB7, BAMB7RE, BAMC2, BAMC2RE, BAME4, BAME4RE, BAME6
Ethylbenzene, Isopropylbenzene, Styrene, Tetrachloroethene, Toluene, Trichloroethene, m,p-Xylene, o-Xylene

1,2-Dichloropropane-d6 BAM76, BAM82, BAM82RE, BAM93, BAM93RE, BAMB7, BAMB7RE, BAMC2, BAMC2RE, BAME4, BAME4RE
1,2-Dichloropropane, Bromodichloromethane, Cyclohexane, Methylcyclohexane

1,1-Dichloroethene-d2 BAMC2, BAMC2RE, BAME4RE
1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene

Chloroethane-d5 BAM82, BAM82RE, BAMB7, BAMB7RE, BAMC2, BAMC2RE, BAME4, BAME4RE
Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane

trans-1,3-Dichloropropene-d4 BAMB7, BAMC2, BAMC2RE, BAME4, BAME4RE
1,1,2-Trichloroethane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene

1,4-Dioxane-d8 BAMC2, BAMC2RE, BAME4RE
1,4-Dioxane

Benzene-d6 BAM76, BAM76RE, BAM82, BAM82RE, BAM93, BAM93RE, BAMB7, BAMB7RE, BAMC2, BAMC2RE, BAME4, BAME4RE, BAME6, BAME6RE
Benzene

Vinyl chloride-d3 BAMB7, BAMB7RE, BAMC2, BAMC2RE, BAME4, BAME4RE
Vinyl chloride

1,1,2,2-Tetrachloroethane-d2 BAMC2, BAMC2RE, BAME4, BAME4RE
1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

2-Hexanone-d5 BAMB7, BAMC2, BAME4, BAME4RE
2-Hexanone, 4-Methyl-2-Pentanone

1,2-Dichloroethane-d4 BAMB7, BAMB7RE, BAMC2, BAMC2RE, BAME4, BAME4RE
1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane

2-Butanone-d5 BAMC2, BAMC2RE, BAME4, BAME4RE
2-Butanone, Acetone

Chloroform-d BAMB7, BAMC2, BAMC2RE, BAME4, BAME4RE

1,1-Dichloroethane, Bromochloromethane, Bromoform, Chloroform, Dibromochloromethane

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not Applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 1 times the blank contaminant level (2 times for common contaminants), the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank has common contaminant analyte concentration is less than 2x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Sample concentrations have been reported at the CRQLs.

Methylene chloride BAM57, BAM63, BAM65, BAM69, BAM70, BAME4, BAME4RE, BAME6,

BAME6RE

The following volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Styrene BAME4

Carbon disulfide BAM82RE, BAM93RE, BAMB7RE, BAMC2RE

Chloroform BAM57, BAM63, BAM65, BAM69, BAM70, BAM75, BAM76, BAM76RE, BAM81, BAM82, BAM82RE, BAM85, BAM88, BAM92, BAM93, BAM93RE, BAM98, BAM99, BAMB7, BAMB7RE, BAMD7

1,2-Dichlorobenzene BAME4, BAME6

Toluene BAM76, BAM82, BAM85, BAM93, BAMB7, BAMC2, BAME4

1,4-Dichlorobenzene BAME4, BAME6

1,3-Dichlorobenzene BAME4, BAME6

B) Field or rinse blank contamination:

Not additional qualification was applied due to rinse blank.

C) Trip blank contamination for VOA aqueous samples:

Not Applicable.

D) Storage Blank associated with VOA samples only:

The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated storage blank common contaminant concentration is less than 2x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Methylene chloride BAM76, BAM82, BAM85, BAM92, BAM93RE, BAMB7, BAMB7RE

The following volatile samples have analyte concentrations reported less than the CRQL. The associated storage blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Toluene BAM57, BAM63, BAM65, BAM69, BAM70, BAM93RE, BAMC2RE

E) Tics "R" rejected:

Tentatively Indentified Compounds (TICS) for VOA organic fraction is not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene. If the mass calibration is in error, all associated data will be classified as unusable "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05, and ≥ 0.01 for the twenty-two analytes with poor response in both the initial and continuing calibrations. A value < 0.05, or < 0.01 for the poor performers indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

The following volatile samples are associated with an initial calibration and CCV with average relative response factors (mean RRFs) outside criteria. Detected compounds are qualified J. Non-detected compounds are qualified R.

1,4-Dioxane BAM60, BAM64, BAM78, BAM86, BAM95, BAM95RE, BAMA4, BAMA4RE, BAMB1, BAMB3, BAMB4, BAMB6, BAMC0, BAMC3, BAMC5, BAMC6, BAMC8, BAMD8, BAME0, BAME0RE, BAME1, BAME1RE, BAME2, BAME3, VBLKS1, VBLKS2, VBLKS4, VHBLKS1

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. %D must be < 25%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria (> 90%), non-detects data may be qualified "R". Qualifications were applied to the samples and analytes as shown below.

The following volatile samples are associated with an opening or closing CCV percent difference %D) outside criteria. Detected compounds are qualified J. Non-detected compounds are

qualified UJ.
Vinyl chloride BAM82RE, BAM93RE, BAMB7RE, BAMC2RE, VBLKS3

The following volatile samples are associated with a opening and closing CCV that are not analyzed at the correct frequency Detected compounds are qualified R. Non-detected compounds are qualified R.

VBLKS2, BAM76, BAM81, BAM82, BAM85, BAMB7, BAMC2, BAMD7, BAM88, BAM92, BAM93, BAM98, BAM99, BAM76RE

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +200%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +200%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity. If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. Qualifications were applied to the samples and analytes as shown below.

The following volatile samples have internal standard area counts that are outside the lower limit of primary criteria. Detected compounds are qualified J. Non-detected compounds are qualified R.

1,4-Difluorobenzene BAMC2, BAMC2RE, BAME4RE
1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1,4-Dioxane, 2-Butanone, Acetone, Bromochloromethane, Bromomethane, Carbon disulfide, Chloroethane, Chloroform, Chloromethane, Dichlorodifluoromethane, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane, Vinyl chloride, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene

Chlorobenzene-d5 BAMB7RE, BAMC2, BAMC2RE, BAME4, BAME4RE
1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2-Dibromoethane, 1,2-Dichloropropane, 2-Hexanone, 4-Methyl-2-Pentanone, Benzene, Bromodichloromethane, Carbon tetrachloride, Chlorobenzene, Cyclohexane, Dibromochloromethane, Ethylbenzene, Isopropylbenzene, Methylcyclohexane, Styrene, Tetrachloroethene, Toluene, Trichloroethene, cis-1,3-Dichloropropene, m,p-Xylene, o-Xylene, trans-1,3-Dichloropropene

1,4-Dichlorobenzene-d4 BAM76, BAM76RE, BAM82, BAM82RE, BAM93, BAM93RE, BAMB7, BAMB7RE, BAMC2, BAMC2RE, BAME4, BAME4RE, BAME6, BAME6RE
1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Bromoform

8. COMPOUND IDENTIFICATION:

Target compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within a window of 0.06 RRT units of the standard compound and have ion spectra which has a ratio of the primary and secondary m/z intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the

ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

None

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

Laboratory noted that on 12/14/12 No peaks were detected in the closing calibration. Therefore the following volatile samples are associated with a closing CCV that are not analyzed at the correct frequency. Detected and non-detected compounds are qualified R
VBLKS2, BAM76, BAM81, BAM82, BAM85, BAMB7, BAMC2, BAMD7, BAM88, BAM92, BAM93, BAM98, BAM99, BAM76RE

Re run data was used for BAM82, BAMB7, and BAM93

12. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified not to be used

BAM76RE, BAM82, BAM93, BAMB7, BAMC2, BAME4RE, BAME6RE

ANALYSIS: BNA

The current SOP HW-35/SVOA (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report. Tentatively Indentified Compounds (TICS) for BNA organic fraction is not validated.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following semi-volatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

Benzo(a)pyrene-d12 BAMC2, BAME4
Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene

Pyrene-d10 BAMC2, BAME4
Benzo(a)anthracene, Chrysene, Fluoranthene, Pyrene

4-Methylphenol-d8 BAME4
2,4-Dimethylphenol, 2-Methylphenol, 4-Methylphenol

The following diluted semi-volatile samples with dilution factors less than or equal to 5 have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

Benzo(a)pyrene-d12 BAM85
Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene

2-Nitrophenol-d4 BAM63
2-Nitrophenol, Isophorone

4,6-Dinitro-2-methylphenol-d2 BAM63
4,6-Dinitro-2-methylphenol

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-

contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

The following semi-volatile samples have common contaminant concentrations reported less than 5x the CRQL. The associated method blank concentration is less than 5x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Sample concentrations have been reported at CRQLs.

Bis(2-ethylhexyl)phthalate BAM57, BAM65, BAM70, BAM76, BAM81, BAM98, BAM99, BAMB7, BAMC2, BAMD7

The following semi-volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Di-n-butylphthalate BAM76, BAM81, BAM98, BAM99

Butylbenzylphthalate BAM57, BAM76, BAM81, BAM82, BAM99, BAMB7, BAMC2, BAMD7

Benzaldehyde BAM81, BAM88, BAM92, BAM98, BAM99, BAMB7, BAMC2

B) Field or rinse blank contamination:

The following semi-volatile samples have common contaminant concentrations reported less than 5x the CRQL. The associated rinse blank concentration is less than 5x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Sample concentrations have been reported at CRQLs.

Bis(2-ethylhexyl)phthalate BAME6

The following semi-volatile samples have analyte concentrations reported less than the CRQL. The associated rinse blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Di-n-butylphthalate, BAME6

Dimethylphthalate BAM98, BAM99

Benzaldehyde BAME6

C) Trip blank contamination for VOA aqueous samples:

Not Applicable.

D) Storage Blank associated with VOA samples only:

Not Applicable.

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E) Tics "R" rejected:

Tentatively Indentified Compounds (TICS) for BNA organic fraction is not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP). If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than □30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity. If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION:

A) Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within □ 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

None

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

None

12. DILUTIONS, RE-EXTRACTIONS and REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified as not to be used

None

ANALYSIS: PESTICIDES

The current SOP HW-36 (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE(MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. LABORATORY CONTROL RECOVERY (LCS):

The LCS data is generated to determine the long-term precision and accuracy of the analytical method. The LCS may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method/Instrument blank contamination:

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

4,4'-DDE BAM93, BAM98, BAM99

4,4'-DDD BAM82

delta-BHC BAM57, BAM63, BAM65, BAM69, BAM75, PLCSS1

alpha-BHC BAM81, BAMC2, BAME4, PLCSS2, PLCSS3, PLCSS4

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated initial instrument blank / continuing instrument concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan II BAM57, BAM63, BAM65, BAM65DL, BAM69, BAM70, BAM75.

gamma-Chlordane BAM63, BAM81MS, BAM81MSD, BAM93, BAM98, BAME4

4,4'-DDD BAM57, BAM63, BAM65, BAM65DL, BAM69, BAM70DL, BAM75DL, BAM88, BAM92, BAM98, BAM99

Aldrin BAM65, BAM65DL, BAM69, BAM70, BAM70DL, BAM75, BAM75DL, BAM81, BAM82, BAM88, BAM92, BAME6

Methoxychlor BAM76, BAM81, BAM81MS, BAM81MSD, BAM82, BAM85, BAM88, BAM92, BAM93, BAM98, BAM99, BAMB7, BAMD7, BAME6, PLCSS2

Endrin aldehyde BAM57, BAM63, BAM65, BAM65DL, BAM69, BAM70, BAM70DL, BAM75DL, BAM76DL, BAMD7DL, BAM88, BAM92, BAM93, BAM98, BAM99, BAME6

Heptachlor epoxide BAM57, BAM63, BAM65DL, BAM69, BAM70DL, BAM75DL, BAM81, BAM81MS, BAM81MSD, BAM85, BAM92, BAM93, BAM98, BAM99, BAMC2, BAME4, BAME6

4,4'-DDT BAM57, BAM63, BAM65DL, BAM69, BAM70DL, BAM75DL, PLCSS1

B) Field or rinse blank contamination:

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The

continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

For the PESTICIDE fraction, if %RSD exceeds 20% for all analytes except alpha-BHC and delta-BHC 25%, for the two surrogates and Toxaphene 30%, qualify all associated positive results "J" and non-detects are not qualified. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) The Percent Difference (%D) for each of the SCP and surrogate in the PEM used for CCV must be greater than or equal to-25% and less than or equal to 25.0%. The Percent Difference (%D) between the calibration Factor (CF) for each of the SCP and surrogate in the Calibration Verification Standard (CS3) and the mean calibration factor from the initial calibration must be greater than or equal to-20% and less than or equal to 20.0%. The Percent Difference not within limits, detected associated compounds are qualified "J" and non-detected associated compounds are qualified "UJ". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. COMPOUND IDENTIFICATION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

The following pesticide samples have percent differences between analyte results in the range of 26-50%. Detected compounds are qualified J.

Endosulfan II BAMD7

4,4'-DDT BAM75, BAM81MS, BAM81MSD, BAM92, BAM93, BAMD7

Dieldrin BAM65, BAM65DL, BAM69, BAM81MS, BAM81MSD, BAM82, BAM99, BAMD7, BAME6

gamma-BHC (Lindane) BAM81MS, PLCSS2, PLCSS3, PLCSS4

Aldrin BAM81MS

Endrin aldehyde BAM69, BAM76, BAM81, BAMD7DL

beta-BHC BAM99

alpha-Chlordane BAM65, BAM70DL, BAM75, BAM76DL, BAM82, BAM85, BAMD7, BAMD7DL

Endosulfan sulfate BAMD7

4,4'-DDE BAM65, BAM70, BAM76, BAM76DL, BAM99, BAMD7, PLCSS1

Heptachlor BAM65DL, BAM76, BAM76DL, BAM85

4,4'-DDD BAM75DL, BAM81MS, BAM81MSD, BAM98

Endrin ketone BAM57

Endrin BAM81MS, BAM98, PLCSS2, PLCSS3

alpha-BHC BAME4, PLCSS2

Heptachlor epoxide BAM57, BAM76, BAM99

The following pesticide samples have percent differences between analyte results in the range of 51-100%. Detected compounds are qualified NJ.

alpha-Chlordane BAM69, BAM81, BAM88

Endosulfan II BAM76

4,4'-DDT BAM76, BAME6

4,4'-DDD BAM75

delta-BHC BAMD7

The following pesticide samples have percent differences between analyte results in the range of 51-100%. Using professional judgment detected compounds are qualified J.
alpha-Chlordane BAM75DL, BAM81MS, BAME6

4,4'-DDT BAM65

Heptachlor epoxide BAM76DL, BAMD7, BAMD7DL

The following pesticide samples have percent differences between analyte results exceeding 50% and the results are below CRQL. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan II BAM57, BAM63, BAM65, BAM65DL, BAM69, BAM70, BAM75, BAM81MSD, BAM82, BAM85, BAM88, BAM92, BAM93, BAM98, BAM99, BAME6

Endosulfan I BAM88

4,4'-DDT BAM63, BAM65DL, BAM76DL, BAM99, BAMB7, BAMC2, BAMD7DL, PLCSS1, PLCSS2

Aldrin BAM65, BAM65DL, BAM69, BAM70, BAM70DL, BAM75, BAM75DL, BAM81, BAM82, BAM88, BAM92, BAME6

Dieldrin BAM57, BAM70DL, BAM75DL, BAM81, BAM85, BAM92, BAM93, BAM98

delta-BHC BAM57, BAM63, BAM65, BAM69, BAM76DL, BAM88, PLCSS1

Endrin aldehyde BAM57, BAM63, BAM65, BAM65DL, BAM75DL, BAM76DL, BAM81MS, BAM81MSD, BAM82, BAM85, BAM88, BAM92, BAM93, BAM98, BAM99, BAMD7, BAME6

beta-BHC BAM69, BAM70, BAM76, BAM82, BAM92, BAMB7, BAMD7, BAME6

alpha-Chlordane BAM63, BAM81MSD, BAM98, BAME4

Endosulfan sulfate BAM69, BAM85, BAM88, BAM92, BAM93

4,4'-DDE BAM63, BAM75DL, BAMB7, BAMC2, BAME4, BAME6

Heptachlor BAM63, BAM69, BAM75, BAM88, BAM92, BAMB7, PLCSS2, PLCSS3

4,4'-DDD BAM57, BAM63, BAM65, BAM65DL, BAM69, BAM70DL, BAM82, BAM88, BAM92, BAM99

Endrin ketone BAM63, BAM70, BAM85, BAM92

Methoxychlor BAM57, BAM63, BAM65, BAM65DL, BAM69, BAM70, BAM70DL, BAM75, BAM75DL, BAM76, BAM76DL, BAM81, BAM81MS, BAM81MSD, BAM82, BAM85, BAM88, BAM92, BAM93, BAM98, BAM99, BAMB7, BAMD7, BAMD7DL, BAME6, PLCSS2

Endrin BAM57, BAM65, BAM65DL, BAM70DL, BAM75DL, BAM76DL, BAM81, BAM82, BAM85, BAM88, BAM92, BAM93, BAM99, BAMD7DL, BAME6

Heptachlor epoxide BAM65DL, BAM69, BAM70DL, BAM75DL, BAM81, BAM81MS, BAM81MSD, BAM85, BAM92, BAM98, BAME4, BAME6

alpha-BHC BAM81, BAMC2, PLCSS3, PLCSS4

The following pesticide samples have percent differences between analyte results exceeding 50% and the results are below CRQL. Using professional judgment detected compounds are qualified J.

Dieldrin PLCSS1, PLCSS2, PLCSS3, PLCSS4

The following pesticide samples have percent differences between analyte results exceeding 100%. Detected compounds are qualified R.

4,4'-DDD BAM70

Endrin BAM76, BAMD7

The following pesticide samples have percent differences between analyte results exceeding 100%. Detected compounds are qualified R.

alpha-Chlordane BAM65DL, BAM76

4,4'-DDT BAM82

delta-BHC BAM76

Heptachlor epoxide BAM75

8. CONTRACT PROBLEMS NON-COMPLIANCE:

None

9. FIELD DOCUMENTATION:

No problems were identified.

10. OTHER PROBLEMS:

None

11. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked not to be used. The following reports were identified as not to be used

BAM65DL, BAM70DL, BAM75DL, BAM76DL, BAMD7DL

ANALYSIS: PCB

The current SOP HW-37 (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied.

1. HOLDING TIME：

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE(MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

The relative percent difference (RPD) between the following aroclor matrix spike and matrix spike duplicate recoveries is outside criteria. Detected compounds are qualified J. Non-detected compounds are not qualified.

Aroclor-1260 BAM81, BAM81MS, BAM81MSD

Aroclor-1016 BAM81, BAM81MS, BAM81MSD

The following Aroclor matrix/matrix spike duplicate samples have percent recoveries that are greater than the upper acceptance limit Detected compounds are qualified J. Non-detected compounds are not qualified.

Aroclor-1260 BAM81, BAM81MS, BAM81MSD

4. Laboratory Control Samples (LCS):

The LCSs data provides information on the accuracy of the analytical method and laboratory performance. If LCS recoveries fell outside of the acceptable limits, qualifications were applied to the associated samples and compounds as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects U. Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

No problems were found for this criterion.

B) Field or rinse blank contamination:

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the

instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD):

For the PCB fraction, if %RSD exceeds 20% for all analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ".

No problems were found for this criterion.

B) Percent Difference (%D):

For closing CCV, if %D exceeds 50% for all analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ".

No problems were found for this criterion.

7. COMPOUND IDENTIFICATION:

A) PCB Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

The following aroclor samples have percent differences between analyte results in the range of 26-50%. Detected compounds are qualified J.

Aroclor-1260 BAM81MS

8. CONTRACT PROBLEMS NON-COMPLIANCE:

None

9. FIELD DOCUMENTATION:

No problems were identified.

10. OTHER PROBLEMS:

None

11. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified as not to be used

None

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 43179
Site: SEA CLIFF
Number of Samples: 20(Soil)
Analysis: VOA**,** BNA, Pest, PCB

SDG No.: BAMA4
Laboratory: ALS Environmental
Sampling dates: 12/10/2012-12/13/2012

QAPP
HWSS #: Not available.
Contractor Document #: Not available.

SUMMARY:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings: VOA: Samples BAM95, BAMA4, BAME0RE, BAME1 have analytes that have been qualified "R".
Pest: Samples BAM78, BAMC3, have analytes that have been qualified "R".

Major Findings: VOA: Samples BAME0RE, BAME1, have analytes that have been qualified "J".

BNA: Samples BAMA4, BAMB3, have analytes that have been qualified "J".

Pest: Samples BAM60, BAM64, BAM78, BAM86, BAM95, BAMB1, BAMB3, BAMC3, BAMC5, BAME0, BAME1, have analytes that have been qualified "J".

PCB: Sample BAME2 has analytes that have been qualified "J".

Minor Findings: VOA: RRF for 1, 4-Dioxane and 1,4-Dioxane-d8 is below limits.

COMMENT: None

Reviewer Name(s): **Dorina Christina Alliu**

Approver's Signature: **Narendra Kumar** **Date:** **01/25/2013**

Name: **Narendra Kumar**

Affiliation: **USEPA/R2/HWSB/HWSS**

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	**Explanation**		
	INORGANICS	**ORGANICS**	**CHLORINATED DIOXIN/FURAN**
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.		
J–	The result is an estimated quantity, but the result may be biased low.		
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		*The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".*	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: VOA

The current SOP HW-33/VOA (Revision 2) November 2008, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report. Tentatively Indentified Compounds (TICS) for VOA organic fraction is not validated.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. DEUTERATED MONITORING COMPOUNDS (DMCs):

All samples are spiked with surrogate compounds (DMC's) prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are not qualified.

Toluene-d8 BAM95, BAM95RE, BAMA4RE, BAME0, BAME0RE, BAME1, BAME1RE
Ethylbenzene, Isopropylbenzene, Styrene, Tetrachloroethene, Toluene, Trichloroethene, m,p-Xylene, o-Xylene

1,2-Dichloropropane-d6 BAM95, BAMA4RE, BAME0, BAME0RE, BAME1, BAME1RE
1,2-Dichloropropane, Bromodichloromethane, Cyclohexane, Methylcyclohexane

1,1-Dichloroethene-d2 BAMA4RE, BAME1RE
1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene

Chloroethane-d5 BAM95, BAMA4RE, BAME0, BAME1, BAME1RE
Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane

1,4-Dioxane-d8 BAMA4RE, BAME1, BAME1RE
1,4-Dioxane

trans-1,3-Dichloropropene-d4 BAMA4RE, BAME1, BAME1RE
1,1,2-Trichloroethane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene

Benzene-d6 BAM95, BAM95RE, BAMA4RE, BAME0, BAME0RE, BAME1, BAME1RE

Benzene

Vinyl chloride-d3 BAMA4RE, BAME1, BAME1RE
Vinyl chloride

1,1,2,2-Tetrachloroethane-d2 BAMA4RE, BAME1, BAME1RE
1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

2-Hexanone-d5 BAMA4RE, BAME1, BAME1RE
2-Hexanone, 4-Methyl-2-Pentanone

1,2-Dichloroethane-d4 BAMA4RE, BAME1, BAME1RE
1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane

2-Butanone-d5 BAMA4, BAMA4RE, BAME1, BAME1RE
2-Butanone, Acetone

Chloroform-d BAMA4RE, BAME1, BAME1RE
1,1-Dichloroethane, Bromochloromethane, Bromoform, Chloroform, Dibromochloromethane

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not Applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 1 times the blank contaminant level (2 times for common contaminants), the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank has common contaminant analyte concentration is less than 2x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Sample concentrations have been reported at the CRQLs.

Methylene chloride BAM60, BAM64, BAM86, BAM95, BAMA4

The following volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Toluene BAM60, BAMA4RE, BAMD8, BAME0RE, BAME1RE

B) Field or rinse blank contamination:

No additional qualification was applied due to rinse blank.

C) Trip blank contamination for VOA aqueous samples:

Not Applicable.

D) Storage Blank associated with VOA samples only:

The following volatile samples have analyte concentrations reported less than the CRQL. The associated storage blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Trichlorofluoromethane BAM64, BAM86, BAM95, BAMA4, BAMB1, BAMB3, BAME0RE, BAME1, BAME2, BAME3

E) Tics "R" rejected:

Tentatively Indentified Compounds (TICS) for VOA organic fraction is not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene. If the mass calibration is in error, all associated data will be classified as unusable "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05, and ≥ 0.01 for the twenty-two analytes with poor response in both the initial and continuing calibrations. A value < 0.05, or <

0.01 for the poor performers indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

The following volatile samples are associated with an initial calibration and CCV with average relative response factors (mean RRFs) outside criteria. Detected compounds are qualified J. Non-detected compounds are qualified R.

1,4-Dioxane BAM60, BAM64, BAM78, BAM86, BAM95, BAM95RE, BAMA4, BAMA4RE, BAMB1, BAMB3, BAMB4, BAMB6, BAMC0, BAMC3, BAMC5, BAMC6, BAMC8, BAMD8, BAME0, BAME0RE, BAME1, BAME1RE, BAME2, BAME3, VBLKS1, VBLKS2, VBLKS4, VHBLKS1

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. %D must be < 25%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria (> 90%), non-detects data may be qualified "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +200%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +200%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity. If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. Qualifications were applied to the samples and analytes as shown below.

The following volatile samples have internal standard area counts that are outside the lower limit of primary criteria. Detected compounds are qualified J. Non-detected compounds are qualified R.

1,4-Difluorobenzene BAMA4RE, BAME1, BAME1RE
1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1,4-Dioxane, 2-Butanone, Acetone, Bromochloromethane, Bromomethane, Carbon disulfide, Chloroethane, Chloroform, Chloromethane, Dichlorodifluoromethane, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane, Vinyl chloride, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene

Chlorobenzene-d5 BAMA4RE, BAME0, BAME1, BAME1RE
1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2-Dibromoethane, 1,2-Dichloropropane, 2-Hexanone, 4-Methyl-2-Pentanone, Benzene, Bromodichloromethane, Carbon tetrachloride, Chlorobenzene, Cyclohexane, Dibromochloromethane, Ethylbenzene, Isopropylbenzene, Methylcyclohexane, Styrene, Tetrachloroethene, Toluene, Trichloroethene, cis-1,3-Dichloropropene, m,p-Xylene, o-Xylene, trans-1,3-Dichloropropene

1,4-Dichlorobenzene-d4 BAM95, BAM95RE, BAMA4, BAMA4RE, BAME0, BAME0RE, BAME1, BAME1RE
1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Bromoform

8. COMPOUND IDENTIFICATION:

Target compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within a window of 0.06 RRT units of the standard compound and have ion spectra which has a ratio of the primary and secondary m/z intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

1,4-Dioxane:

Average relative response factor (mean RRFs) is below the Contractual Criteria in the initial Calibration. Continuing response factor (RRF 50.0) is below the contractual criteria in all the opening and closing CCV calibrations.

1,4-Dioxane-d8:

Average relative response factor (mean RRFs) is below the Contractual Criteria in the initial calibration. Continuing Calibration Verification (CCV) response factor (RRF 50.0) is below the contractual criteria in all the opening and closing CCV calibrations.

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

None.

12. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified not to be used

BAM95RE, BAMA4RE, BAME0, BAME1RE

ANALYSIS: BNA

The current SOP HW-35/SVOA (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report. Tentatively Indentified Compounds (TICS) for BNA organic fraction is not validated.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following semi-volatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

Benzo(a)pyrene-d12 BAMA4, BAME1, BAME2
Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene

Pyrene-d10 BAMA4, BAME2
Benzo(a)anthracene, Chrysene, Fluoranthene, Pyrene

2-Nitrophenol-d4 BAMB3
2-Nitrophenol, Isophorone

2,4-Dichlorophenol-d3 BAMB3
1,2,4,5-Tetrachlorobenzene, 2,3,4,6-Tetrachlorophenol, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 4-Chloro-3-methylphenol, Hexachlorobutadiene, Pentachlorophenol

4-Nitrophenol-d4 BAMB3
2,4-Dinitrophenol, 2-Nitroaniline, 3-Nitroaniline, 4-Nitroaniline, 4-Nitrophenol

4-Methylphenol-d8 BAMA4
2,4-Dimethylphenol, 2-Methylphenol, 4-Methylphenol

4,6-Dinitro-2-methylphenol-d2 BAMB3
4,6-Dinitro-2-methylphenol

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

The following semi-volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Butylbenzylphthalate BAM86, BAMB1, BAMB4, BAMB6, BAMC5, BAMC8, BAME2, BAME3

Benzaldehyde BAM60, BAM64, BAM78, BAM86, BAMA4, BAMB1, BAMB3, BAMB4, BAMB6, BAMC0, BAMC3, BAMC5, BAMC6, BAMC8, BAMD8, BAME1, BAME2, BAME3

Naphthalene BAMC5, BAMC8, BAMD8

Phenol BAM60, BAMC8, BAMD8

Acetophenone BAM60, BAM64, BAM78, BAM86, BAMB1, BAMC0, BAMC3, BAMC5, BAMC6, BAMC8, BAMD8, BAME2, BAME3

B) Field or rinse blank contamination:

The following semi-volatile samples have common contaminant concentrations reported less than 5x the CRQL. The associated rinse blank concentration is less than 5x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Sample concentrations have been reported at CRQLs.

Bis(2-ethylhexyl)phthalate BAM64, BAM86, BAMA4, BAMB1, BAMB3, BAMB6, BAMC0, BAMC3, BAMC8, BAMD8, BAME1, BAME2, BAME3

The following semi-volatile samples have analyte concentrations reported less than the CRQL. The associated rinse blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Di-n-butylphthalate BAM86, BAMA4, BAMB1, BAMB4, BAMB6, BAMC0, BAMC8, BAMD8, BAME3

C) Trip blank contamination for VOA aqueous samples:

Not Applicable.

D) Storage Blank associated with VOA samples only:

Not Applicable.

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E) Tics "R" rejected:

Tentatively Indentified Compounds (TICS) for BNA organic fraction is not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP). If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than □30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity. If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION:

A) Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within □ 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

None.

12. DILUTIONS, RE-EXTRACTIONS and REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified as not to be used

None.

ANALYSIS: PESTICIDES

The current SOP HW-36 (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. LABORATORY CONTROL RECOVERY (LCS):

The LCS data is generated to determine the long-term precision and accuracy of the analytical method. The LCS may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method/Instrument blank contamination:

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan I BAMB1

4,4'-DDE BAM60, BAMC0, BAMC5, BAMC8, BAME1, BAME2, BAME3, BAME3MS, BAME3MSD

Endosulfan sulfate BAM60, BAM64, BAM78, BAME0

4,4'-DDT BAMC0, BAMC8, BAMD8, BAME2

gamma-Chlordane BAM78DL, BAMA4MS, BAME1

delta-BHC BAM60, BAM64, BAM64DL, BAM86, BAM95, BAMA4, BAMA4MS, BAMA4MSD, BAMB1, BAMB3, BAMB4, BAMB6, BAMC0, BAMC3, BAMC5, BAMC6, BAMC8, BAMD8, BAME0, BAME1, BAME2, BAME3, BAME3MS, BAME3MSD, PLCSS1, PLCSS2

Endrin ketone BAM60, BAMA4MS, BAMA4MSD, BAMC0, BAMC8, BAMD8, BAME3, BAME3MS, BAME3MSD, PLCSS1, PLCSS2

Methoxychlor BAM60, BAM64, BAM78, BAM78DL, BAM95, BAMB1, BAMC3, BAMD8, BAME2

Endrin BAMA4, BAMB1, BAMD8

alpha-BHC BAM64, BAMA4, BAMA4MS, BAMA4MSD, BAMB3, BAMB4, BAMB6, BAMC0, BAMC5, BAMC6, PLCSS1, PLCSS2

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated initial instrument blank / continuing instrument concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not

qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan II BAM60, BAM64, BAM64DL, BAM78, BAM78DL, BAMA4, BAMA4MS, BAMA4MSD, PLCSS1

4,4'-DDD BAM60, BAM86, BAMB1, BAMC0, BAME1, BAMA4MS, BAMA4MSD

Aldrin BAM64, BAM64DL, PLCSS1

Endrin aldehyde BAM60, BAM64, BAM64DL, BAM78, BAM86, BAM95, BAMA4MS, BAMA4MSD, BAMB1, BAMC0, BAMC5, BAMC8, BAMD8, BAME0, BAME1, BAME2, BAME3, BAME3MS, BAME3MSD

Heptachlor epoxide BAM60, BAM64DL, BAM78DL, BAM86, BAM95, BAMB1,BAMB3, BAMC0, BAMC5, BAMC6, BAMD8, BAME0, BAME1, BAME2, BAME3, BAME3MS, BAME3MSD

B) Field or rinse blank contamination:

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

For the PESTICIDE fraction, if %RSD exceeds 20% for all analytes except alpha-BHC and delta-BHC 25%, for the two surrogates and Toxaphene 30%, qualify all associated positive results "J" and non-detects are not qualified. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) The Percent Difference (%D) for each of the SCP and surrogate in the PEM used for CCV must be greater than or equal to-25% and less than or equal to 25.0%. The Percent Difference (%D) between the calibration Factor (CF) for each of the SCP and surrogate in the Calibration Verification Standard (CS3) and the mean calibration factor from the initial calibration must be greater than or equal to-20% and less than or equal to 20.0%. The Percent Difference not within limits, detected associated compounds are qualified "J" and non-detected associated compounds are qualified "UJ". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. COMPOUND IDENTIFICATION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration

exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

The following pesticide samples have percent differences between analyte results in the range of 26-50%. Detected compounds are qualified J.

4,4'-DDE BAM60, BAM64DL, BAM95, BAMC5, BAME0, BAME1

4,4'-DDT BAMB1

4,4'-DDD BAM86, BAMA4MS, BAME0

gamma-Chlordane BAME0

gamma-BHC (Lindane) PLCSS2

Dieldrin BAM60, BAM64, BAM95

Endrin ketone BAME3MS

delta-BHC BAMB3, BAMC5, BAME1

Methoxychlor BAMC3

Endrin aldehyde BAMC3

Heptachlor epoxide BAM95

The following pesticide samples have percent differences between analyte results in the range of 51-100%. Detected compounds are qualified NJ.

alpha-Chlordane BAM78, BAM86, BAME0

gamma-Chlordane BAMB1

The following pesticide samples have percent differences between analyte results in the range of 51-100%. Using professional judgment detected compounds are qualified J.

alpha-Chlordane BAM64, BAM64DL

The following pesticide samples have percent differences between analyte results exceeding 50% and the results are below CRQL. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan II BAM60, BAM64, BAM64DL, BAM78, BAM78DL, BAMA4, BAMA4MS, BAMA4MSD, BAME0, BAME2, BAME3, BAME3MS, BAME3MSD, PLCSS1

4,4'-DDT BAMA4, BAMC0, BAMC8, BAMD8, BAME2

Dieldrin BAM64DL, BAM78, BAMB1, BAMC5, BAMC8, BAMD8, BAME0, BAME2, BAME3

Aldrin BAM64, BAM64DL, BAMD8

delta-BHC BAM60, BAM86, BAM95, BAMA4, BAMA4MS, BAMA4MSD, BAMB1, BAMB4, BAMB6, BAMC0, BAMC6, BAMC8, BAMD8, BAME0, BAME2, BAME3, BAME3MS, BAME3MSD, PLCSS1, PLCSS2

Endrin aldehyde BAM64, BAM64DL, BAM78, BAM86, BAM95, BAMA4MS, BAMA4MSD, BAMB1, BAMC0, BAMC5, BAMC8, BAMD8, BAME0, BAME1, BAME3, BAME3MS, BAME3MSD

beta-BHC BAM60, BAM64, BAM64DL, BAM78, BAM86, BAME1, PLCSS2

alpha-Chlordane BAM78DL

Endosulfan sulfate BAM60, BAM64, BAM78, BAME0

4,4'-DDE BAMA4, BAMC8, BAME2, BAME3, BAME3MS, BAME3MSD

Heptachlor BAM78, BAMC6, PLCSS1

gamma-Chlordane BAMA4MS

4,4'-DDD BAM60, BAMB1, BAMC0, BAME1

Endrin ketone BAMC0, BAMC8, BAMD8, BAME3, PLCSS1, PLCSS2

Methoxychlor BAM60, BAM64, BAM78, BAM78DL, BAM95, BAMB1, BAMD8, BAME2

Endrin BAMA4, BAMB1, BAMD8

Heptachlor epoxide BAM64DL, BAM78DL, BAMA4, BAMA4MS, BAMA4MSD, BAMB3, BAMC0, BAMC5, BAMC8, BAME0, BAME1, BAME2, BAME3, BAME3MS, BAME3MSD

alpha-BHC BAM64, BAMA4, BAMA4MS, BAMA4MSD, BAMB3, BAMC0, BAMC5, PLCSS1, PLCSS2

The following pesticide samples have percent differences between analyte results exceeding 100%. Detected compounds are qualified R.

Endosulfan II BAMC3

Dieldrin BAMC3

Heptachlor epoxide BAM78, BAMC3

The following pesticide samples have percent differences between analyte results exceeding 100%. Using professional judgment detected compounds are qualified JN.

alpha-Chlordane BAM60, BAM95

Heptachlor epoxide BAM64

8. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

9. FIELD DOCUMENTATION:

No problems were identified.

10. OTHER PROBLEMS:

None.

11. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked not to be used. The following reports were identified as not to be used

BAM64DL, BAM78DL

ANALYSIS: PCB

The current SOP HW-37 (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied.

1. HOLDING TIME：

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

The relative percent difference (RPD) between the following aroclor matrix spike and matrix spike duplicate recoveries is outside criteria. Detected compounds are qualified J. Non-detected compounds are not qualified.

Aroclor-1016 BAMA4, BAMA4MS, BAMA4MSD

The following Aroclor matrix/matrix spike duplicate samples have percent recoveries that are greater than the upper acceptance limit Detected compounds are qualified J. Non-detected compounds are not qualified.

Aroclor-1260 BAME3, BAME3MS, BAME3MSD

4. Laboratory Control Samples (LCS):

The LCSs data provides information on the accuracy of the analytical method and laboratory performance. If LCS recoveries fell outside of the acceptable limits, qualifications were applied to the associated samples and compounds as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects U. Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

No problems were found for this criterion.

B) Field or rinse blank contamination:

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD):

For the PCB fraction, if %RSD exceeds 20% for all analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ".

No problems were found for this criterion.

B) Percent Difference (%D):

For closing CCV, if %D exceeds 50% for all analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ".

No problems were found for this criterion.

7. COMPOUND IDENTIFICATION:

A) PCB Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

The following aroclor samples have percent differences between analyte results in the range of 26-50%. Detected compounds are qualified J.

Aroclor-1260 BAME2

Aroclor-1254 BAME2

Aroclor-1016 ALCSS2

8. CONTRACT PROBLEMS NON-COMPLIANCE:

None

9. FIELD DOCUMENTATION:

No problems were identified.

10. OTHER PROBLEMS:

None

11. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified as not to be used

BAMC3DL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 43179
Site: SEA CLIFF
Number of Samples: 20 (Soil)
Analysis: VOA**,** BNA, Pest, PCB

SDG No.: BAMD9
Laboratory: ALS Environmental
Sampling dates: 12/12/2012-12/18/2012

QAPP
HWSS #: Not available.
Contractor Document #: Not available.

SUMMARY:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings: VOA: Samples BAM41, BAM47, BAM53, BAME5 have analytes that have been qualified "R".

Major Findings: VOA: Sample BAME5 has analytes that have been qualified "J".

BNA: Samples BAM46, BAM52, BAM58, BAMA5, BAMA9, BAMC9, BAMD4, BAME5, BAME8, BAME9, BAMF0, BAMF1 have analytes that have been qualified "J".

Pest: Samples BAM41, BAM47, BAM52, BAM53, BAM58, BAMA5, BAMA9, BAMC9, BAME5, BAME7, BAME9, BAMF0, BAMF1 have analytes that have been qualified "J".

Minor Findings: VOA: RRF for 1, 4-Dioxane and 1,4-Dioxane-d8 is below limits.

COMMENT: None

Reviewer Name(s): Dorina Christina Alliu

Approver's Signature: **Date: 01/29/13**

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	**Explanation**		
	INORGANICS	**ORGANICS**	**CHLORINATED DIOXIN/FURAN**
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.		
J–	The result is an estimated quantity, but the result may be biased low.		
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		*The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".*	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: VOA

The current SOP HW-33/VOA (Revision 2) November 2008, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report. Tentatively Indentified Compounds (TICS) for VOA organic fraction is not validated.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. DEUTERATED MONITORING COMPOUNDS (DMCs):

All samples are spiked with surrogate compounds (DMC's) prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are not qualified.

Toluene-d8 BAM41, BAME5, BAME5RE
Ethylbenzene, Isopropylbenzene, Styrene, Tetrachloroethene, Toluene, Trichloroethene, m,p-Xylene, o-Xylene

1,2-Dichloropropane-d6 BAM41, BAM47RE, BAME5, BAME5RE
1,2-Dichloropropane, Bromodichloromethane, Cyclohexane, Methylcyclohexane

1,1-Dichloroethene-d2 BAME5RE
1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene

Chloroethane-d5 BAME5, BAME5RE
Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane

1,4-Dioxane-d8 BAM58, BAME5, BAME5RE, BAMF0
1,4-Dioxane

trans-1,3-Dichloropropene-d4 BAME5, BAME5RE
1,1,2-Trichloroethane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene

Benzene-d6 BAM41, BAM41RE, BAM47, BAM47RE, BAM53, BAME5, BAME5RE

Benzene
Vinyl chloride-d3 BAME5, BAME5RE
Vinyl chloride

1,1,2,2-Tetrachloroethane-d2 BAME5, BAME5RE
1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

2-Hexanone-d5 BAME5, BAME5RE
2-Hexanone, 4-Methyl-2-Pentanone

1,2-Dichloroethane-d4 BAME5, BAME5RE
1,1,1-Trichloroethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, 1,2-Dibromoethane, 1,2-Dichloroethane, Carbon tetrachloride, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane

2-Butanone-d5 BAME5
2-Butanone, Acetone

Chloroform-d BAME5, BAME5RE
1,1-Dichloroethane, Bromochloromethane, Bromoform, Chloroform, Dibromochloromethane

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not Applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 1 times the blank contaminant level (2 times for common contaminants), the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank has common contaminant analyte concentration less than 2x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Sample concentrations have been reported at the CRQLs.

Methylene chloride BAM41, BAM41RE, BAM46, BAM47, BAM47RE, BAM53RE, BAME5, BAMF1

The following volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected

compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Carbon disulfide BAM41, BAM41RE, BAM46, BAM47, BAM47RE, BAM52, BAM53, BAM53RE, BAM58, BAMA5, BAMA9, BAMC9, BAMD4, BAME5, BAME5RE, BAME7, BAME8, BAME9, BAMF0, BAMF1

Chloroform BAM41, BAM41RE, BAM46, BAM47, BAM47RE, BAM52, BAM53, BAM53RE, BAM58, BAMA5, BAMA9, BAMC9, BAMD4, BAME5RE, BAME7, BAME8, BAME9, BAMF0, BAMF1

Toluene BAM47

B) Field or rinse blank contamination:

Not additional qualification was applied due to rinse blank.

C) Trip blank contamination for VOA aqueous samples:

Not Applicable.

D) Storage Blank associated with VOA samples only:

The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated storage blank common contaminant concentration is less than 2x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Acetone BAM41, BAM41RE, BAM47, BAM47RE, BAM53RE, BAMA5, BAMC9, BAME5RE, BAME7, BAMF0

The following volatile samples have analyte concentrations reported less than the CRQL. The associated storage blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Toluene BAME5RE

Trichlorofluoromethane BAM41RE, BAME5, BAME5RE

E) Tics "R" rejected:

Tentatively Indentified Compounds (TICS) for VOA organic fraction is not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene. If the mass calibration is in error, all associated data will be classified as unusable "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05, and ≥ 0.01 for the twenty-two analytes with poor response in both the initial and continuing calibrations. A value < 0.05, or < 0.01 for the poor performers indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

The following volatile samples are associated with an initial calibration and CCV with average relative response factors (mean RRFs) outside criteria. Detected compounds are qualified J. Non-detected compounds are qualified R.

1,4-Dioxane BAM41, BAM41RE, BAM46, BAM47, BAM47RE, BAM52, BAM53, BAM53RE, BAM58, BAMA5, BAMA9, BAMC9, BAMD4, BAMD9, BAME5, BAME5RE, BAME7, BAME8, BAME9, BAMF0, BAMF1, VBLKS1, VBLKS2, VBLKW1, VHBLKS1, VHBLKW1

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. %D must be < 25%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria (> 90%), non-detects data may be qualified "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +200%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +200%) range of the associated standard, all of the positive results for compounds quantitated using that IS are

qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity. If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. Qualifications were applied to the samples and analytes as shown below.

The following volatile samples have internal standard area counts that are outside the lower limit of primary criteria. Detected compounds are qualified J. Non-detected compounds are qualified R.

1,4-Difluorobenzene BAME5RE
1,1,2-Trichloro-1,2,2-trifluoroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, 1,4-Dioxane, 2-Butanone, Acetone, Bromochloromethane, Bromomethane, Carbon disulfide, Chloroethane, Chloroform, Chloromethane, Dichlorodifluoromethane, Methyl acetate, Methyl tert-butyl ether, Methylene chloride, Trichlorofluoromethane, Vinyl chloride, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene

Chlorobenzene-d5 BAME5, BAME5RE
1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2-Dibromoethane, 1,2-Dichloropropane, 2-Hexanone, 4-Methyl-2-Pentanone, Benzene, Bromodichloromethane, Carbon tetrachloride, Chlorobenzene, Cyclohexane, Dibromochloromethane, Ethylbenzene, Isopropylbenzene, Methylcyclohexane, Styrene, Tetrachloroethene, Toluene, Trichloroethene, cis-1,3-Dichloropropene, m,p-Xylene, o-Xylene, trans-1,3-Dichloropropene

1,4-Dichlorobenzene-d4 BAM41, BAM41RE, BAM47, BAM47RE, BAM53, BAM53RE, BAME5, BAME5RE
1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Bromoform

8. COMPOUND IDENTIFICATION:

Target compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within a window of 0.06 RRT units of the standard compound and have ion spectra which has a ratio of the primary and secondary m/z intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

None.

12. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified not to be used

BAM41RE, BAM47RE, BAM53RE, BAME5RE

ANALYSIS: BNA

The current SOP HW-35/SVOA (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report. Tentatively Indentified Compounds (TICS) for BNA organic fraction is not validated.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

The following semi-volatile soil samples are outside primary extraction holding time criteria. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

BAME5

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following semi-volatile samples have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

Benzo(a)pyrene-d12 BAME5
Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene

4-Chloroaniline-d4 BAMA5, BAMC9
3,3'-Dichlorobenzidine, 4-Chloroaniline, Hexachlorocyclopentadiene
4-Methylphenol-d8 BAMC9
2,4-Dimethylphenol, 2-Methylphenol, 4-Methylphenol

The following diluted semi-volatile samples with dilution factors less than or equal to 5 have deuterated monitoring compound recovery below the lower limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

2-Chlorophenol-d4 BAM58
2-Chlorophenol

Benzo(a)pyrene-d12 BAM58
Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene

2,4-Dichlorophenol-d3 BAM58
1,2,4,5-Tetrachlorobenzene, 2,3,4,6-Tetrachlorophenol, 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, 2,4-Dichlorophenol, 4-Chloro-3-methylphenol, Hexachlorobutadiene, Pentachlorophenol

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

Not applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

The following semi-volatile samples have common contaminant concentrations reported less than 5x the CRQL. The associated method blank concentration is less than 5x the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Sample concentrations have been reported at CRQLs.

Bis(2-ethylhexyl)phthalate BAM46, BAM47, BAM52, BAM53, BAMA5, BAMA9, BAMC9, BAMD4, BAME5, BAME8, BAME9, BAMF0, BAMF1

The following semi-volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Butylbenzylphthalate BAM46, BAM53, BAMA5, BAMC9, BAMD4, BAME8, BAME9, BAMF0

Benzaldehyde BAM46, BAM52, BAMA5, BAMA9, BAMC9, BAME8, BAME9, BAMF0, BAMF1

B) Field or rinse blank contamination:

The following semi-volatile samples have analyte concentrations reported less than the CRQL. The associated rinse blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Di-n-butylphthalate BAM46, BAMA5, BAMC9, BAME5, BAME8, BAME9, BAMF0, BAMF1

Dimethylphthalate BAMA5

Acetophenone BAMA5, BAMF1

C) Trip blank contamination for VOA aqueous samples:

Not Applicable.

D) Storage Blank associated with VOA samples only:

Not Applicable.

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E) Tics "R" rejected:

Tentatively Indentified Compounds (TICS) for BNA organic fraction is not validated.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP). If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor

sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R". Qualifications were applied to the samples and analytes as shown below.

The following semi-volatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

N-Nitroso-di-n-propylamine BAM46, BAM52, BAMA5, BAMA9, BAMC9, BAMD4, BAME8, BAME9, BAMF0, BAMF1, SBLK21

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than □30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity. If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

8. COMPOUND IDENTIFICATION:

A) Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within □ 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

10. FIELD DOCUMENTATION:

No problems were identified.

11. OTHER PROBLEMS:

None.

12. DILUTIONS, RE-EXTRACTIONS and REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified as not to be used

None.

ANALYSIS: PESTICIDES

The current SOP HW-36 (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. LABORATORY CONTROL RECOVERY (LCS):

The LCS data is generated to determine the long-term precision and accuracy of the analytical method. The LCS may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects, "U". Qualifications were applied to the samples and analytes as shown below.

A) Method/Instrument blank contamination:

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan I BAM41, BAM52, BAMA9, BAMA9MS, BAMC9, BAME7

4,4'-DDT PLCSS1

4,4'-DDD BAME5, PLCSS1

delta-BHC BAM41, BAM46, BAM47, BAM52, BAM53, BAM58, BAMA5, BAMA9, BAMA9MS, BAMA9MSD, BAMD4, BAME5, BAME7, BAME8, BAME9, BAMF0, BAMF1, PLCSS1, PLCSS2

Methoxychlor BAM41, BAM47, BAMA5

Endrin ketone PLCSS1, PLCSW1

Endrin BAME5

alpha-BHC BAM46, BAM52, BAM58, BAMA9, BAMA9MS, BAMA9MSD, BAMC9, BAMD4, BAME8, BAMF1, PLCSS2

beta-BHC BAM46, BAM52, BAMA9, BAMA9MS, BAMA9MSD, BAMC9, BAMD4, BAME7, BAME8, BAMF1, PLCSW1

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated initial instrument blank / continuing instrument concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan II BAM41, BAM47, BAM53, BAM58, BAMA5, BAMC9, BAME5, BAME7, BAME8, BAME9

4,4'-DDT BAM47, BAM53, BAM58, BAMC9, BAME7, BAME8, BAMF1

4,4'-DDD BAM53, BAMA5, BAMA9MS, BAMA9MSD, BAME7, BAME9, BAMF0, BAMF1, PLCSS2

gamma-Chlordane BAM41, BAM47, BAM53, BAM58, BAMC9, BAME5, BAME7, BAME8, BAME9, BAMF0, BAMF1

Aldrin BAMA5, BAME5, BAME8, BAMF0, PLCSS1

Endrin aldehyde BAM58, BAMA5, BAMC9

Heptachlor epoxide BAM41, BAM47, BAM52, BAM53, BAM58, BAMA5, BAMA9, BAMA9MS, BAMA9MSD, BAMC9, BAMD4, BAMD9, BAME7, BAME8, BAME9, BAMF0

B) Field or rinse blank contamination:

The following pesticide samples have analyte concentrations reported less than the CRQL. The associated rinse blank concentration is less than the concentration criteria. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Beta-BHC BAME5

Heptachlor epoxide BAME5

Dieldrin BAME5, BAM41, BAM47, BAM52, BAM53, BAM58, BAMA5, BAMC9, BAME7, BAME8, BAME9, BAMF0, BAMF1

Endrin ketone BAM41, BAM52, BAM58, BAMA9, BAMA9MS, BAMA9MSD, BAMC9, BAMD4, BAME8, BAMF0, BAMF1, PLCSS2

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

For the PESTICIDE fraction, if %RSD exceeds 20% for all analytes except alpha-BHC and delta-BHC 25%, for the two surrogates and Toxaphene 30%, qualify all associated positive results "J" and non-detects are not qualified. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) The Percent Difference (%D) for each of the SCP and surrogate in the PEM used for CCV must be greater than or equal to-25% and less than or equal to 25.0%. The Percent Difference (%D) between the calibration Factor (CF) for each of the SCP and surrogate in the Calibration Verification Standard (CS3) and the mean calibration factor from the initial calibration must be greater than or equal to-20% and less than or equal to 20.0%. The Percent Difference not within limits, detected associated compounds are qualified "J" and non-detected associated compounds are qualified "UJ". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

7. COMPOUND IDENTIFICATION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

The following pesticide samples have percent differences between analyte results in the range of 26-50%. Detected compounds are qualified J.

Endosulfan II BAM53, BAM58

4,4'-DDT BAM53, BAME5, BAME9

Aldrin PLCSS1

Dieldrin BAM52, BAMA5, PLCSS1, PLCSS2

delta-BHC BAMA9, BAMF1

beta-BHC PLCSW1

4,4'-DDE BAM41, BAM47, BAM52, BAM58, BAMC9, BAME7, PLCSS2

Endosulfan sulfate BAMF1

gamma-Chlordane BAME7, BAME9

Methoxychlor BAM41

Endrin ketone BAM58, BAMA9MS, BAMF0, PLCSW1

Endrin BAMA5, BAMF0

alpha-BHC BAMA9MSD

Heptachlor epoxide BAM52, BAME5, BAME9

The following pesticide samples have percent differences between analyte results exceeding 50% and the results are below CRQL. Detected compounds are qualified U. Nondetected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Endosulfan II BAM41, BAM47, BAMA5, BAMC9, BAME5, BAME7, BAME8, BAME9

Endosulfan I BAM41, BAM52, BAMA9, BAMA9MS, BAME7

4,4'-DDT BAM47, BAMC9, BAME8

Aldrin BAMA5, BAME5, BAME8, BAMF0, BAMF1

gamma-BHC (Lindane) BAM46, BAM52, BAMC9, BAMF1

Dieldrin BAM41, BAM47, BAM53, BAM58, BAMC9, BAME5, BAME8, BAME9, BAMF0

delta-BHC BAM41, BAM46, BAM47, BAM52, BAM53, BAM58, BAMA5, BAMA9MSD, BAMD4, BAME5, BAME7, BAME8, BAME9, BAMF0, PLCSS1, PLCSS2

Endrin aldehyde BAM58, BAMA5

beta-BHC BAM46, BAM52, BAMA9, BAMA9MS, BAMA9MSD, BAMC9, BAMD4, BAME5, BAME7, BAME8, BAMF1

alpha-Chlordane BAM41, BAM52, BAM53, BAMA5, BAMC9, BAME5, BAME7, BAME9, BAMF0, BAMF1

Endosulfan sulfate BAMA9MS, BAME9, BAMF0

4,4'-DDE BAM46, BAM53, BAMA9, BAMA9MSD, BAMD4

gamma-Chlordane BAM41, BAM47, BAMC9, BAME8

4,4'-DDD BAM53, BAMA5, BAMA9MS, BAMA9MSD, BAME7, PLCSS1, PLCSS2

Heptachlor BAM47, BAM52, BAM58, BAMA5, BAMA9, BAMC9, BAMD4, BAME5, BAME7, BAMF1, PLCSS1, PLCSS2

Endrin ketone BAM41, BAM52, BAMA9, BAMC9, BAMD4, BAME8, BAMF1, PLCSS1, PLCSS2

Endrin BAM41, BAME5, BAME8, BAME9

Heptachlor epoxide BAM41, BAMA9, BAMA9MS, BAMA9MSD, BAMC9, BAMD4, BAME7, BAME8

alpha-BHC BAM46, BAM58, BAMA9MS, BAMC9, BAME8, BAMF1, PLCSS2

8. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

9. FIELD DOCUMENTATION:

No problems were identified.

10. OTHER PROBLEMS:

None.

11. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked not to be used. The following reports were identified as not to be used

None.

ANALYSIS: PCB

The current SOP HW-37 (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data have been applied.

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD):

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. Laboratory Control Samples (LCS):

The LCSs data provides information on the accuracy of the analytical method and laboratory performance. If LCS recoveries fell outside of the acceptable limits, qualifications were applied to the associated samples and compounds as shown below.

No problems were found for this criterion.

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Depending on the concentration of the analyte in the blank, the analytes are qualified as non-detects U. Qualifications were applied to the samples and analytes as shown below.

A) Method blank contamination:

No problems were found for this criterion.

B) Field or rinse blank contamination:

No problems were found for this criterion.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Percent Relative Standard Deviation (%RSD):

For the PCB fraction, if %RSD exceeds 20% for all analytes and the two surrogates, qualify all associated positive results "J" and non-detects "UJ".

No problems were found for this criterion.

B) Percent Difference (%D):

For closing CCV, if %D exceeds 50% for all analytes and the two surrogates, qualify all associated positive results “J” and non-detects “UJ”.

No problems were found for this criterion.

7. COMPOUND IDENTIFICATION:

A) PCB Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

8. CONTRACT PROBLEMS NON-COMPLIANCE:

None.

9. FIELD DOCUMENTATION:

No problems were identified.

10. OTHER PROBLEMS:

None.

11. DILUTIONS, RE-EXTRACTIONS & REANALYSIS:

Samples may be reanalyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report and the other report is marked as not to be used. The following reports were identified as not to be used

None.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 43179
Site: Sea Cliff
Number of Samples: 18 Soil
Analysis: Metals, Hg, CN

SDG No.: MBAM42
Laboratory: DATAC
Sampling dates: 1/17/13 - 1/19/13

QAPP
HWSS #: Not available.
Contractor Document #: Not applicable.

SUMMARY:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings: None

Major Findings: Sample MBAMF4 has analytes qualified J.

Minor Findings: None

COMMENT:	None

Reviewer Name(s): Israel Okwuonu

Approver's Signature: **Date: 1/31/2013**

Name: Muhammad H. Sheikh

Affiliation: USEPA/R2/HWSB/HWSS

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	**Explanation**		
	INORGANICS	**ORGANICS**	**CHLORINATED DIOXIN/FURAN**
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.		
J–	The result is an estimated quantity, but the result may be biased low.		
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		*The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".*	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: METALS ICP-AES

The current SOP HW-2a (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).

The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Sodium MBAM51, MBAMA6, MBAMD3, MBAMF4, MBAMF5, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3, MBAMG4, MBAM42

Potassium MBAMD3, MBAMG2, MBAMG3, MBAMG4, MBAM42

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Sodium MBAM51, MBAMA6, MBAMD3, MBAMF4, MBAMF5, MBAMF9, MBAMG0, MBAMG1, MBAMG2 MBAMG3, MBAMG4, MBAM42

Potassium MBAMD3, MBAMG2, MBAMG3, MBAMG4, MBAM42

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Sodium MBAM51, MBAMA6, MBAMD3, MBAMF4, MBAMF5, MBAMF9, MBAMG0, MBAMG1, MBAMG2 MBAMG3, MBAMG4 , MBAM42

Potassium MBAMD3, MBAMG2, MBAMG3, MBAMG4, MBAM42

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents

(target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical

methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

No problems were found for this criterion.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: METALS ICP-MS

The current SOP HW-2b (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Beryllium MBAMF4, MBAM42, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF2, MBAMF3, MBAMF5 MBAMF6, MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3, MBAMG4

Antimony MBAMF4, MBAM42, MBAM51, MBAM54, MBAMF2, MBAMF3, MBAMF5, MBAMF6, MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2

Cadmium MBAMF4, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF3, MBAMF5, MBAMF6 MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3

Thallium MBAMF4, MBAM42, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF2, MBAMF3, MBAMF5 MBAMF6, MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3, MBAMG4

Silver MBAMF4, MBAM42, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF2, MBAMF3, MBAMF5 MBAMF6, MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3, MBAMG4

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Arsenic MBAM42, MBAM51, MBAMA6, MBAMG3, MBAMG4

Barium MBAM42, MBAM51

Cobalt MBAM42, MBAM51

Beryllium MBAMF4, MBAM42, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF2, MBAMF3, MBAMF5, MBAMF6, MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3 MBAMG4

Antimony MBAMF4, MBAM42, MBAM51, MBAM54, MBAMF2, MBAMF3, MBAMF5, MBAMF6 MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2

Cadmium MBAMF4, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF3, MBAMF5, MBAMF6 MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3

Thallium MBAMF4, MBAM42, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF2, MBAMF3 MBAMF5 MBAMF6, MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3, MBAMG4

Silver MBAMF4, MBAM42, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF2, MBAMF3

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Cobalt MBAM42, MBAM51, MBAMG3

Beryllium MBAMF4, MBAM42, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF2, MBAMF3, MBAMF5, MBAMF6, MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3 MBAMG4

Antimony MBAMF4, MBAM42, MBAM51, MBAM54, MBAMF2, MBAMF3, MBAMF5, MBAMF6 MBAMF7 MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2

Thallium MBAMF4, MBAM42, MBAM51, MBAM54, MBAMA6, MBAMD3, MBAMF2, MBAMF3, MBAMF5 MBAMF6, MBAMF7, MBAMF8, MBAMF9, MBAMG0, MBAMG1, MBAMG2, MBAMG3 MBAMG4

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±2X CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following Matrix Spike samples have percent recoveries less than 30% and post-digestion spike samples have percent recoveries greater than or equal to 75%. Detected analytes with results greater than or equal to MDLs are qualified J. Non-detected analytes are qualified UJ.

Antimony MBAMF4

The following Matrix Spike samples have percent recoveries in the range of 30-74% and post-digestion spike samples have percent recoveries greater than or equal to 75%. Detected analytes with results greater than or equal to MDLs are qualified J. Non-detected analytes are qualified UJ.

Arsenic MBAMF4

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

No problems were found for this criterion.

10. ICP-MS TUNE ANALYSIS

The Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) tune serves as an initial demonstration of instrument stability and precision. Prior to calibration, the laboratory shall analyze or scan the ICP-MS tuning solution at least five times (5x) consecutively. The tuning solution contains 100 µg/L of Be, Mg, Co, In, and Pb. The solution shall contain all required isotopes of the above elements. The laboratory shall make any adjustments necessary to bring

peak width within the instrument manufacturer's specifications and adjust mass resolution to within 0.1 u over the range of 6-210 u. The Percent Relative Standard Deviation (%RSD) of the absolute signals for all analytes in the tuning solution must be < 5%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

11. ICP-MS INTERNAL STANDARDS

The analysis of Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) internal standards determines the existence and magnitude of instrument drift and physical interferences. The criteria for evaluation of internal standard results apply to all analytical and Quality Control (QC) samples analyzed during the run, beginning with the calibration.
All samples analyzed during a run, with the exception of the ICP-MS tune, shall contain internal standards. A minimum of five internal standards shall be added to each sample. The laboratory shall monitor the same internal standards throughout the entire analytical run and shall assign each analyte to at least one internal standard. The Percent Relative Intensity (%RI) in the sample shall fall within 60-125% of the response in the calibration blank. If the %RI of the response in the sample falls outside of these limits, the laboratory shall reanalyze the original sample at a two-fold dilution with internal standard added. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

12. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: MERCURY

The current SOP HW-2c (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (28 days) and pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion

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2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for mercury. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curves for mercury shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must fall within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. All sample results shall be reported from an analysis within the calibrated range. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for mercury by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

7. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: CYANIDE

The current SOP HW-2c (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (14 days) and pH (≥12) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for cyanide. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curve for cyanide shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for cyanide by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

7. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 43179
Site: Sea Cliff
Number of Samples: 20 Soil
Analysis: Metals, Hg, CN

SDG No.: MBAM57
Laboratory: DATAC
Sampling dates: 12/11/2012-12/12/2012

QAPP
HWSS #: Not available.
Contractor Document #: Not applicable.

SUMMARY:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings: None

Major Findings: **Metals** Sample MBAM81 has analytes qualified J.

Minor Findings: None

COMMENT: None

Reviewer Name(s): Israel Okwuonu

Approver's Signature: **Date: 01/25/2013**

Name: Muhammad H. Sheikh

Affiliation: USEPA/R2/HWSB/HWSS

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	**Explanation**		
	INORGANICS	**ORGANICS**	**CHLORINATED DIOXIN/FURAN**
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.		
J–	The result is an estimated quantity, but the result may be biased low.		
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		*The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".*	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: METALS ICP-AES

The current SOP HW-2a (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last

analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Sodium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81, MBAM82 MBAM85, MBAMB7, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

Potassium MBAM93

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Sodium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81,MBAM82 MBAM85, MBAMB7, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Sodium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81, MBAM82 MBAM85, MBAMB7, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98,MBAM99

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for

analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

No problems were found for this criterion.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: METALS ICP-MS

The current SOP HW-2b (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Beryllium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81, MBAM82 MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

Antimony MBAM57, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM82, MBAM85, MBAMB7 MBAMC2, MBAMD7, MBAM93, MBAM99

Thallium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81, MBAM82 MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Arsenic MBAM88

Barium MBAM88, MBAM93

Cobalt MBAM88, MBAM93

Beryllium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81 , MBAM82 MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

Antimony MBAM57, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM82, MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM93, MBAM99

Cadmium MBAM82, MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM99

Thallium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81, MBAM82 MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98 , MBAM99

Silver MBAM82, MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98 MBAM99

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Beryllium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81, MBAM82, MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

Antimony MBAM57, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM82, MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM93, MBAM99

Thallium MBAM57, MBAM63, MBAM65, MBAM69, MBAM70, MBAM75, MBAM76, MBAM81, MBAM82 MBAM85, MBAMB7, MBAMC2, MBAMD7, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±2X CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are

observed for analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following Matrix Spike samples have percent recoveries less than 30% and post-digestion spike samples have percent recoveries greater than or equal to 75%. Detected analytes with results greater than or equal to MDLs are qualified J. Non-detected analytes are qualified UJ.

Antimony MBAM81

The following Matrix Spike samples have percent recoveries greater than 125% and post-digestion spike samples have percent recoveries less than or equal to 125%. Detected analytes with results greater than or equal to MDLs are qualified J. Non-detected analytes are not qualified.

Arsenic, Manganese MBAM81

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

The following Duplicate or original sample results are less than or equal to 5xCRQL and the absolute difference between duplicate and original samples are greater than CRQL. The original sample results are greater than or equal to MDLs. Detected analytes are qualified J. Non-detected analytes are qualified UJ.

Arsenic, Vanadium MBAM81

The following Duplicate or original sample results are greater than 5xCRQL and the percent RPD between duplicate and original samples are greater than 35% but less than or equal to 120%. Detected analytes greater than or equal to CRQL are qualified J.

Zinc, Nickel, Lead, Copper MBAM81

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following ICP-MS Serial Dilution (SD) samples have percent difference (%D) greater than 15% and initial sample results are greater than 50xMDLs. The detected analytes in samples with results greater than or equal to MDLs are qualified J. Non-detected analytes in samples are not qualified.

Zinc, Nickel MBAM81

10. ICP-MS TUNE ANALYSIS

The Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) tune serves as an initial demonstration of instrument stability and precision. Prior to calibration, the laboratory shall analyze or scan the ICP-MS tuning solution at least five times (5x) consecutively. The tuning solution contains 100 µg/L of Be, Mg, Co, In, and Pb. The solution shall contain all required isotopes of the above elements. The laboratory shall make any adjustments necessary to bring peak width within the instrument manufacturer's specifications and adjust mass resolution to within 0.1 u over the range of 6-210 u. The Percent Relative Standard Deviation (%RSD) of the absolute signals for all analytes in the tuning solution must be < 5%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

11. ICP-MS INTERNAL STANDARDS

The analysis of Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) internal standards determines the existence and magnitude of instrument drift and physical interferences. The criteria for evaluation of internal standard results apply to all analytical and Quality Control (QC) samples analyzed during the run, beginning with the calibration.
All samples analyzed during a run, with the exception of the ICP-MS tune, shall contain internal standards. A minimum of five internal standards shall be added to each sample. The laboratory shall monitor the same internal standards throughout the entire analytical run and shall assign each analyte to at least one internal standard. The Percent Relative Intensity (%RI) in the sample shall fall within 60-125% of the response in the calibration blank. If the %RI of the response in the sample falls outside of these limits, the laboratory shall reanalyze the original sample at a two-fold dilution with internal standard added. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

12. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: MERCURY

The current SOP HW-2c (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (28 days) and pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for mercury. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curves for mercury shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must fall within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. All sample results shall be reported from an analysis within the calibrated range. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for mercury by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Mercury MBAM63, MBAM69, MBAM81, MBAM85, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Mercury MBAM63, MBAM69, MBAM81, MBAM85, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Mercury MBAM63, MBAM69, MBAM81, MBAM85, MBAM88, MBAM92, MBAM93, MBAM98, MBAM99

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

7. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: CYANIDE

The current SOP HW-2c (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (14 days) and pH (≥12) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for cyanide. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curve for cyanide shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for cyanide by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

7. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 43179
Site: Sea Cliff
Number of Samples: 20 Soil
Analysis: Metals, Hg, CN

SDG No.:MBAMA4
Laboratory: DATAC
Sampling dates: 12/10/2012-12/13/2012

QAPP
HWSS #: Not available.
Contractor Document #: Not applicable.

SUMMARY:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings: None

Major Findings: **Metals** Sample MBAMA4 has analytes qualified J.

Minor Findings: None

COMMENT:	None

Reviewer Name(s): Israel Okwuonu

Approver's Signature: **Date: 01/25/2013**

Name: Muhammad H. Sheikh

Affiliation: USEPA/R2/HWSB/HWSS

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	**Explanation**		
	INORGANICS	**ORGANICS**	**CHLORINATED DIOXIN/FURAN**
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.		
J–	The result is an estimated quantity, but the result may be biased low.		
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		*The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".*	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: METALS ICP-AES

The current SOP HW-2a (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).

The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Sodium MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3, MBAMB4 MBAMB6, MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1, MBAME2 MBAME3, MBAME5

Potassium MBAM60, MBAM78, MBAM86, MBAMB1, MBAMB3, MBAMB4, MBAMB6, MBAMC3 MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME3

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Sodium MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3, MBAMB4, MBAMB6 MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1, MBAME2, MBAME3 MBAME5

Potassium MBAM60, MBAM78, MBAM86, MBAMB1, MBAMB3, MBAMB4, MBAMB6, MBAMC3 MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME3

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Sodium MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3, MBAMB4, MBAMB6 MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1, MBAME2, MBAME3 MBAME5

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

No problems were found for this criterion.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: METALS ICP-MS

The current SOP HW-2b (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Beryllium MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3 MBAMB4, MBAMB6, MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1, MBAME2 MBAME3 , MBAME5

Antimony MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB6 MBAMC3, MBAMC5, MBAMD8, MBAME0, MBAME1, MBAME2, MBAME5

Thallium MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3, MBAMB4 MBAMB6, MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1, MBAME2 MBAME3, MBAME5

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Vanadium MBAMB6, MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAME3

Arsenic MBAM78, MBAMB3, MBAMB4, MBAMB6, MBAMC5, MBAMC6

Cobalt MBAMB4, MBAMB6, MBAMC5, MBAMC6, MBAMC8, MBAME3

Barium MBAM78, MBAMB3, MBAMB4, MBAMB6, MBAMC3, MBAMC6, MBAMC8, MBAME3

Zinc MBAMB6

Beryllium MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3 MBAMB4, MBAMB6, MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1 MBAME2 , MBAME3 , MBAME5

Antimony MBAMA4 , MBAMA4S , MBAMA4D , MBAMA4L , MBAM60 , MBAM64 , MBAM78 MBAM86 MBAM95 , MBAMB1 , MBAMB6 , MBAMC3 , MBAMC5, MBAMD8 , MBAME0 , MBAME1 , MBAME2 MBAME5

Cadmium MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMC3 MBAMC5, MBAMC8, MBAMD8, MBAME0, MBAME1, MBAME2, MBAME5

Thallium MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3 MBAMB4, MBAMB6, MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1 MBAME2, MBAME3, MBAME5

Lead MBAMB4, MBAMB6, MBAMC6

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Zinc MBAMB6

Beryllium MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3 MBAMB4, MBAMB6, MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1 MBAME2, MBAME3, MBAME5

Antimony MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB6 MBAMC3, MBAMC5, MBAMD8, MBAME0, MBAME1, MBAME2, MBAME5

Thallium MBAMA4, MBAM60, MBAM64, MBAM78, MBAM86, MBAM95, MBAMB1, MBAMB3 ,MBAMB4 MBAMB6, MBAMC3, MBAMC5, MBAMC6, MBAMC8, MBAMD8, MBAME0, MBAME1, MBAME2 , MBAME3, MBAME5

Lead MBAMB4, MBAMB6, MBAMC6

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±2X CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following Matrix Spike samples have percent recoveries less than 30% and post-digestion spike samples have percent recoveries greater than or equal to 75%. Detected analytes with results greater than or equal to MDLs are qualified J. Non-detected analytes are qualified UJ.

Antimony MBAMA4

The following Matrix Spike samples have percent recoveries in the range of 30-74% and post-digestion spike samples have percent recoveries less than 75%. Detected analytes with results greater than or equal to MDLs are qualified J-. Non-detected analytes are qualified UJ.

Selenium MBAMA4

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required

Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following ICP-MS Serial Dilution (SD) samples have percent difference (%D) greater than 15% and initial sample results are greater than 50xMDLs. The detected analytes in samples with results greater than or equal to MDLs are qualified J. Non-detected analytes in samples are qualified UJ.

Arsenic, Zinc MBAMA4

10. ICP-MS TUNE ANALYSIS

The Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) tune serves as an initial demonstration of instrument stability and precision. Prior to calibration, the laboratory shall analyze or scan the ICP-MS tuning solution at least five times (5x) consecutively. The tuning solution contains 100 µg/L of Be, Mg, Co, In, and Pb. The solution shall contain all required isotopes of the above elements. The laboratory shall make any adjustments necessary to bring

peak width within the instrument manufacturer's specifications and adjust mass resolution to within 0.1 u over the range of 6-210 u. The Percent Relative Standard Deviation (%RSD) of the absolute signals for all analytes in the tuning solution must be < 5%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

11. ICP-MS INTERNAL STANDARDS

The analysis of Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) internal standards determines the existence and magnitude of instrument drift and physical interferences. The criteria for evaluation of internal standard results apply to all analytical and Quality Control (QC) samples analyzed during the run, beginning with the calibration.
All samples analyzed during a run, with the exception of the ICP-MS tune, shall contain internal standards. A minimum of five internal standards shall be added to each sample. The laboratory shall monitor the same internal standards throughout the entire analytical run and shall assign each analyte to at least one internal standard. The Percent Relative Intensity (%RI) in the sample shall fall within 60-125% of the response in the calibration blank. If the %RI of the response in the sample falls outside of these limits, the laboratory shall reanalyze the original sample at a two-fold dilution with internal standard added. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

12. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: MERCURY

The current SOP HW-2c (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (28 days) and pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for mercury. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curves for mercury shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must fall within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. All sample results shall be reported from an analysis within the calibrated range. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for mercury by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However,

spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

7. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

ANALYSIS: CYANIDE

The current SOP HW-2c (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes

detected in the samples whose holding time (14 days) and pH (≥12) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for cyanide. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curve for cyanide shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for cyanide by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

7. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No. : 43179
Site: Sea Cliff
Number of Samples: 18 Soil, 1 Water
Analysis: Metals, Hg, CN

SDG No.: MBAMC0
Laboratory: DATAC
Sampling dates: 12/10/12-12/18/12.

QAPP
HWSS #: Not available.
Contractor Document #: Not applicable.

SUMMARY:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.
Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated.
Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings: None

Major Findings: Samples MBAMA9, MBAM41 have analytes qualified J.

Minor Findings: None

COMMENT:	None

Reviewer Name(s): Israel Okwuonu

Approver's Signature: **Date: 1/29/2013**

Name: Muhammad Sheikh

Affiliation: USEPA/R2/HWSB/HWSS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	**Explanation**		
	INORGANICS	**ORGANICS**	**CHLORINATED DIOXIN/FURAN**
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.		
J–	The result is an estimated quantity, but the result may be biased low.		
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		*The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".*	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	

DATA ASSESSMENT

ANALYSIS: METALS ICP-AES

The current SOP HW-2a (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).

The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Sodium MBAMC0, MBAME4, MBAME6, MBAM46, MBAM52, MBAM58, MBAMA5, MBAMA9, MBAMC9 MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Potassium MBAMC0, MBAM41, MBAM46, MBAM52, MBAM53, MBAM58, MBAMA9, MBAME8

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Sodium MBAMC0, MBAME4, MBAME6, MBAM46, MBAM52, MBAM58, MBAMA5, MBAMA9, MBAMC9 MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Potassium MBAMC0, MBAM41, MBAM46, MBAM52, MBAM53, MBAM58, MBAMA9, MBAME8

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Sodium MBAMC0, MBAME4, MBAME6, MBAM46, MBAM52, MBAM58, MBAMA5, MBAMA9, MBAMC9 MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Potassium MBAMC0, MBAM41, MBAM46, MBAM52, MBAM53, MBAM58, MBAMA9, MBAME8

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

No problems were found for this criterion.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

The following sample has percent solids less than 50%. Detected results greater than or equal to MDL are qualified J. Non-detected results are qualified UJ.

Aluminum, Calcium, Iron, Magnesium, Potassium, Sodium, MBAM41

ANALYSIS: METALS ICP-MS

The current SOP HW-2b (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples

whose holding time (180 days) or pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated ICB analyte results are greater than or equal to MDLs but less than or equal to CRQLs.

Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Beryllium MBAMA9, MBAMC0, MBAME6, MBAM41, MBAM46, MBAM47, MBAM52, MBAM53, MBAM58 MBAMA5, MBAMC9, MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Antimony MBAMC0, MBAME4, MBAME6, MBAM41, MBAM46, MBAM47, MBAM52, MBAM53, MBAM58 MBAMA5, MBAMC9, MBAME7, MBAME8, MBAME9, MBAMF0

Thallium MBAMA9, MBAMC0, MBAME6, MBAM41, MBAM46, MBAM47, MBAM52, MBAM53, MBAM58 MBAMA5, MBAMC9, MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Silver MBAMA9, MBAMC0, MBAME4, MBAME6, MBAM41, MBAM46, MBAM47, MBAM52, MBAM53 MBAM58, MBAMA5, MBAMC9, MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Lead MBAM46

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

Copper MBAM46, MBAM52

Lead MBAM46

Selenium MBAMA9, MBAMC0, MBAME4, MBAME6, MBAM41, MBAM46, MBAM47, MBAM53 MBAM58, MBAMA5, MBAMC9, MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Cobalt MBAM41, MBAM46, MBAM47, MBAM52, MBAM58

Barium MBAMA9, MBAM46, MBAM52, MBAMD4, MBAME7

Beryllium MBAMA9, MBAMC0, MBAME6, MBAM41, MBAM46, MBAM47, MBAM52, MBAM53, MBAM58 MBAMA5, MBAMC9, MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Antimony MBAMC0, MBAME4, MBAME6, MBAM41, MBAM46, MBAM47, MBAM52, MBAM53 MBAM58 MBAMA5, MBAMC9, MBAME7, MBAME8, MBAME9, MBAMF0

Cadmium MBAMC0, MBAME4, MBAME6, MBAM41, MBAM46, MBAM47, MBAM53, MBAM58, MBAMA5 MBAMC9, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Thallium MBAMA9, MBAMC0, MBAME6, MBAM41, MBAM46, MBAM47, MBAM52, MBAM53, MBAM58, MBAMA5, MBAMC9, MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

Silver MBAMA9, MBAMC0, MBAME4, MBAME6, MBAM41, MBAM46, MBAM47, MBAM52, MBAM53 MBAM58, MBAMA5, MBAMC9, MBAMD4, MBAME7, MBAME8, MBAME9, MBAMF0, MBAMF1

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated preparation blank analyte results are greater than or equal to MDLs but less

than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

Chromium MBAM46

4. **INTERFERENCE CHECK SAMPLE**

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of ± 20% or ±2X CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is ≥ MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following Matrix Spike samples have percent recoveries less than 30% and post-digestion spike samples have percent recoveries greater than or equal to 75%. Detected analytes with results greater than or equal to MDLs are qualified J. Non-detected analytes are qualified UJ.

Antimony MBAMA9

The following Matrix Spike samples have percent recoveries greater than 125% and post-digestion spike samples have percent recoveries less than or equal to 125%. Detected analytes with results greater than or equal to MDLs are qualified J. Non-detected analytes are not qualified.

Manganese MBAMA9

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or

duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

No problems were found for this criterion.

10. ICP-MS TUNE ANALYSIS

The Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) tune serves as an initial demonstration of instrument stability and precision. Prior to calibration, the laboratory shall analyze or scan the ICP-MS tuning solution at least five times (5x) consecutively. The tuning solution contains 100 µg/L of Be, Mg, Co, In, and Pb. The solution shall contain all required isotopes of the above elements. The laboratory shall make any adjustments necessary to bring peak width within the instrument manufacturer's specifications and adjust mass resolution to within 0.1 u over the range of 6-210 u. The Percent Relative Standard Deviation (%RSD) of the absolute signals for all analytes in the tuning solution must be < 5%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

11. ICP-MS INTERNAL STANDARDS

The analysis of Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) internal standards determines the existence and magnitude of instrument drift and physical interferences. The criteria for evaluation of internal standard results apply to all analytical and Quality Control (QC) samples analyzed during the run, beginning with the calibration.
All samples analyzed during a run, with the exception of the ICP-MS tune, shall contain internal standards. A minimum of five internal standards shall be added to each sample. The laboratory shall monitor the same internal standards throughout the entire analytical run and shall assign each analyte to at least one internal standard. The Percent Relative Intensity (%RI) in the sample shall fall within 60-125% of the response in the calibration blank. If the %RI of the response in the sample falls outside of these limits, the laboratory shall reanalyze the original sample at a two-fold dilution with internal standard added. Qualifications were applied to the samples and analytes as shown below.

No problems found for this qualification.

12. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

The following sample has percent solids less than 50%. Detected results greater than or equal to MDL are qualified J. Non-detected results are qualified UJ.

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Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc MBAM41

ANALYSIS: MERCURY

The current SOP HW-2c (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (28 days) and pH (≤2) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for mercury. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curves for mercury shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must fall within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. All sample results shall be reported from an analysis within the calibrated range. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for mercury by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a

matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

7. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

The following sample has percent solids less than 50%. Detected results greater than or equal to MDL are qualified J. Non-detected results are qualified UJ.

Mercury MBAM41

ANALYSIS: CYANIDE

The current SOP HW-2c (Revision 15) December 2012, USEPA Region II Data Validation SOP for Statement of Work ISOM01.2 for evaluating metals data has been applied. Data has been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi-Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time, pH (aqueous samples), or cooler temperature are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (14 days) and pH (≥12) have not been met, will be qualified as estimated, "J"; the non-detects (sample quantitation limits) will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for cyanide. Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be employed to establish the analytical curve. At least one of the calibration standards shall be at or below the Contract Required Quantitation Limit (CRQL). The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The calibration curve for cyanide shall possess a correlation coefficient of ≥ 0.995 to ensure the linearity over the calibrated range. The percent differences calculated for all of the non-zero standards must be within ±30% of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for cyanide by the analysis of an ICV solution(s).
The CCV standard shall be analyzed at a frequency of every hour during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 85 – 115%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

4. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is ≥ 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

No problems were found for this criterion.

5. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

6. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values ≥ five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

7. PERCENT SOLIDS
The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. Qualifications were applied to the samples and analytes as shown below.

The following sample has percent solids less than 50%. Detected results greater than or equal to MDL are qualified J. Non-detected results are qualified UJ.

Cyanide MBAM41

Sea Cliff Site
Targeted Brownfields Assessment
Stage 2A Data Evaluation Worksheet

Sample Delivery Group (SDG) Number:	NL18009
Laboratory:	Shealy Environmental Services, Inc.
Matrix:	Sediment
Collection date:	17-DEC-2012, 18-DEC-2012
Analysis/Methods:	Hexavalent Chromium
	% Solids
Report Date:	09-JAN-2013

Samples in SDG:

Station Location	Shealy Sample ID
TP-100-B	NL18009-001
TP-100-SS	NL18009-002
TP-101-B	NL18009-003
TP-101-SS	NL18009-004
TP-102-B	NL18009-005
TP-102-SS	NL18009-006
TP-105-BR	NL18009-007
TP-111-B	NL18009-008
TP-111-SS	NL18009-009
TP-115-B	NL18009-010
TP-115-FL	NL18009-011
TP-115-SS	NL18009-012
TP-116-B	NL18009-013
TP-116-SS	NL18009-014
TP-911-SS	NL18009-015

Validation was performed in accordance with the Targeted Brownfields Assessment at the Lighthouse Pointe Site QAPP, EPA Method 7196, EPA Method 3060A, and The EPA inorganic functional guidelines.

Precision:	**Yes**	**No**	**N/A**
Were the Field Duplicate relative percent differences (RPD) ≤ 100% for samples > 5x sample reporting limit (RL) for detected samples?			**N/A**
Is absolute difference (ABS) between Field Duplicates <5x RL when only one sample detected?			**N/A**
Is the RPD between the matrix spike (MS) and matrix spike duplicate (MSD) < 40%?		**No**	

Comments (note deviations):

Matrix Spike	MS % Recovery	MSD % Recovery	RPD	Qualifiers	Associated Samples
TP-116-SS	-81	-41	200%	**J**	All

Color blanks were used to correct for absorbance due to extract color for the sample, MS, and MSD. Both the MS and MSD had negative sample results due to apparent overcompensation of color blank correction. This may have been caused by slight variations in turbidity or highly colored digestate solutions, possibly due to sample non-homogeneity.

Accuracy:	**Yes**	**No**	**N/A**
Was the ICAL criteria met?			
A minimum of three calibration standards and a blank?	**Yes**		
Was the correlation coefficient ≥ 0.995?	**Yes**		
Were the ICV and CCV standard within control limits?	**Yes**		
Were the ICB and CCB standards < PQL?	**Yes**		
Were the Laboratory Method Blank results all < PQL?	**Yes**		
Were the Trip Blanks/Field Blanks results all < PQL?			**N/A**
Was the Laboratory Control Sample within 80-120 % recovery?	**Yes**		
Were the Matrix Spike and Matrix Spike Duplicate recoveries 75-125 %.		**No**	
Was a post digestion spike performed?	**Yes**		
Was the qualitation goal of 0.29 mg/kg met?		**No**	
If total chromium was analyzed on the same samples, were hexavalent results less than total chromium results?	**Yes**		

Comments (note deviations):

Matrix Spike

	Sample Result (mg/kg)	Spike Added (mg/kg)	% Recovery	Qualifiers	Associated Samples
TP-111-B					
MS	0.27U	4.3	57%	**J/UJ**	All
MSD	0.27U	4.3	58%	**J/UJ**	All

All sample results were qualfied as estimated values.

	Sample Result (mg/kg)	Spike Added (mg/kg)	% Recovery	Qualifiers	Associated Samples
TP-116-SS					
MS	4.1	5.1	-81%	**J/UJ**	All
MSD	4.1	5.1	-41%	**J/UJ**	All

All sample results were qualfied as estimated values.

Post Digestion Spike	% Recovery	Recovery Limits	Qualifiers
TP-101-B	89%	85-115%	None

A post digestion spike was performed on a sample in the analytical batch, demostrating that the matrix was compatible with hexavalent chromium. No furthur qualification was required on the basis of matrix spike recoveries.

Quantitation Goal

The calculated MDL for most of the samples was above the quantiation goal of 0.29 mg/kg. The highest reported MDL was 0.64 mg/kg.

Negative Results

	Sample Raw Result (mg/L)	Calculated Sample Result (mg/kg)	Color Blank	Qualifiers
TP-100-SS	-0.622	-26.9	Yes	**R**
TP-101-B	-0.025	-1.20	No	**None**
TP-102-SS	-0.478	-26.9	Yes	**R**
TP-111-SS	-0.074	-3.67	Yes	**R**
TP-911-SS	-0.027	-1.33	Yes	**R**

Several samples had negative raw sample results (prior to calculations in terms of mg/kg). These negative values resulted in negative calculated concentrations in mg/kg in excess of the MDLs and in most cases greater than the negative PQL. The samples calculated to be greater than the negative PQL were rejected, due to apparant problems with color blank correction.

Representativeness:	**Yes No N/A**
Were sampling procedures and design criteria met?	**Yes**
Were holding times met?	**Yes**
Was preservation criteria met? (4 ± 6 °C)	**Yes**
Were Chain-of-Custody records complete and provided in data package?	**Yes**

Comments (note deviations):

Sample ID Discrepancy

Sample ID COC	**Sample ID Data Package and EDD**
TP-115-B	TP-115B
TP-115-FL	TP-115FL
TP-115-SS	TP-115SS
TP-116-B	TP-116B

"-'s" were inadvertently omitted from the sample ID's and on the Form 1s and EDD. These corrections have been made.

Comparability:	**Yes No N/A**
Were analytical procedures and methods followed as defined in the QAPP or field change documentation?	**Yes**

Comments (note deviations):

Completeness (90%):	**Yes No N/A**
Are all data in this SDG usable?	**No**

Comments (note deviations):

Hexavlaent chromium results were rejected for four of the 15 samples. **Completeness was 73%**

Sensitivity:	**Yes**	**No**	**N/A**
Are MDLs present and reported?	**Yes**		
Do the reporting limits meet project requirements?		**No**	

Comments (note deviations):

See quatitation goal above.

Data Validator: Jeanne Shoulder Date: 2/8/2013

Data Reviewer: Scott Kirchner Date: 2/12/2013

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)** Laboratory ID: **NL18009-001**
Description: **TP-100-B** Matrix: **Solid**
Date Sampled: **12/17/2012 0850** % Solids: **92.4** **12/19/2012 0047**
Date Received: **12/18/2012**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**0.64**	**J**	**1.1**	**0.27**	**mg/kg**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)** Laboratory ID: **NL18009-002**

Description: **TP-100-SS** Matrix: **Solid**

Date Sampled: **12/17/2012 0845** % Solids: **39.3** **12/19/2012 0047**

Date Received: **12/18/2012**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	18540-29-9	7196A	ND	R	2.5	0.64	mg/kg	1

2/8/13

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
Q = Surrogate failure
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
L = LCS/LCSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
S = MS/MSD failure

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-101-B**
Date Sampled: **12/17/2012 0945**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-003**
Matrix: **Solid**
% Solids: **82.0** **12/19/2012 0047**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	18540-29-9	7196A	~~ND~~	UJ	1.2	0.31	mg/kg	1

QA 2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-101-SS**
Date Sampled: **12/17/2012 0935**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-004**
Matrix: **Solid**
% Solids: **57.3** **12/19/2012 0047**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**23**	J	**1.7**	**0.44**	**mg/kg**	**1**

2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-102-B**
Date Sampled: **12/17/2012 1055**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-005**
Matrix: **Solid**
% Solids: **87.1** **12/19/2012 0047**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**0.90**	**J**	**1.1**	**0.29**	**mg/kg**	**1**

2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-102-SS**
Date Sampled: **12/17/2012 1045**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-006**
Matrix: **Solid**
% Solids: **70.6** **12/19/2012 0047**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	18540-29-9	7196A	~~ND~~	R	1.4	0.36	mg/kg	1

2/18/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-105-BR**
Date Sampled: **12/17/2012 1400**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-007**
Matrix: **Solid**
% Solids: **87.5** **12/19/2012 0047**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**0.32**	**J**	**1.1**	**0.29**	**mg/kg**	**1**

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)** Laboratory ID: **NL18009-008**

Description: **TP-111-B** Matrix: **Solid**

Date Sampled: **12/17/2012 0900** % Solids: **93.0** **12/19/2012 2324**

Date Received: **12/18/2012**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	18540-29-9	7196A	~~ND~~	UJ	1.1	0.27	mg/kg	1

2/8/13
2/13/13
QA

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
Q = Surrogate failure
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
L = LCS/LCSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
S = MS/MSD failure

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-111-SS**
Date Sampled: **12/17/2012 0850**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-009**
Matrix: **Solid**
% Solids: **80.4** **12/19/2012 2324**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	18540-29-9	7196A	~~ND~~	R	1.2	0.31	mg/kg	1

2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: ~~**TP-115B**~~ TP-115-B
Date Sampled: **12/17/2012 1200**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-010**
Matrix: **Solid**
% Solids: **91.0** **12/19/2012 2324**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**0.52**	**J**	**1.1**	**0.28**	**mg/kg**	**1**

2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-115FL** JA 2/8/13 TP-115-FL
Date Sampled: **12/17/2012 1210**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-011**
Matrix: **Solid**
% Solids: **84.4** **12/19/2012 2324**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**0.80**	**J**	**1.2**	**0.30**	**mg/kg**	**1**

JA 2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-115SS** JA 2/8/13 TP-115-SS
Date Sampled: **12/17/2012 1130**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-012**
Matrix: **Solid**
% Solids: **80.7** **12/19/2012 2324**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/09/2013 0900	WKC	01/08/2013 1500	11418

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**2.1**	J	**1.2**	**0.31**	**mg/kg**	**1**

JA 2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: ~~**TP-116B**~~ 2/8/13 TP-116-B
Date Sampled: **12/17/2012 1400**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-013**
Matrix: **Solid**
% Solids: **90.0** **12/19/2012 2324**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**1.1**	J	**1.1**	**0.28**	**mg/kg**	**1**

2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)**
Description: **TP-116-SS**
Date Sampled: **12/17/2012 1330**
Date Received: **12/18/2012**

Laboratory ID: **NL18009-014**
Matrix: **Solid**
% Solids: **79.0** **12/19/2012 2324**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	**18540-29-9**	**7196A**	**4.1**	~~S~~ J	**1.3**	**0.32**	**mg/kg**	**1**

2/8/13

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
B = Detected in the method blank
J = Estimated result < PQL and ≥ MDL
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
H = Out of holding time
N = Recovery is out of criteria
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Inorganic non-metals

Client: **CDM Federal Programs (CDM Smith)** Laboratory ID: **NL18009-015**

Description: **TP-911-SS** Matrix: **Solid**

Date Sampled: **12/17/2012 0850** % Solids: **80.8** **12/19/2012 2324**

Date Received: **12/18/2012**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3060A	(Hexavalent C) 7196A	1	01/08/2013 1630	WKC	01/08/2013 0900	11328

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Hexavalent Chromium	18540-29-9	7196A	~~ND~~	R	1.2	0.31	mg/kg	1

2/8/13

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
Q = Surrogate failure
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
L = LCS/LCSD failure
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"
S = MS/MSD failure

APPENDIX B

MONITORING WELL LOGS AND FIELD NOTES FOR WELLS AND WELL POINTS

Well Completion Log

Client Saeid Jalayer | **Well ID** MW-4

Project Seacliff | **Location** Seacliff, NY | **Project No.** 130451.0

CORNERSTONE
Engineering and Land Surveying, PLLC

Drilling

Drilling Contractor: Associated Environmental Services, Ltd.
Drilled by: John Shretzmayer
Logged by:
Drill Rig: Geoprobe
Drilling Method: Hollow Stem Auger

Start Date: 3/4/2013 12:00:00 AM
Completion Date: 3/4/2013 12:00:00 AM
Borehole Depth (ft bgs): 15.0
Borehole Dia. (in): 6.0

Sample Method: Slipt Spoon

Northing: 732187.7
Easting: 726527.4
Surface Elev. (ft): 9.3
TOC Elev. (ft): 12.4
DTP (ft. btoc):
DTW (ft. btoc): 6.7
* DTP & DTW measured after well development

Well

Well Depth (ft bgs): 15.0
Casing Type: PVC
Casing Dia. (in): 2.0
Screen Type: PVC
Slot Size (in): 0.01
Development:

Notes:
Monitoring Well Installation and Oversight Performed by:
Associated Environmental Services, Ltd.

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
0			10in Protective Casing; 6in Cement; 6in Bentonite		GROUND SURFACE	
				SW	SAND/Fill	
5				SW	C SAND	
			6in Filter Pack			
10				SW	C SAND	
15						

Well Completion Log

Client Saeid Jalayer | **Well ID** MW-1

Project Seacliff | **Location** Seacliff, NY | **Project No.** 130451.0

CORNERSTONE
Engineering and Land Surveying, PLLC

Drilling

Drilling Contractor	Associated Environmental Services, Ltd.	Start Date	3/1/2013 12:00:00 AM
Drilled by	John Shretzmayer	Completion Date	3/1/2013 12:00:00 AM
Logged by		Borehole Depth (ft bgs)	75.0
Drill Rig	D-120	Borehole Dia. (in)	6.0
Drilling Method	Hollow Stem Auger		
Sample Method	Slipt Spoon		

Northing	732211.4
Easting	726806.2
Surface Elev. (ft)	69.1
TOC Elev. (ft)	68.9
DTP (ft. btoc)	
DTW (ft. btoc)	58.0

* DTP & DTW measured after well development

Well

Well Depth (ft bgs)	70.5
Casing Type	PVC
Casing Dia. (in)	2.0
Screen Type	PVC
Slot Size (in)	0.01
Development	

Notes:
Monitoring Well Installation and Oversight Performed by:
Associated Environmental Services, Ltd.

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
					GROUND SURFACE	
	0		10in → Protective Casing	SM	Brown Silty SAND	
5	0		6in → ← Cement	SM	Brown Silty SAND	
10	0			SM	Brown Silty MC Silty Sand with pebbles	
15				SW	Brown m SAND with pebbles	

Well Completion Log

Client Saeid Jalayer **Well ID** MW-1

Project Seacliff **Location** Seacliff, NY **Project No.** 130451.0

CORNERSTONE Engineering and Land Surveying, PLLC

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
	0			SW	Brown m SAND with pebbles	
20	0			SM	Brown Silty SAND, small pebbles	
25	0		6in → ← Cement	SW	Brown m SAND, some small round pebbles	
30	0			SW	Brown mc SAND, med pebbles	
35				SW	Brown m SAND	

Well Completion Log

Client Saeid Jalayer **Well ID** MW-1

Project Seacliff **Location** Seacliff, NY **Project No.** 130451.0

CORNERSTONE
Engineering and Land Surveying, PLLC

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
40	0			SW	Brown m SAND	
				SW	Reddish-brown m SAND, small pebbles	
45	0		6in → Cement	SW	m SAND, interbedding of Brown Sand	
50	0			SW	Brown mc SAND	
55	0		6in → Bentonite 6in → Filter Pack	SW	Brown mc SAND	

Well Completion Log

Client Saeid Jalayer **Well ID** MW-1

Project Seacliff **Location** Seacliff, NY **Project No.** 130451.0

CORNERSTONE
Engineering and Land Surveying, PLLC

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
60	0		6in → ← Filter Pack	SW	Brown mc SAND	
				SW	Brown c SAND	
65	0			CL	Silty CLAY, Clay	
70	0			CL	CLAY, Trace Silt	
75						

Well Completion Log

Client Saeid Jalayer | **Well ID** MW-2

Project Seacliff | **Location** Seacliff, NY | **Project No.** 130451.0

CORNERSTONE
Engineering and Land Surveying, PLLC

Drilling

Drilling Contractor	Associated Environmental Services, Ltd.	Start Date	3/4/2013 12:00:00 AM
Drilled by	John Shretzmayer	Completion Date	3/4/2013 12:00:00 AM
Logged by		Borehole Depth (ft bgs)	40.0
Drill Rig	Geoprobe	Borehole Dia. (in)	6.0
Drilling Method	Hollow Stem Auger		
Sample Method	Slipt Spoon		

Northing	731929.8
Easting	726781.1
Surface Elev. (ft)	39.6
TOC Elev. (ft)	42.8
DTP (ft. btoc)	
DTW (ft. btoc)	38.3

* DTP & DTW measured after well development

Well

Well Depth (ft bgs)	45.0
Casing Type	PVC
Casing Dia. (in)	2.0
Screen Type	PVC
Slot Size (in)	0.0
Development	

Notes:
Monitoring Well Installation and Oversight Performed by:
Associated Environmental Services, Ltd.

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
0			10in → Protective Casing		GROUND SURFACE	
	0			ML	Topsoil Grading to SILT	
5			6in → ← Cement	ML	SILT grading to CLAY	
	0					
10				CL	Tan CLAY grading to SAND and decayed/pulverized rock	
	0					

Well Completion Log

Client Saeid Jalayer **Well ID** MW-2

Project Seacliff **Location** Seacliff, NY **Project No.** 130451.0

CORNERSTONE
Engineering and Land Surveying, PLLC

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
15	0			CL	Tan CLAY grading to SAND and decayed/pulverized rock	
				SW	Tan m Gravelly SAND	
20	0		6in → Cement			
25	0			ML	Tan SILT	
30	1		6in → Bentonite	SW	Tan m SAND	

Well Completion Log

Client Saeid Jalayer **Well ID** MW-2

Project Seacliff **Location** Seacliff, NY **Project No.** 130451.0

CORNERSTONE
Engineering and Land Surveying, PLLC

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
35	0		Bentonite	SW	Tan m SAND	
				SW	Tan c SAND	
40			6in Filter Pack			
45						
50						
55						

Well Completion Log

Client Saeid Jalayer | **Well ID** MW-3

Project Seacliff | **Location** Seacliff, NY | **Project No.** 130451.0

CORNERSTONE Engineering and Land Surveying, PLLC

Drilling

Drilling Contractor	Associated Environmental Services, Ltd.	Start Date	3/4/2013 12:00:00 AM
Drilled by	John Shretzmayer	Completion Date	3/4/2013 12:00:00 AM
Logged by		Borehole Depth (ft bgs)	25.0
Drill Rig	Geoprobe	Borehole Dia. (in)	6.0
Drilling Method	Hollow Stem Auger		
Sample Method	Slipt Spoon		

Northing	731975.6
Easting	726535.1
Surface Elev. (ft)	17.7
TOC Elev. (ft)	20.3
DTP (ft. btoc)	
DTW (ft. btoc)	18.1

* DTP & DTW measured after well development

Well

Well Depth (ft bgs)	25.5
Casing Type	PVC
Casing Dia. (in)	2.0
Screen Type	PVC
Slot Size (in)	0.0
Development	

Notes:

Monitoring Well Installation and Oversight Performed by:
Associated Environmental Services, Ltd.

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
					GROUND SURFACE	
0			10in → Protective Casing	ML	Fill, Silt grading to m SAND	
5			6in → Cement	SW	Sand grading to Ash @ 7'	
10			6in → Bentonite	SW	Ash, changing to Tan m SAND @ 13'	

Well Completion Log

Client Saeid Jalayer **Well ID** MW-3

Project Seacliff **Location** Seacliff, NY **Project No.** 130451.0

CORNERSTONE
Engineering and Land Surveying, PLLC

DEPTH (ft)	PID (ppm)	REC (ft)	WELL DETAILS	USCS SOIL TYPE	SOIL / ROCK DESCRIPTION	REMARKS
15			Bentonite	SW	Ash, changing to Tan m SAND @ 13'	
				SW	M SAND, some Ash @17'	
			6in Filter Pack	SW	C Gravelly SAND	
20				SW	Brown c SAND grading to m SAND	
25						
30						

CURVE FORMULAS

$T = R \tan \frac{1}{2} I$

$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$

$\text{Sin. } \frac{1}{2} D = \frac{50}{R}$

$\text{Sin. } \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$

$R = T \text{ cot. } \frac{1}{2} I$

$R = \frac{50}{\text{Sin. } \frac{1}{2} D}$

$E = R \text{ ex. sec } \frac{1}{2} I$

$E = T \tan \frac{1}{4} I$

$\text{Chord def.} = \frac{\text{chord}^2}{R}$

$\text{No. chords} = \frac{I}{D}$

$\text{Tan. def.} = \frac{1}{2} \text{ chord def.}$

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

RIGHT ANGLE TRIANGLES. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. $10.10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. $25.25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875 =$ Base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

LEVELING. The correction for curvature and refraction, in feet and decimals of feet is equal to $0.574\,d^2$, where d is the distance in miles. The correction for curvature alone is closely, $\frac{2}{3}d^2$. The combined correction is negative.

PROBABLE ERROR. If d_1, d_2, d_3, etc. are the discrepancies of various results from the mean, and if Σd^2 = the sum of the squares of these differences and n = the number of observations, then the probable error of the mean $= \pm 0.6745 \sqrt{\frac{\Sigma d^2}{n(n-1)}}$

MINUTES IN DECIMALS OF A DEGREE

1′	.0167	11′	.1833	21′	.3500	31′	.5167	41′	.6833	51′	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

1-16	3-32	⅛	3-16	¼	5-16	⅜	½	⅝	¾	⅞
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

3/1/13

Friday P/Sunny 40's

Arrived @ site 845 am

0920 Set R.G up on MW-1 (0-120 PPT)

Hand Cleared to 5ft bls

PID

0.1 0-5 – No odor staining - Brown silty Sand w/ some pebbles

0.2 5-10 – SAB

0.1 10-15 – Med/coarse sand Brown w/ angular pebbles

0.0 15-20 – ~~SAB~~ med sand Brown

0.2 20-25 – Silty Sand Brown small angular pebbles

0.0 25-30 Brown Med Sand some sm rounded pebbles

0.0 30-35 med/coarse sand Brown ~~mud~~ med pebbles

0.0 35-40 Mud and Brown/light Brown

0.0 40-45 med sand Reddish brown/Brown sm pebbles

0.0 45-50 Mpebbly med sand interbedded Brown/light brown fine to med sand

0.0 50-55 SAB but med/coarse sand

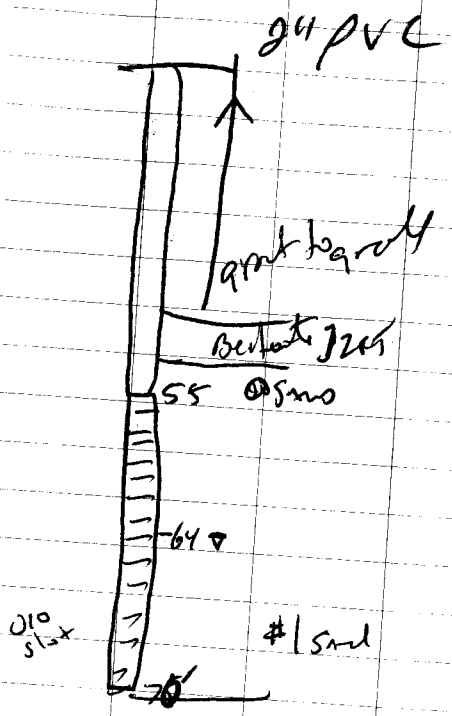
0.0 55-60 SAB

0.0 60-65 SAB Coarse sand above → Water @ 64' 1130am gray sandstone some silt/sand

0.0 65-70 Silty clay, clay

0.0 70-75 Clay w/ silt (trace)

well construction



MON 3/4

MW-2 GEOPROBE

0-5 POOR RECOVERY TOPSOIL GRADING TO SILT. NO ODOR

5-10 SILT GRADING TO CLAY, SILT WET. NO ODOR/STAINS

10-15 TAN CLAY GRADING TO SAND AND DECAYED/PULVERIZED ROCK (FILL?)

15-20 POOR RECOVERY (1 FOOT) TAN, MED GRAINED GRAVELLY SAND. MOIST, NO ODOR

20-25 NO RECOVERY. OUTSIDE OF DUAL TUBE WET. PULLED OUT, WENT BACK IN, SAW SAND HEAVE IN HOLE (WET) FROM 20-25

25-30 SILT (TAN), MOIST, NO ODOR (MED SAND IN TIP)

30-35 TAN - MED SAND, NO ODOR

35-40 POOR RECOVERY, TAN, COARSE SAND, WET

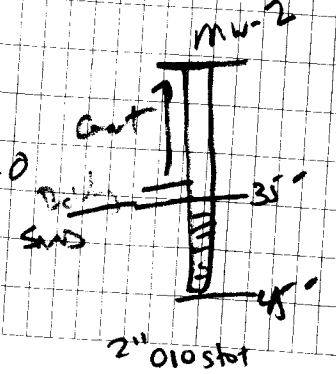
PID

15-20 .3 PPM

25-30 .3 "

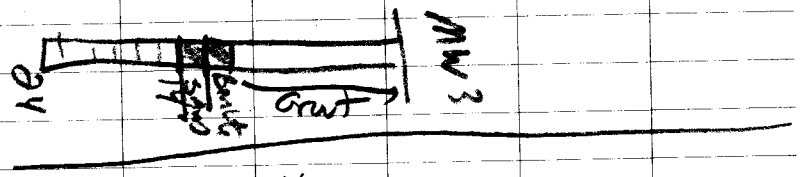
30-35 .6

ALL OTHERS 0.0



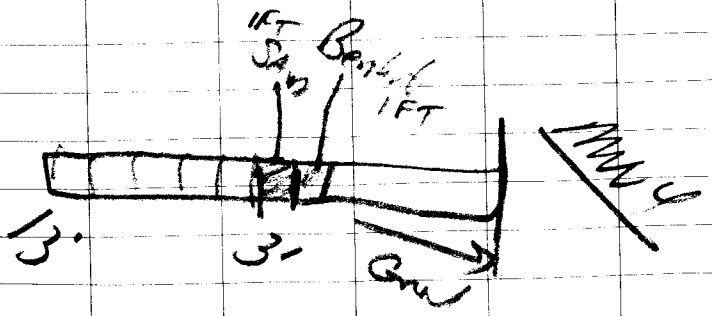
MW-3 3/4

0-5	FILL SILT GRADING TO MED. SAND NO ODOR
5-10	SAND GRADING TO ASH AT 7'
10-15	ASH (MOIST) TO @ 13' CHANGE TO MED TAN SAND
15-20	MED SAND 15-17, SOME ASH AT 17
H_2O →	17-20 COARSE GRAVELLY SAND, WET
20-25	COARSE SAND TO 21, MED GRAINED BROWN SAND TO 25.



MW-4

0-5	SAND/FILL NO STAIN OR ODOR WET AT 31
5-10	COARSE SAND " "
10-15	Some



3/19

WPD-4 Screen 26-30 GW @ 8
ARTESIAN CONDITIONS
FINISHED 11 AM

WPD-5 Set 26-30, NO WATER (CLAY) RAISED TO 24-28
FINISHED 12:20

WPD-6 - ON ACCESS ROAD, NEAR MW-3 G.W. EST. AT 17 BG, SET SCREEN 36-40
FINISHED 2:00

WP-1 COULD NOT BE INSTALLED AS PER MAP (NO ACCESS) MOVED WEST. ELEVATION @ 30 FT. (PER DRAWING) ABOUT 35' TO WATER. SET SCREEN 36-40 FINISHED 3:10

WP-2 EST. 35 feet above Road, set screen at 47-43
FINISHED 4:20

WP-3 EST 45 feet above Road EST DTW @ 53 SET SCREEN 55-59
NO WATER (CLAY) PULL UP TO 52-56, GOOD
FINISH 5:30

APPENDIX C

SOIL GAS SAMPLING WORK PLAN AND FIELD NOTES

SOIL GAS SURVEY WORK PLAN
& PROJECT SCHEDULE
FOR
34 WOODRIDGE LANE
(LOTS 38, 81, 148, 149, and 150)
SEA CLIFF, NEW YORK
REVISED 6-24-13

Prepared for
Saeid Jalayer
Shoreham, New York

Prepared by:

CORNERSTONE
Engineering and Land Surveying, PLLC

90 Crystal Run Road, Suite 201
Middletown, NY 10941

June 2013

Project
130451

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Figure 1-1. Location of Proposed Soil Gas Survey Locations

1 SOIL GAS SURVEY SCOPE OF WORK & SCHEDULE

1.1 Soil Gas Survey

Based on NYSDEC's conditional approval letter of May 20, 2011, for the Site's Draft Remedial Investigation Work Plan, in which the Department requested that a soil gas survey be conducted on the Site, a revised RIWP was submitted to NYSDEC. Following the 30-day public comment period, the RIWP received final approval from NYSDEC on July 14, 2011. The approved RIWP stated that the soil gas survey would be conducted following the soils investigation. The CDM Smith report "Final Phase II Environmental Site Assesssment Report" dated May 14, 2013, details the results and conclusions of the test pit soil investigation that was conducted in December 2012. In addition, the groundwater investigation has also recently been completed, with laboratory analytical reports for the groundwater collected from the Site's temporary and permamant monitoring wells dated March 29, 2013.

The soil gas survey will be conducted according to NYSDEC DER-10 Section 3.6 and NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006). NYSDEC's conditional approval letter of May 20, 2011 requested that the soil gas survey include monitoring of gases typically generated from landfill activities such as methane and hydrogen sulfide, to provide information on the soil atmosphere in the vadose zone on contaminants associated with land filling. Per NYSDOH Guidance Section 2.6.1, proposed soil gas sample locations are based on a review site soil and groundwater data, as well as based on the overall purpose of the sampling. Based on the results of the test pit soil sampling and groundwater sampling from the Site's temporary and permanent monitoring wells, five (5) locations have been proposed. The proposed locations, presented in Figure 1-1, have been overlain on CDM Smith's Figure 2-3 from their May 2013 Phase II Report. Soil gas sample locations SG-1 and SG-2 are in the vicinity of groundwater monitoring wells MW-1 and MW-3, which detected very low concentrations of chlorinated organic compounds in the March 2013 sampling event. While all VOC groundwater sampling results were below applicable NYSDEC criteria, two (2) soil gas sampling locations are proposed to investigate the vadose zone soil vapor in these areas. Soil gas sample locations SG-3 through SG-5 are located in areas where test pits encountered construction debris, with or without coal ash. Location SG-2 is also located in an area of mixed ash and construction debris fill.

To evaluate the potential for future exposures if development on a known or suspected contaminated area is possible, representative soil gas samples will be collected from a depth of approximately eight (8) feet, comparable to the expected depth of foundation

footings. In addition, depths great than 5 feet below grade are recommended in Section 2.6.1 of the NYSDOH Guidance to prevent negative bias due to infiltraton of outdoor air. Geoprobe drilling performed by Zebra Environmental of Lynbrook, NY will be utilized to install temporary soil gas sampling points. Per NYSDOH Guidance Section 2.7.1, the temporary soil gas probes will be constructed in the same manner at each location. Using the direct push method, a 2.25-inch casing will be driving to 8 feet. The six-inch soil vapor point attached to Teflon tubing is dropped into the casing, and clean sand is added into the casing. The casing is pulled out, and approximately 3 feet of bentonite slurry is added above the sand as a surface seal. The depth of the soil gas probe and bentonite seal should ensure that there is no ambient are infiltration. In addition, a tracer gas (helium) will be used at each location per Section 2.7.5 to verify infiltration of outdoor air is not occurring.

Sampling protocols will follow those presented in NYSDOH Guidance Section 2.7.1., and will include use of a tracer gas (helium) per Section 2.7.5. A helium leak detector (MGD – 2002) will be utilized to provide real time monitoring of tracer gas.

Sampling will be initiated shortly after installation, with approximately three volumes of sample probe and tube purged prior to sampling. Purge volume calculations will be confirmed in the field, but based on an estimated 14 feet of 0.25" ID tubing, and a purge rate of 0.2 liters/minute, purging is estimated to take 2 minutes. Samples will be collected into Tedlar bags and measured for the presence of the tracer gas with the helium leak detector (MGD-2002). Should the tracer gas sampling detect helium at greater than 10%, no sample will be collected, and the inverted bucket seal and all fittings will be checked for tightness. Should a repeat of the test still indicate helium at greater than 10%, a tarp will be placed over the ground, around the probe, and the tracer gas sampling repeated. If again helium is found greater than 10%, the need to install a new vapor probe will be evaluated.

Once helium testing indicates that less than 10% helium is detected, VOC and methane samples will be collected in laboratory–supplied Summa canisters, and the hydrogen sulfide samples will be collected in Tedlar bags. To achieve necessary volumes and detection limits for VOCs using Method TO-15 and Methane by EPA 3C, samples will be collected into 6-liter Summa canisters. Summa canister vacuum readings will be recorded at the beginning and ending of sampling. With a required flow rate not to exceed 0.2 liters per minute, the sample collection time is estimated at 30 minutes. Appendix A lists the method detection limits and reporting limits for the VOCs using Method TO-15.

Samples will be analyzed for VOCs using Method TO-15, Methane using EPA 3C, and Hydrogen Sulfide using EPA 15_16. Soil vapor samples will be shipped to TestAmerica of South Burlington, Vermont for methane and VOC analysis, and TestAmerica of Sacramento, California for hydrogen sulfide analysis.

Following completion of sample collection activities, the soil gas probes will be removed and the hole sealed. A flag will be placed at the location of each of the soil gas samples. The locations will be surveyed along with the elevations and locations of the permanent monitoring wells within a week after the scheduled sampling.

1.2 Project Schedule

The soil gas survey is anticipated to be conducted on or about June 5th, 2013, baring any weather or equipment-related delays. Soil gas samples will be submitted to TestAmerica with standard turnaround time reporting. Following receipt of the soil gas analytical data package, the remaining work items identified by NYSDEC in their letter of February 28, 2013 can be completed.

The following is a schedule to complete the remaining Remedial Investigation Phase work items:

Soil Gas Survey: Conduct Soil Gas Survey on or about June 5th, 2013. Final analytical data from TestAmerica anticated to be received on or by July 8th, 2013.

Monitoring Well and Soil Gas Locations Survey: Elevation and location surveying of the four permanent groundwater monitoring wells and the five soil gas survey locations will be conducted on or about June 10th, 2013.

Fish and Wildlife Resources Impact Analysis (FWRIA): The FWRIA will be conducted in accordance with DER-10 and Section 3.3 of the approved RIWP. Per DER-10 Section 3.14, the RI Report will include the results of the FWRIA.

Qualitative Exposure Assessment: The Qualitative Human Health Exposure Assessment will be conducted in accordance with DER-10 and Section 3.4 of the approved RIWP. Per DER-10 Section 3.14, the RI Report will include the results of the qualitative human health exposure assessment.

Remedial Investigation Report: The NYSDEC February 23, 2013 letter states that the RI Report will be prepared 30 days after the receipt of all analytical results. The analytical results for the soil gas survey, the last planned field samping event, are antipated to be received by July 8th, 2013. Cornerstone antipates being able to complete the RI Report and submit to NYSDEC by August 8, 2013.

As NYSDEC is aware though, work required by the approved RIWP was conducted by consultants other than Cornerstone, including work conducted under a USEPA Targeted Brownsfield Assessment Program. In order for Cornerstone to complete the RI Report in accordance with Chapter 3 of DER-10, Cornerstone must be able to acquire the results of the investigations completed by other consultants. Cornerstone will be contacting the previous consultants for this information, and while every attempt will be made to work around any delays in receipt of this information, should any pertinent data found to be missing, NYSDEC will be notified if additional time is warranted. Cornerstone understands that NYSDEC has granted Mr. Jalayer certain extensions, and is anxious to have the remedial investigation completed. We believe that given the remaining tasks, that Cornerstone's proposed schedule meets the intent to complete the remaining work items as soon as is reasonably possible.

LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client and the New York State Department of Environmental Conservation (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

FIGURES



Figure 2-3
Estimated Extent of Coal Ash Fill
Sea Cliff Site
Targeted Brownfields Assessment
Village of Sea Cliff, NY

CDM Smith

FIGURE 1-1

APPENDIX A

LABORATORY DETECTION LIMITS AND REPORTING LIMITS FOR TO-15 VOC ANALYSES

Analyte	CAS Number	RLs (ug/m3)	MDLs (ug/m3)
1,1,1-Trichloroethane	71-55-6	1.1	0.11
1,1,2,2-Tetrachloroethane	79-34-5	1.4	0.076
1,1,2-Trichloroethane	79-00-5	1.1	0.087
1,1-Dichloroethane	75-34-3	0.81	0.093
1,1-Dichloroethene	75-35-4	0.79	0.34
1,2,4-Trichlorobenzene	120-82-1	3.7	0.22
1,2,4-Trimethylbenzene	95-63-6	0.98	0.1
1,2-Dibromoethane	106-93-4	1.5	0.11
1,2-Dichlorobenzene	95-50-1	1.2	0.16
1,2-Dichloroethane	107-06-2	0.81	0.073
1,2-Dichloropropane	78-87-5	0.92	0.11
1,2-Dichlorotetrafluoroethane	76-14-2	1.4	0.14
1,3,5-Trimethylbenzene	108-67-8	0.98	0.093
1,3-Butadiene	106-99-0	0.44	0.055
1,3-Dichlorobenzene	541-73-1	1.2	0.11
1,4-Dichlorobenzene	106-46-7	1.2	0.11
1,4-Dioxane	123-91-1	18	0.25
2,2,4-Trimethylpentane	540-84-1	0.93	0.07
2-Chlorotoluene	95-49-8	1	0.067
3-Chloropropene	107-05-1	1.6	0.15
4-Ethyltoluene	622-96-8	0.98	0.074
4-Isopropyltoluene	99-87-6	1.1	0.11
Acetone	67-64-1	12	0.95
Benzene	71-43-2	0.64	0.058
Benzyl chloride	100-44-7	1	0.11
Bromodichloromethane	75-27-4	1.3	0.08
Bromoethene(Vinyl Bromide)	593-60-2	0.87	0.083
Bromoform	75-25-2	2.1	0.074
Bromomethane	74-83-9	0.78	0.1
Carbon disulfide	75-15-0	1.6	0.062
Carbon tetrachloride	56-23-5	1.3	0.082
Chlorobenzene	108-90-7	0.92	0.06
Chloroethane	75-00-3	1.3	0.087
Chloroform	67-66-3	0.98	0.12
Chloromethane	74-87-3	1	0.07
cis-1,2-Dichloroethene	156-59-2	0.79	0.33
cis-1,3-Dichloropropene	10061-01-5	0.91	0.059
Cumene	98-82-8	0.98	0.054
Cyclohexane	110-82-7	0.69	0.065
Dibromochloromethane	124-48-1	1.7	0.094
Dichlorodifluoromethane	75-71-8	2.5	0.099
Ethylbenzene	100-41-4	0.87	0.065
Freon 22	75-45-6	1.8	0.081
Freon TF	76-13-1	1.5	0.15
Hexachlorobutadiene	87-68-3	2.1	0.31
Isopropyl alcohol	67-63-0	12	0.19
m,p-Xylene	179601-23-1	2.2	0.096
Methyl Butyl Ketone (2-Hexanone)	591-78-6	2	0.16
Methyl Ethyl Ketone	78-93-3	1.5	0.074
methyl isobutyl ketone	108-10-1	2	0.14
Methyl methacrylate	80-62-6	2	0.066
Methyl tert-butyl ether	1634-04-4	0.72	0.054
Methylene Chloride	75-09-2	1.7	0.08
Naphthalene	91-20-3	2.6	0.2
n-Butane	106-97-8	1.2	0.052
n-Butylbenzene	104-51-8	1.1	0.12
n-Heptane	142-82-5	0.82	0.07
n-Hexane	110-54-3	0.7	0.07
n-Propylbenzene	103-65-1	0.98	0.064
sec-Butylbenzene	135-98-8	1.1	0.082

Styrene	100-42-5	0.85	0.047
tert-Butyl alcohol	75-65-0	15	0.12
tert-Butylbenzene	98-06-6	1.1	0.06
Tetrachloroethene	127-18-4	1.4	0.1
Tetrahydrofuran	109-99-9	15	0.086
Toluene	108-88-3	0.75	0.053
trans-1,2-Dichloroethene	156-60-5	0.79	0.091
trans-1,3-Dichloropropene	10061-02-6	0.91	0.068
Trichloroethene	79-01-6	1.1	0.049
Trichlorofluoromethane	75-69-4	1.1	0.12
Vinyl chloride	75-01-4	0.51	0.023
Xylene, o-	95-47-6	0.87	0.069
1,2-Dichloroethene, Total	540-59-0	0.79	0.091
Xylene (total)	1330-20-7	0.87	0.069

DLs are subject to change.

6/5/13 Seaclift, NY

0500: Onsite

1930: ~~Offsite~~

0810: Walk site with Saeid

0830: Walk site with Zebra to determine locations of the Soil gas probes

0900 SG-3 installed
- ~~Preparing~~ to Sample

Outdoor Temp - 65°F
Barom. - 30.21 in Hg

0920 Helium Under shroud - >3000 ppm
Helium in Tedlar = 0.0 ppm

0925 Purged SG-3
- Collect Tedlar for H2S

0930 Begin Sampling SG-3 Canister

0930 Beginning pressure = -28.5

0955 Ending pressure = -2.5

1000 He test @ SG-2 1115 Beg. Hg = -22.5
In Shroud > 1000 ppm 1145 End = -5
In Tedlar = 0.0 ppm

1015 finished purging SG-2
Begin Sampling Canister

1105 Helium test > 3000 ppm SG-4
Tedlar Bag = 0.0 ppm
- Began Sampling Hg = 27 in
1130 ending Hg = -5

1140 Helium Test > 1200 ppm SG-5
Tedlar Bag = 0.0 ppm

1145 Began Sampling Hg = -28 in
1215 End Sample Hg = -5 in

1225 He Shroud SG-01 > 1000 ppm
Tedlar = 0.0 ppm
- Begin Sampling SG-01 Hg = -29

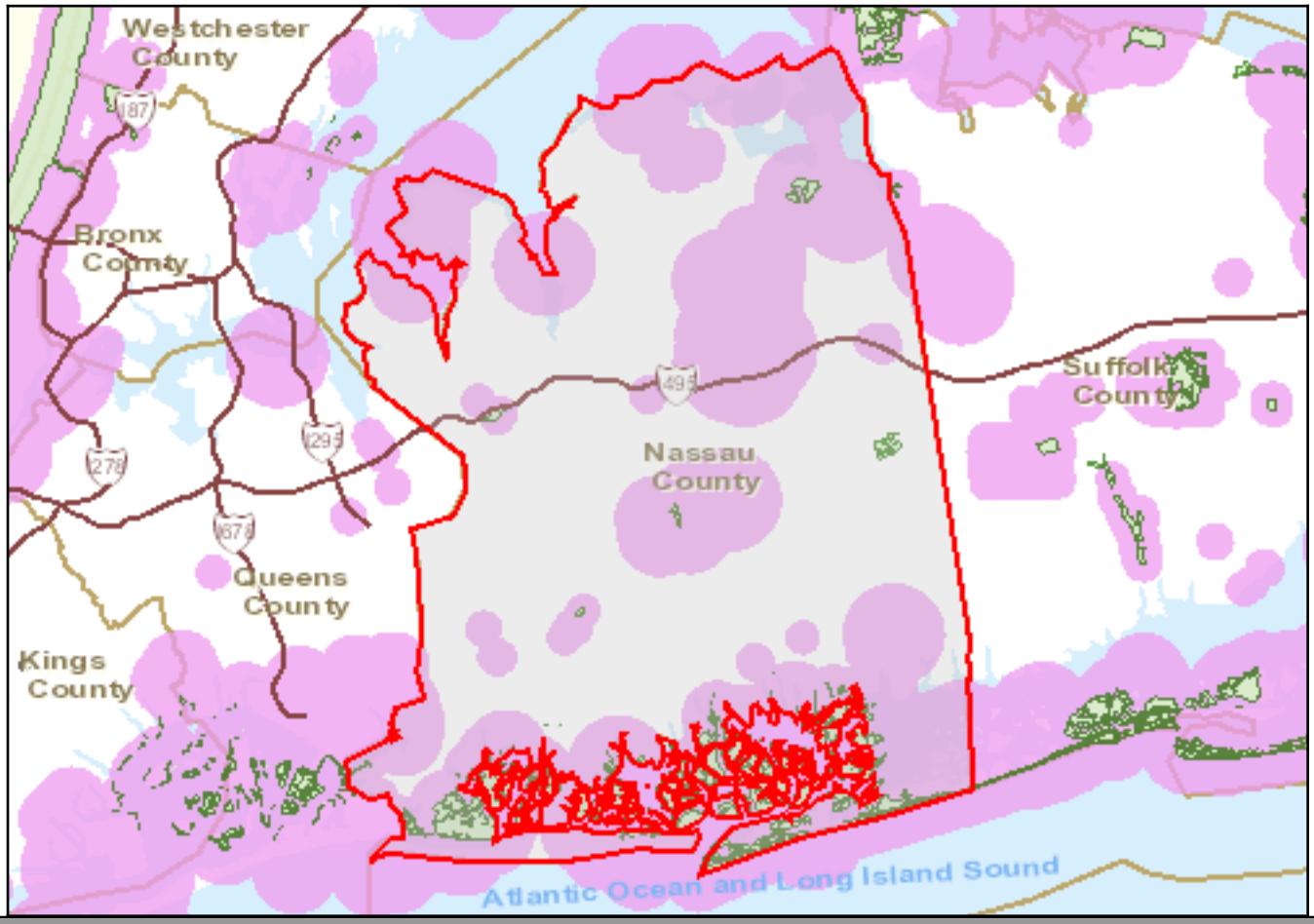
1300 End Sample SG-01 Hg = -10
1330 All parties offsite

APPENDIX D

LIST OF ENDANGERED, THREATENED OR RARE MAMMALS, BIRDS, FISH, MUSSELS AND CLAMS IN NASSAU COUNTY

New York Nature Explorer
County Results Report

Criteria: County: Nassau; Animal Group: Mammals, Birds, Fish, Mussels and Clams; State Protection Status: Endangered, Threatened, Rare



Common Name	Subgroup	Distribution Status	Year Last Documente	Protection Status		Conservation Rank	
				State	Federal	State	Global
County: Nassau							
Animal: Birds							
Black Rail *Laterallus jamaicensis*	Rails, Coots and Cranes	Possible but not Confirmed		Endangered		S1B	G4
Common Tern *Sterna hirundo*	Gulls, Terns, Plovers, Shorebirds	Recently Confirmed	2012	Threatened		S3B	G5
Least Bittern *Ixobrychus exilis*	Herons, Bitterns, Egrets, Ibises	Recently Confirmed	2011	Threatened		S3B,S1N	G5
Least Tern *Sternula antillarum*	Gulls, Terns, Plovers, Shorebirds	Recently Confirmed	2012	Threatened		S3B	G4

New York Nature Explorer

Common Name	Subgroup	Distribution Status	Year Last Documente	Protection Status		Conservation Rank	
				State	Federal	State	Global
Northern Harrier *Circus cyaneus*	Hawks, Falcons, Eagles, Vultures	Recently Confirmed	2002	Threatened		S3B,S3N	G5
Peregrine Falcon *Falco peregrinus*	Hawks, Falcons, Eagles, Vultures	Recently Confirmed	2009	Endangered		S3B	G4
Pied-billed Grebe *Podilymbus podiceps*	Grebes	Recently Confirmed		Threatened		S3B,S1N	G5
Piping Plover *Charadrius melodus*	Gulls, Terns, Plovers, Shorebirds	Recently Confirmed	2008	Endangered	Endangered/Threatened	S3B	G3
Roseate Tern *Sterna dougallii*	Gulls, Terns, Plovers, Shorebirds	Recently Confirmed	1989	Endangered	Endangered	S1B	G4
Short-eared Owl *Asio flammeus*	Owls	Recently Confirmed	2002	Endangered		S2	G5
Upland Sandpiper *Bartramia longicauda*	Gulls, Terns, Plovers, Shorebirds	Recently Confirmed	1987	Threatened		S3B	G5

This list only includes records from the databases of the NY Natural Heritage Program, the second NYS Breeding Bird Atlas Project, and the NY Amphibian and Reptile Atlas Project. This list is not a definitive statement about the presence or absence of all plants and animals, including rare or state-listed species, or of all significant natural communities.

APPENDIX E

DATA USABILITY SUMMARY REPORT - GROUNDWATER

DATA USABILITY SUMMARY REPORT (DUSR) FOR ALPHA ANALYTICAL JOB NUMBER L1304679

INTRODUCTION

Groundwater samples from six (6) temporary well points were included in this laboratory report. One trip blank was also submitted for VOC analysis. Samples were submitted and analyzed for the full TCL+30 (target compound list plus the 10 volatile organic compounds and 20 semi-volatile organic compounds highest concentration TICs) plus the full TAL inorganic analytical list, in accordance with DER-10 Section 2.1 and the approved RIWP. Groundwater samples were also analyzed for hexavalent and trivalent chromium. In addition to the samples submitted for total metals, samples were field filtered and submitted for dissolved metals analysis. Samples were collected on March 19, 2013 and were received in the laboratory on March 21, 2013.

The samples included in this data set are WP-1, WP-2, WP-3, WPD-4, WPD-5, WPD-6, and TRIP BLK.

CUSTODY DOCUMENTATION

Chain of custody forms were completed as required. The date for the trip blank on the chain of custody was recorded as March 19, 2013. Internal custody records and laboratory chronicles were completed as required.

HOLDING TIMES

All samples were analyzed within the required holding times, except for hexavaelent chromium. The holding time for Method 7196A is 24 hours. The samples were received by the lab 48 hours after sampling. The analysis of hexavalent chromium was performed at the client's request.

An analysis of the chromium and hexavalent chromium data show that total chromium was not detected in the dissolved analysis for any of the temporary well points, and thus the hexavalent chromium data should also be non-detect, as is reported. And while total chromium was detected in the total metals analysis for the four temporary well points, a comparison with the monitoring well data, Job Number L1304892, indicate that hexavalent chromium was non-detect in both the total and dissolved analysis. Based on the overall analysis of the chromium and hexavalent chromium data for the two data sets, no data validation qualifier is applied to the hexavalent chromium data.

BLANKS

One trip blank was analyzed as part of this sample delivery group and was without contamination. No field blank was collected as part of this sampling program.

DATA USABILITY SUMMARY REPORT (DUSR) FOR TESTAMERICA JOB NUMBER 200-16853-1

INTRODUCTION

Soil vapor samples from five (5) temporary soil gas sample points were included in this laboratory report. Samples were submitted and analyzed for EPA TO-15 VOCs, EPA 3C Methane, and EPA 15_16 Hydrogen Sulfide, in accordance with Soil Gas Survey Work Plan. Samples were collected on June 5, 2013 and were received in TestAmerica's Sacramento laboratory for Hydrogen Sulfide analysis on June 6, 2013. Samples for TO-15 and methane analysis were received in TestAmerica's Burlington laboratory on June 7, 2013 and formally logged in on June 10, 2013..

The samples included in this data set are SG-1, SG-2, SG-3, SG-4 and SG-5.

CUSTODY DOCUMENTATION

Chain of custody forms were completed as required. Internal custody records and laboratory chronicles were completed as required.

HOLDING TIMES

All samples were analyzed within the required holding times.

BLANKS

No field or trip blanks were collected as part of this sampling program. No compounds were detected in the laboratory method blanks and no problems were reported.

SURROGATE RECOVERIES

Surrogate recoveries were within acceptable limits for all samples and blanks.

LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within acceptable limits for all samples and blanks.

INTERNAL STANDARDS

Internal standard retention times and areas were within acceptable limits for all samples and blanks.

FIELD DUPLICATES

No field duplicate was collected as part of this sampling program.

TARGET COMPOUND IDENTIFICATION

TestAmerica Sacramento reported that Samples SG-3, SG-2, SG-4, SG-5 and SG-1 were analyzed for Sulfur in accordance with EPA Method 15/16. The samples were run two times and each time the closing calibration check yielded low responses indicating a matrix effect from the samples. Original data was reported. All laboratory QA/QC data were within acceptable limits.

All parameters were correctly identified and quantified for all samples. All retention times were within acceptable limits. Chromatographs for TO-15 samples showed acceptable baseline stability and peak performance. The data qualifiers identified in the laboratory reports are determined to be correct, no changes or additions to the data qualifiers have been applied.

The Method Blank detected low concentrations of total metals aluminum, chromium, copper, nickel and sodium, and low concentrations of dissolved metals aluminum, antimony, chromium, copper, manganese, silver, sodium and thallium. All detections are below the Reporting Limit and are "J" flagged and are below applicable criteria. No data validation qualifiers are applied.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The WG597326-4 MS recovery, performed on L1304679-01, is above the acceptance criteria for Mercury (134%). A post digestion spike was performed with an acceptable recovery of 112%.

The WG597359-4 MS recoveries, performed on L1304679-01, are above the acceptance criteria for Iron (147%) and Sodium (173%). A post digestion spike was performed with acceptable recoveries for Iron (108%) and Sodium (105%).

SURROGATE RECOVERIES

Surrogate recoveries were within acceptable limits for all samples and blanks.

LABORATORY CONTROL SAMPLES

Laboratory control recoveries and surrogate recoveries were within acceptable limits for all samples and blanks.

FIELD DUPLICATES

No field duplicate was collected as part of this sampling program.

TARGET COMPOUND IDENTIFICATION

L1304679-01 through -06 have elevated detection limits for all elements, except Mercury, due to the dilutions required by matrix interferences encountered during the 6020 analysis.

All parameters were correctly identified and quantified for all samples. All retention times were within acceptable limits. The data qualifiers identified in the laboratory reports are determined to be correct, no changes or additions to the data qualifiers have been applied.

DATA USABILITY SUMMARY REPORT (DUSR) FOR ALPHA ANALYTICAL JOB NUMBER L1304892

INTRODUCTION

Groundwater samples from four (4) monitoring wells were included in this laboratory report. One trip blank, one field blank and one blind duplicate sample were also submitted in this data set. Samples were submitted and analyzed for the full TCL+30 (target compound list plus the 10 volatile organic compounds and 20 semi-volatile organic compounds highest concentration TICs) plus the full TAL inorganic analytical list, in accordance with DER-10 Section 2.1 and the approved RIWP. Groundwater samples were also analyzed for hexavalent and trivalent chromium. In addition to the samples submitted for total metals, samples were field filtered and submitted for dissolved metals analysis. Samples were collected on March 22, 2013 and were received in the laboratory on March 22, 2013.

The samples included in this data set are TB, FB, MW-4, MW-3, MW-2, MW-1 and BLIND DUP.

CUSTODY DOCUMENTATION

Chain of custody forms were completed as required. The date for the trip blank (TB) and field blank (FB) on the chain of custody was recorded as March 22, 2013. Internal custody records and laboratory chronicles were completed as required.

HOLDING TIMES

All samples were analyzed within the required holding times.

BLANKS

One trip blank was analyzed as part of this sample delivery group and detected acetone at the MDL. The laboratory reported that the sample vial was labeled correctly, and that the previous sample showed no potential for carry over. The field blank detected acetone at 7.5 ug/l. Acetone was not detected in any of the groundwater samples. One method blank was run as part of this project.

The field blank for total metals analysis, antimony, chromium, copper and manganese were detected at low levels. The method blank for total metals detected antimony, magnesium, manganese and sodium. In the field blank for dissolved metals analysis, antimony, barium, calcium, chromium, copper, iron, manganese and nickel were detected at very low levels. All detections are below the Reporting Limit and are “J” flagged and are below applicable criteria. No data validation qualifiers are applied.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The WG597283-4 MS recoveries, performed on L1304892-05, is below the acceptance criteria for Calcium (61%) and Magnesium (64%). A post digestion spike was performed with acceptable recoveries for Calcium (97%) and Magnesium (97%).

SURROGATE RECOVERIES

Surrogate recoveries were within acceptable limits for all samples and blanks.

LABORATORY CONTROL SAMPLES

Laboratory control recoveries and surrogate recoveries were within acceptable limits for all samples and blanks except for the WG597283-3 Laboratory Duplicate RPD, performed on L1304892-05. It is above the acceptance criteria for Antimony (56%); however, the sample and duplicate results are less than five times the reporting limit. Therefore, the RPD is valid.

FIELD DUPLICATES

One field duplicate (BLIND DUP) was collected as part of this sampling program. No issues were indicated with the analysis of this sample. From the field notes and sampling times it was determined that this is a duplicate of MW-4. The results are comparable for these two samples and do not indicate any analytical problems or inconsistencies.

TARGET COMPOUND IDENTIFICATION

All parameters were correctly identified and quantified for all samples. All retention times were within acceptable limits. The data qualifiers identified in the laboratory reports are determined to be correct, no changes or additions to the data qualifiers have been applied.

APPENDIX F

DATA USABILITY SUMMARY REPORT – SOIL GAS