Metal Etching Site

NASSAU COUNTY, FREEPORT, NEW YORK

Site Management Plan

NYSDEC Site Number: 130110

Prepared for:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E
625 Broadway
Albany, New York 12233-7017

Prepared by:
EA Engineering, P.C. and its Affiliate
EA Science and Technology
6712 Brooklawn Parkway, Suite 104
Syracuse, New York 13211-2158
(315)-431-4610

Revisions to Final Approved Site Management Plan:

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SITE MANAGEMENT PLAN

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at the Metal Etching Co, Inc. site under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The Class 2 inactive hazardous waste disposal site (Site No. 130110) was remediated in accordance with the Record of Decision (ROD) (NYSDEC 2007)[1].

1.1.1 General

EA Engineering, P.C., and its affiliate EA Science and Technology (EA), along with its Joint Venture Partner, The Louis Berger Group, Inc. (Berger) were tasked by the NYSDEC to oversee the remediation of a 1.05 acre property located in Freeport, Nassau County, New York. The Remedial Party, EA and Berger, was required to investigate and oversee the remediation of contaminated media at the site. A figure showing the site location and boundaries of this 1.05-acre site is provided in Figure 1. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement (EE) currently being prepared by the NYSDEC to be included in Appendix G.

After completion of the remedial work described in the Remedial Action Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as remaining contamination. This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the EE is extinguished in accordance with Environmental Conservation Law (ECL) Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in NYS.

This SMP was prepared by EA in accordance with the requirements in NYSDEC Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation (NYSDEC 2010)[2] and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the institutional controls (ICs) and engineering controls (ECs) that are required by the EE for the site.

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. ECs have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. An EE granted to the

1. NYSDEC. 2007. Record of Decision. March.
2. NYSDEC. 2010. DER-10 Technical Guidance for Site Investigation and Remediation.

NYSDEC, and recorded with the Nassau County Clerk, will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use; and mandate operation, maintenance, monitoring, and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the EE for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the EE and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the remedial action, including: (1) implementation and management of all ECs and ICs; (2) media monitoring; and (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports. To address these needs, this SMP includes two plans: (1) an EC/IC Plan for implementation and management of EC/ICs; and (2) a Monitoring Plan for implementation of site monitoring.

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

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the EE. Failure to properly implement the SMP is a violation of the EE.

- Failure to comply with this SMP is also a violation of ECL, 6 New York Code of Rules and Regulations Part 375 and, thereby, subject to applicable penalties.

1.1.3 Revisions

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

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The Metal Etching site is a Class 2 Site listed on the NYSDEC Registry of Inactive Hazardous Waste Sites (No. 1-30-110). The site is located adjacent to Freeport Creek at 435 South Main Street, Freeport, Nassau County, New York. A site location map is presented in Figure 1. The site is currently owned by Freeport Creek Associates and leased by Main Street Marina, 500 South Main Street, Freeport, New York. The Metal Etching property is designated as Section 62, Block 45, and Lots 144, 145, and 158 on the tax maps. The Metal Etching property is a 1.05 acre L-shaped area, bounded by Ray Street East and a commercial property to the north, Freeport Creek to the south and east, and Main Street and Ray Street East to the west. Figure 1 depicts

the site boundaries. The boundaries of the site are more fully described in Appendix A – ALTA Survey.

The site is currently used as a boat dealership, marina, and boat storage yard. Operations at the site are conducted in a single 2,400 ft^2 building located on the northeast corner of the property. A smaller 1,200 ft^2 building, located on the western portion of the property, has been restored and is used for office space for the boat dealership. Minor boat restoration activities are performed within the 2,400 ft^2 building and include engine rebuilds, sanding, and painting/varnishing. Prior to remediation, most areas of the site grounds were concrete or asphalt paved. Portions of the site adjacent to Freeport Creek were covered with gravel. Soil cover was observed on a small stretch of land on the southern property beneath a two-story boat rack.

1.2.2 Site History

The former Metal Etching buildings at the site were erected prior to 1954; however, the exact date of construction is unknown. These connected buildings occupied approximately 26,650 ft^2 of the property (approximately 60 percent of the Metal Etching portion of the site). Aside for the 2,400 ft^2 building, which was a portion of the Metal Etching quarters, the Metal Etching buildings were demolished in 2001; however, the concrete slabs and footings of the buildings remained in place at the site. A 6-in. thick concrete slab covering an approximate area of 7,750 ft^2 was the foundation of the Metal Etching plating slab and is visible to the west of the 2,400 ft^2 building.

Prior to 1966, the site operated as Flores Manufacturing, which manufactured handbags. The manufacturing process included decorative plating with nickel, chromium, and cadmium. From 1966 to 1999, Metal Etching Corporation manufactured metal nameplates, instrument panels, rulers, and miscellaneous plated products. All products were etched or printed. The process of etching included anodizing, chromate conversion, and chrome/nickel plating. From 1973 to 1982, Metal Etching Co. operated under the name of Plastic Associates, as a wholly owned subsidiary. From July 1982 to June 1999, Metal Etching Co., Inc. was the entity that operated the site. In the later years of the operation of Metal Etching Co., Inc., several of the metal coating operations were discontinued; i.e., chromate conversion (discontinued in 1997), chrome plating (discontinued in 1997), and anodizing (discontinued in 1998). All operations terminated in 1999 and Metal Etching Co., Inc. abandoned the premises during September of 1999. The facility buildings were demolished around 2001. During the demolition, limited decontamination and/or investigation was performed under the oversight of NYSDEC Resource Conservation and Recovery Act personnel. Two 4,000 gal aboveground storage tanks (ASTs), which formerly contained ferric chloride, were decontaminated and removed from the site during demolition activities.

1.2.3 Geologic Conditions

The top 3-4 ft of soil at the site consists of compacted fill material which includes sand, gravel, and brick and wood debris. Fill is underlain by organics and shells to approximately 11 ft below ground surface (bgs). A geologic cross section of the site is provided in Figure 2. Some fill was

excavated, disposed offsite, and replaced with clean granular fill during the 2011 remedial action. In areas depicted on Figure 3, fill has been excavated, disposed offsite and replaced with clean granular fill.

Depth to groundwater ranges from 3 to 5 ft bgs and is highly influenced by tides, as discussed in the remedial investigation (RI) report (Environmental Resource Management [ERM] 2007)[3]. Groundwater flow is to the southeast across the site. Overburden and bedrock groundwater flow is shown in Figure 4.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A RI was performed to characterize the nature and extent of contamination at the site. The results of the RI are described in detail in the RI Report (ERM 2007)[3].

Generally, the RI determined that, based on the standards, criteria, and guidance (SCGs) used for the site, surface soil, subsurface soil, groundwater, and sediment contained metals and volatile organic compounds (VOCs) contamination that was to be addressed in the remedy selection. Soil vapor contained VOC contamination which was addressed by an interim remedial measure (IRM) conducted at the site prior to the remedial action.

Below is a summary of site conditions when the RI was performed in 2007.

Soil

Site soil was analyzed for VOCs and metals during the RI. Analytical results indicated that the site soil contained concentrations of VOCs and metals exceeding their SCGs. Metals were detected exceeding their SCGs in the top 7 ft of soil; specifically, nickel, copper, and zinc were detected at concentrations exceeding their SCGs. VOC contamination varied across the site. The eastern area was contaminated with petroleum related compounds including ethylbenzene, chlorobenzene, and xylene. Samples collected from the western area contained xylene and naphthalene exceeding their SCGs. Contaminants tetrachloroethene (PCE) (non-detect [ND] to 4.3 mg/kg), trichloroethene (TCE) (ND to 10 mg/kg), and methyl tert butyl ether (MTBE) (ND to 1.5 mg/kg) were the predominant VOCs detected in soil samples above their SCGs in the eastern central area of the site. The western central area of the site contained only TCE above its SCG.

Table 1 and Figures 5-5D show site soil sampling results from the RI.

Site-Related Groundwater

Groundwater samples were collected from 10 onsite monitoring wells at the water table interface and three monitoring wells installed directly above the clay layer. Samples collected from all

3 ERM. 2007. Remedial Investigation Report Metal Etching Co. Inc. Site (NYSDEC Site No. 1-30-110), Freeport, New York. Environmental Resource Management. January.

onsite monitoring wells contained concentrations of VOCs including MTBE and PCE; and PCE breakdown contaminants TCE, dichloroethene (DCE), and vinyl chloride (VC). Samples collected from above the clay layer contained higher concentrations of PCE, TCE, DCE, and VC than samples collected from the water table interface. Concentrations of PCE from samples collected above the clay layer ranged from ND to 1,600 µg/L, while concentrations of PCE from samples collected at the water table interface ranged from ND to 250 µg/L. The highest concentrations of PCE and breakdown contaminants were detected in monitoring wells located west and south of the 2,400 ft^2 building in monitoring wells MW-02S/D and MW-07S/D. The distribution and concentrations of breakdown contaminants across the site indicated that degradation was occurring at the site.

MTBE was detected in groundwater samples across the site at concentrations ranging from ND to 2,100 µg/L. The highest groundwater concentration of MTBE was collected as a grab sample at boring SB-21, south of MW-02S/D in the area of a suspected underground storage tank (UST) southwest of the 2,400 ft^2 building.

Table 2 and Figures 6A and 6B show the groundwater sampling results from the RI.

Site-Related Soil Vapor Intrusion

The potential for vapor intrusion in onsite buildings was evaluated prior to the RI. Subslab vapor samples indicated that both PCE and TCE were present in subslab air beneath both buildings onsite. The smaller building subslab vapor sample contained PCE at a concentration of 292 $\mu g/m^3$ and TCE at a concentration of 187 $\mu g/m^3$. The subslab vapor sample from the larger building contained PCE at a concentration of 5,772 $\mu g/m^3$ and TCE at a concentration of 16,014 $\mu g/m^3$. Indoor air samples collected from both buildings did not contain detections of PCE or TCE. Potential vapor intrusion was addressed by the installation of sub-slab depressurization systems at the two onsite buildings prior to the RI; however, site soil vapor will continue to be monitored as part of the EC/IC Plan as discussed in Section 2.0.

Table 3 and Figure 7 show the soil vapor sampling results from the RI.

Underground Storage Tanks

One UST was removed from the western area of the site in 1990, prior to the RI. This tank contained heating fuel. During the RI, two additional potential USTs were identified on the site. One was identified east of the smaller building and the other was identified south of the larger building. Contents were unknown prior to the remedial action.

Sediment

Sediment within Freeport Creek surrounding the perimeter of the site was sampled during the RI. Two of the eight samples contained metals (i.e., nickel, chromium, and zinc) exceeding their respective SCGs. The sample collected from sediment just below the outfall in the northeastern part of the site contained nickel at a concentration of 40.4 mg/kg, exceeding the Effect Range-

Low (ER-L) of 20.9 mg/kg. The sample collected south of the southeastern bulkhead contained chromium (127 mg/kg) and nickel (28.4 mg/kg) at concentrations exceeding their respective ER-L values (81 mg/kg and 20.9 mg/kg, respectively), as well as zinc (425 mg/kg) exceeding the Effect Range-Medium (ER-M) of 410 mg/kg. ER-L is the 10^{th} percentile on a series of data that is ranked from the lowest, or least toxic concentrations, to the highest, or more toxic concentrations. ER-M is the 50^{th} percentile on this continuum.

In addition to sediment within Freeport Creek, sediment from within an existing storm drain was sampled during the RI. The samples contained metals (i.e., nickel, copper, and zinc) exceeding their respective SCGs. Table 4 and Figure 5D show the sediment sampling results from the RI.

1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved remedial design, which was part of the Contract Documents dated August 2010 and addendums dated September 28, 2010, September 30, 2010, and October 1, 2010.

The following is a summary of the remedial actions performed at the site:

- Excavation of 2,684 yd^3 of soil/fill exceeding soil cleanup objectives (SCOs) listed in Table 5A within identified excavation limits, to low-tide groundwater elevation, approximately 5 ft bgs.

- Construction and maintenance of a soil cover system consisting of a geotextile demarcation layer covered by asphalt or permeable pavement to prevent human exposure to contaminated soil/fill remaining at the site.

- Execution and recording of an EE to restrict land use to commercial use, and prevent future exposure to any contamination remaining at the site. NYSDEC is currently preparing an EE.

- Removal of approximately 2 yd^3 of sediment from the onsite storm water system and disposal at an approved offsite facility.

- Closure and removal of four USTs onsite in accordance with NYSDEC regulations.

- Limited removal of approximately 183 yd^3 of sediment from delineated area within Freeport Creek and disposal at an approved offsite facility.

- Development and implementation of a SMP for long-term management of remaining contamination as required by the EE, which includes plans for: (1) IC/ECs, (2) monitoring, (3) operation and maintenance, and (4) reporting.

Remedial activities were completed at the site in January 2012.

1.4.1 Removal of Contaminated Materials from the Site

Soil and sediment hot spots were identified onsite and delineated during design activities prior to the remedial construction. Hot spot locations were based on soil sample collection and analysis performed during the 2007 RI (ERM 2007)[3] and the 2008 additional site investigation.

Soil

Remedial activities at the site consisted of excavation and offsite disposal of contaminated soils from within excavation areas EX-1 through EX-7 shown on Figure 3. Asphalt and concrete top layers within excavation limits were saw-cut using walk-behind saw equipment, broken up by a CAT 320 excavator, and disposed of offsite. Remnant foundation walls encountered within excavation areas were removed to the bottom of the excavation limits, broken up, and disposed of offsite along with other construction and demolition (C&D) debris. Approximately 240 tons of C&D materials were removed and disposed offsite at 110 Sand Landfill in Melville, NY.

Soil within excavation areas EX1, EX3, EX4, EX5, and EX6 was removed down to 5 ft bgs. Soil within excavation area EX2 was removed down to 1 ft bgs. Contaminated soil from the excavation areas was removed using a CAT 320 excavator and disposed offsite at 110 Sand Landfill. During excavation within EX6, fuel-impacted soil was encountered directly to the west of excavation limit points EX6-7 and EX6-8. Excavation area EX6 was extended an additional 9 ft to the east of excavation limit points EX6-7 and EX6-8, down to approximately 5 ft bgs to remove visual impacts. Two additional USTs were uncovered within EX3, to the east side of the one-story brick office building. All product from within the USTs was pumped and disposed of at International Petroleum Corporation of Delaware. Cleaned USTs were delivered to Gershow Recycling in Freeport, NY.

During excavation in the vicinity of excavation limit points EX5-11, EX5-12, and EX5-13, down to 5 ft bgs, two USTs were encountered. These USTs were found to extend within the footprint of excavation area EX1. The area to the west of points EX5-11 and EX5-13, and entire excavation area EX1 were excavated down to the bottom of the USTs (approximately 5 ft bgs), and then further excavated another 2-3 ft below the bottom of the USTs to remove visually impacted soils.

Approximately 5,500 tons of contaminated soil was excavated and disposed off-site. This includes approximately 110 tons of fuel-impacted soil encountered within EX1 and EX6, and C&D materials. The fuel-impacted soil encountered at excavations EX1 and EX6 were segregated from other excavated soil, characterized, and disposed at 110 Sand Landfill, following disposal facility approval.

In addition, during excavation activities, monitoring wells MW02S/MW02D, MW03S/MW03D, and MW07S/MW07D were decommissioned, removed, and disposed of offsite in accordance with the Contract Documents. Monitoring wells MW-08S and MW-08D replaced MW-02S and MW-02D; monitoring wells MW-09S and MW-09D replaced MW-07S and MW-07D; and monitoring wells MW-10S and MW-10D replaced MW-03S and MW-03D.

Storm Drain Sediment

Sediment from within an 18-in. reinforced-concrete storm pipe located in the east portion of the site was cleaned out on May 16, 2011 using a vactor truck (2100 Series DEC 1A-727).

No sediment or wash water was observed to flow out of the pipe into Freeport Creek from the outfall end. Following pipe clean out activities, water that had been pumped from the manhole during clean out activities was decanted from the vactor truck back into the manhole, then sediment from the vactor truck was loaded into 55 gal drums. Seven drums were packed with sediment and staged onsite until disposal at Residuals Management Services, Inc. (RMS) in Deer Park, NY on October 3, 2011.

Freeport Creek Contaminated Sediment

Dredging of contaminated sediment located in the 40 ft × 60 ft targeted area within Freeport Creek (delineated by excavation limit points EX7-1 through EX7-4) was performed between 11 and January 20, 2012. Wood-finger docks were removed prior to dredging and restored following dredging activities. A turbidity barrier was installed prior to dredging operations to prevent migration of sediment outside of the targeted area and was removed following completion of dredging activities.

Pre- and post-dredging surveys of the dredging area were performed by Alphonse Pesce Land Surveying to verify the sediment removal limits and the volume of sediment removed. Dredging was performed by Hancock Bulkhead by means of clamshell boom mechanical dredging equipment. Sediment removal progressed in a grid pattern within the targeted area. AARCO removed sediment from the onsite barge and transported it to 110 Sand Landfill. Approximately 250 tons of dredged sediment were transported and disposed offsite.

A list of the ER-Ls and ER-Ms for the primary contaminants of concern is provided in Table 5B.

A figure showing areas where excavation was performed is shown in Figure 3.

1.4.2 Site-Related Treatment Systems

Two sub-slab depressurization systems (SSDSs) that were installed in March 2005 in the onsite buildings remain in operation. No additional long-term treatment systems were installed as part of the site remedy.

1.4.3 Remaining Contamination

Per the ROD, excavation depth was limited by the low-tide groundwater elevation; therefore, known contamination remains at the site. Mirafi® 180N/O non-woven geotextile was installed at a depth of 5 ft in excavation areas EX3, EX4, EX5, and EX6; it was installed at a depth of 1 ft in excavation areas EX1 and EX2.

During the RI, VOC and metals contamination was identified in various locations throughout the site deeper than the maximum excavation depth of 5 ft. Concentrations of metals and VOCs exceeded the SCOs at sampling intervals 7-8 ft bgs and 12 ft bgs. VOCs (i.e., xylene and naphthalene) were identified in the western area of the site near excavation EX3 7-8 ft bgs and 12 ft bgs. Various VOCs including TCE, benzene, toluene, and MTBE were identified in the central area of the site near excavation EX5 within intervals 7-8 ft bgs and 12 ft bgs. Xylenes were identified 7-8 ft bgs and 12 ft bgs in the northeast area of the site near an existing electrical conduit. Ethylbenzene, xylene, and chlorobenzene were identified 8 ft bgs in the southeast area of the site.

Metals including chromium, copper, nickel, and zinc were identified at concentrations exceeding the SCOs in soil within the central portion of the site 7-8 ft bgs and 12 ft bgs. Copper, nickel, and zinc were identified in soil within the east area of the site 7-8 ft bgs and 12 ft bgs. A confining clay layer was identified 31-38 ft bgs across the site.

Confirmation soil samples were collected at the excavation boundaries following remediation work. VOCs detected in confirmation soil samples with concentrations exceeding the site-specific SCGs include xylenes (north sidewall of EX1 and south central area of EX5); and 1,2-DCE as a combination of *cis*- and *trans*-1,2-DCE, and toluene (south central area of EX5).

Metals detected in confirmation soil samples with concentrations exceeding the site-specific SCGs include chromium, copper, nickel, and zinc. Some confirmation samples collected from the bottom of excavations EX1 and EX2 contained all four metals at concentrations in exceedance of the site-specific SCGs.

Of the three confirmation samples collected from the bottom of EX3, only one sample contained zinc at a concentration exceeding the site-specific SCGs. Four of the five side wall samples from EX3 contained zinc at a concentration exceeding the site-specific SCGs as well.

The bottom sample collected from EX4 contained chromium, copper, and zinc at concentrations exceeding the SCGs, while only one of the three side wall samples from EX4 contained a concentration of zinc exceeding the site-specific SCGs.

A majority of the bottom samples of EX5 contained a concentration of copper exceeding the site-specific SCGs, while the northwest quadrant contained chromium and the northeast quadrant contained nickel at concentrations exceeding the respective site-specific SCGs. A majority of side samples from EX5 contained concentrations of copper and zinc exceeding the site-specific SCGs, while 4 of 13 samples contained concentrations of nickel exceeding the site-specific SCGs. Only one side wall sample from EX5 contained chromium at a concentration exceeding the site-specific SCGs.

Excavation EX6 consisted of a northern and southern portion separated by the utility right-of-way. Both bottom samples in the northern portion and all three of the bottom samples in the southern portion contained concentrations of copper and zinc exceeding the site-specific SCGs.

One of the northern bottom samples and two of the three southern bottom samples contained nickel at a concentration greater than the site-specific SCGs. All side wall samples collected from EX6 contained concentrations of zinc exceeding the site-specific SCGs, while all but two (along the northern and northwestern excavation boundary) contained concentrations of copper exceeding the site-specific SCGs. All but two of the side wall samples collected from the southern portion of EX6 and one of the side wall samples collected from the northern portion of EX6 (along the boundary with the right-of-way) contained nickel at a concentration exceeding the site-specific SCGs. One side wall sample along the southern boundary of EX6 contained a concentration of chromium at a concentration exceeding the site-specific SCGs.

EX7 was a 2 ft excavation within Freeport Creek. Documentation samples collected following dredging activities contained copper and mercury exceeding their respective ER-Ls of 34 mg/Kg and 0.15 mg/Kg. Sample location EX7P2 contained copper at a concentration of 299 mg/Kg exceeding the Effects Range-High (ER-H) of 270 mg/Kg. Sample location EX7P3 contained mercury at a concentration of 1.86 mg/Kg exceeding the ER-H of 0.71 mg/Kg . Four of the five documentation samples collected from EX7 contained concentrations of arsenic which exceeded the ER-L of 8.2 mg/Kg. Concentrations ranged from 8.48 mg/Kg in EX7P5 to 17.2 mg/Kg in EX7P2.

Tables 6A and 6B, and Figures 8-8C summarize the results of all soil samples remaining at the site after completion of remedial action that exceed the unrestricted levels for VOCs and metals, respectively. Tables 7A and 7B, and Figures 9-9C summarize the remaining soil contamination that exceeds the site-specific SCOs for VOCs and metals, respectively. Table 8 and Figure 9D summarizes the results of all sediment samples remaining at the site after completion of dredging activities that exceed the ER-L and ER-H.

Since contaminated soil and groundwater remain beneath the site after completion of the remedial action, ECs and ICs are required to protect human health and the environment. These ECs and ICs are described in the following sections. Long-term management of these ECs and ICs, and residual contamination will be performed under this SMP.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil exists beneath the site, ECs and ICs are required to protect human health and the environment. This EC/IC Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

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

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 Final Cover System

Exposure to remaining contamination in soil/fill at the site is prevented by a demarcation layer and asphalt and porous pavement cover system placed over the site. This cover system is comprised of a geotextile demarcation layer, topped by a minimum of 12 in. of asphalt pavement, porous pavement, or rip-rap. The EWP that appears in Appendix B outlines the procedures required to be implemented in the event the cover system is breached, penetrated, or temporarily removed; and any underlying remaining contamination is disturbed. Procedures for

the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP. A figure showing the location of the different cover types is provided as Figure 10.

2.2.1.2 Sub-Slab Depressurization Systems

Exposure to indoor air impacted with VOCs within the site buildings is prevented by the two existing SSDSs, which were installed in the site buildings in March 2005. The systems serve to reduce the pressure beneath the building slabs by venting potentially impacted soil vapor outside of the buildings.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

2.2.2.1 Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

2.2.2.2 Sub-Slab Depressurization Systems

The SSDSs will be monitored on an annual basis to determine whether the systems remain necessary at the site, or if the remedial action objectives were achieved.

2.3 INSTITUTIONAL CONTROLS

A series of ICs is required by the ROD to: (1) implement, maintain and monitor EC systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to commercial uses only. Adherence to these ICs on the site is required by the EE and will be implemented under this SMP. These ICs are:

- Compliance with the EE and this SMP by the Grantor and the Grantor's successors and assigns.
- All ECs must be operated and maintained as specified in this SMP.
- All ECs on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP.

- Groundwater and indoor air monitoring must be performed as defined in this SMP.

- Submission of a periodic certification of institutional and ECs to the NYSDEC by the property owner.

- Data and information pertinent to site management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP.

ICs identified in the EE may not be discontinued without an amendment to or extinguishment of the EE.

The site has a series of ICs in the form of site restrictions. Adherence to these ICs is required by the EE. Site restrictions that apply to the Controlled Property are:

- The property may only be used for commercial use provided that the long-term ECs and ICs included in this SMP are employed. The property may also be used for industrial use, in conformance of local zoning.

- The property may not be used for a higher level of use, such as unrestricted use without additional remediation and amendment of the EE, as approved by the NYSDEC.

- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP.

- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use.

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

- Vegetable gardens and farming on the property are prohibited.

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

2.3.1 Excavation Work Plan

The site has been remediated for commercial or industrial uses. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the EWP that is attached as Appendix B to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP is attached as Appendix B-1 to the EWP that is in current compliance with DER-10, and 29 Code of Federal Regulations (CFR) 1910, 29 CFR 1926, and all other applicable federal, state, and local regulations. Based on future changes to state and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP, and CAMP; and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (Section 5).

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

2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures within the area identified on Figure 11, a soil vapor intrusion (SVI) evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, a SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive SSDS that is capable of being converted to an active system.

Prior to conducting a SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and New York State Department of Health (NYSDOH) for approval. This work plan will be developed in accordance with the most recent NYSDOH Guidance for Evaluating Vapor Intrusion in the State of New York (NYSDOH 2006)[4]. Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

4 New York State Department of Health. 2006. *Guidance forEvaluating Soil Vapor Intrusion in the State of New York*. New York State Department of Health, Division of Environmental Health Assessment, Center for Environmental Health. October.

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

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

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed
- If these controls continue to be protective of human health and the environment
- Compliance with requirements of this SMP and the EE
- Achievement of remedial performance criteria
- Sampling and analysis of appropriate media during monitoring events
- If site records are complete and up to date
- Changes, or needed changes, to the remedial or monitoring system.

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

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use in accordance with the ROD.

- 15-day advance notice of any proposed ground-intrusive activities pursuant to the EWP.

- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other ECs and likewise any action to be taken to mitigate the damage or defect.

- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of all approved work plans and reports, including this SMP

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

2.5 CONTINGENCY PLAN

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

2.5.1 Emergency Telephone Numbers

In the event of any environmentally-related situation or unplanned occurrence requiring assistance, the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to the NYSDEC project manager. These emergency contact lists must be maintained in an easily accessible location at the site.

Emergency Contact Numbers	
Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Contact Numbers	
NYSDEC Division of Environmental Remediation	518-402-9814
Eric Hausamann (SSDS)	518-402-9814
NOTE: Contact numbers subject to change and should be updated as necessary	

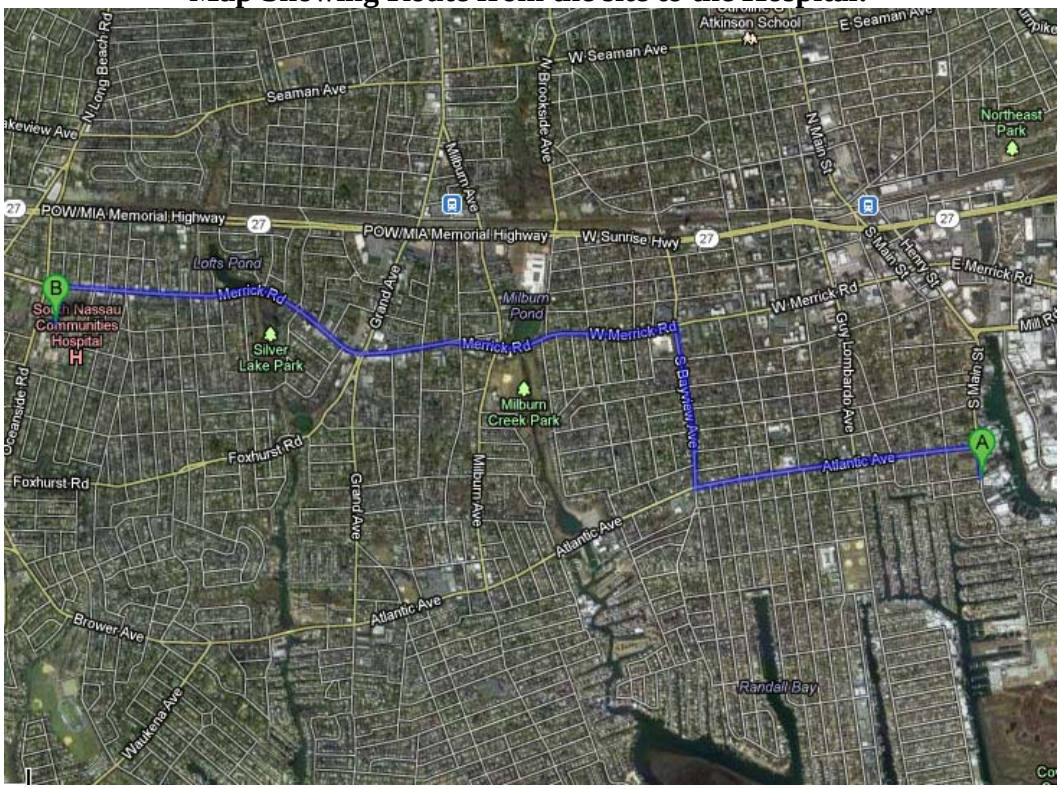
2.5.2 Map and Directions to Nearest Health Facility

Site Location: Metal Etching Site
Nearest Hospital Name: South Nassau Communities Hospital
Hospital Location: 1 Healthy Way, Oceanside, New York 11572
Hospital Telephone: 516-632-3000

Directions to the Hospital:
1. Go north on S Main Street.
2. Take 1st left onto Atlantic Avenue.
3. Turn right onto S Bayview Avenue.
4. Turn left onto W Merrick Road.
5. Turn left onto Healthy Way.

Total Distance: 3.6 miles
Total Estimated Time: 10 minutes

Map Showing Route from the site to the Hospital:



*Map is from maps.google.com

2.5.3 Response Procedures

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

2.5.3.1 Spill Procedures

In the event that a hazardous substance is released on the site, all site personnel shall be notified immediately. If the substance poses an immediate threat to human health and the environment, evacuation and notification of the appropriate authorities including the NYSDEC Spill Response team (listed in previous table) may be necessary. If the release is minimal and does not pose a health risk, the leak shall be contained and the spilled material shall be cleaned up with appropriately sized absorbent pads. Materials used to contain the substance shall be disposed of properly.

2.5.3.2 Evacuation Plan

If site evacuation is necessary, site personnel shall exit the site on Main Street. All site personnel shall be notified of the evacuation.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. Monitoring of other ECs is described in Chapter 4, Operation and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

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

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

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

Semi-annual monitoring of the performance of the remedy and overall reduction in contamination onsite will be conducted for the first year. The frequency thereafter will be determined by NYSDEC. Trends in contaminant levels in air, soil, and/or groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in the following table and outlined in detail in Sections 3.2 and 3.3 below.

Monitoring/Inspection Schedule			
Monitoring Program	**Frequency[1]**	**Matrix**	**Analysis**
Groundwater	Semi-Annually (For first year)	Water	VOCs and Metals
Site Cover Inspection	Semi-Annually (For first year)	NA	NA
SSDS/Indoor Air	As recommended by State Agencies (During heating season)	Air	VOCs
(1) The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH			

3.2 COVER SYSTEM MONITORING

For the first year of monitoring, the cover system will be inspected on a semi-annual basis and after large storm events to ensure proper drainage, and to look for sedimentation issues. The inspector will also note whether the asphalt and porous pavement has settled unevenly, been overloaded, or otherwise disturbed. The porous pavement will be checked for signs of clogging by soil or debris or chemical sealers. Rip-rap areas will be inspected for disturbance and effectiveness. Concrete surrounding the slotted drains at the site entrances will be inspected for cracking or crumbling.

3.3 MEDIA MONITORING PROGRAM

Groundwater and indoor air will be monitored as part of the management of this site.

3.3.1 Groundwater Monitoring

The network of monitoring wells has been installed to monitor both upgradient and downgradient groundwater conditions at the site. The network of onsite wells was designed and installed during the RI. A total of 10 wells were installed including three monitoring well clusters of one shallow and one deep well, three single shallow wells, and one single deep micro well. Deep wells were installed to a maximum of 33 ft bgs, which is the depth of the top of the clay layer observed during the soil boring investigation. Shallow wells were installed to 13 ft bgs to intercept any light non-aqueous phase liquid that may have been present. All wells were constructed with 10 ft of screen. Well locations were selected based on the geophysical, soil boring and groundwater investigations which took place as part of the RI and field observations. Wells are located throughout the site. Figure 12 show the shallow and deep monitoring well arrays.

As noted in Section 1.4.1, monitoring wells MW02S/MW02D, MW03S/MW03D, and MW07S/MW07D were decommissioned during soil excavation activities. These monitoring wells were replaced with monitoring wells MW-08S and MW-08D, MW-09S and MW-09D, and MW-10S and MW-10D following cover installation in similar locations and to similar depths as

the original wells. Monitoring well construction details for all wells present at the site are included in Appendix C.

New monitoring wells were last sampled on December 14, 2011. Samples were analyzed for oil and grease (Method E1664A), polychlorinated biphenyls (PCBs) and pesticides (Method E608), metals and mercury (Methods SW6010B and SW7470A, respectively,) VOCs (Method SW8260B), and semivolatile organic compounds (Method SW8270C). Results of the initial post-remedial groundwater sampling are shown on Figure 13.

Groundwater monitoring is to be performed twice per year for the first year and as directed by NYSDEC thereafter. Groundwater is to be analyzed for metals and mercury (Methods 6010B and SW7470A) and VOCs (Method 8260B). The following monitoring wells are to be sampled as part of the groundwater monitoring program for the Metal Etching site.

Monitoring Wells at the Metal Etching Site	
Upgradient Onsite Monitoring Wells	**Well Depth (ft bgs)**
MW-01	31
MW-06	13
Downgradient Onsite Monitoring Wells	**Well Depth**
MW-04	13
MW-05	13
MW-08S	14
MW-08D	31
MW-09S	14
MW-09D	32
MW-10S	14
MW-10D	32

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

The groundwater monitoring well network is shown in Figure 12. Figure 13 and Tables 9A and 9B provide a summary of the post-remaining groundwater quality for VOCs and metals, respectively.

Deliverables for the groundwater monitoring program are specified below.

3.3.1.1 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater sampling log presented in Appendix D. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

Prior to sampling, all monitoring wells shall be inspected and gauged to obtain the static water levels for the site. Monitoring well purging will be performed and groundwater samples will be collected from the monitoring wells using a submersible pump and dedicated section of polyethylene tubing. A water quality meter (Horiba U-52 or similar) with flow-through cell (flushed with distilled water before use at each well) will be used during well purging for field measurement of pH, specific conductance, temperature, Eh, turbidity, and dissolved oxygen. Each well shall be purged three well volumes or until field parameters stabilize, whichever occurs first. Purge water is to be discharged to the ground surface near the well. In the event that a strong odor or sheen is evident, water is to be drummed, characterized, handled, and disposed of at a licensed treatment, storage, and disposal facility.

The following procedures will be used for monitoring well groundwater sampling:

- Wear appropriate personal protective equipment as specified in the site-specific HASP Addendum (Appendix B-1). In addition, samplers will use new nitrile sampling gloves for the collection of each sample.

- Unlock and remove the well cap.

- Measure the static water level in the well with an electronic water level indicator.

- The water level indicator will be washed with Alconox detergent and water, then rinsed with deionized water between individual monitoring wells to prevent cross-contamination.

- Calculate the volume of water in the well.

- Place polyethylene sheeting around the well casing to prevent contamination of sampling equipment in the event sampling equipment is dropped.

- Purge 3-5 well volumes of water from the well or until water quality parameters are stabilized, using the method described below.

- Pump with a submersible pump equipped with new polyethylene tubing dedicated to each well. Set pump intake at the approximate mid-point of the monitoring wells screened interval and start pump.

- Allow field parameters of pH, reduction-oxidation potential (Eh), dissolved oxygen, specific conductivity, turbidity, and temperature to stabilize before sampling. Purging will be considered complete if the following conditions are met:
    - Consecutive pH readings are ±0.1 pH units of each other
    - Consecutive dissolved oxygen readings are ±10 percent of each other
    - Consecutive Redox readings are ±0.10 units of each other
    - Consecutive measured specific conductance is ±3 percent of each other

- Turbidity < 50 Nephelometric turbidity units

If these parameters are not met after purging a volume equal to 3-5 times the volume of standing water in the well, the EA Project Manager will be contacted to determine the appropriate action(s).

- If the well is purged dry before the required volumes are removed, the well may be sampled when it recovers (recovery period up to 24 hours).

- Place analytical samples in cooler and chill to 4°C. Samples will be shipped to the analytical laboratories within 24 hours.

- Pump will be decontaminated and the polyethylene suction/discharge line will be properly discarded.

- Re-lock well cap.

- Fill out field sampling form, labels, custody seals, and chain-of-custody forms.

Groundwater samples will be placed in appropriate sample containers, sealed, and submitted to the laboratory for analysis.

3.3.1.2 Monitoring Well Repairs, Replacement, and Decommissioning

If biofouling or silt accumulation occurs in the onsite and/or offsite monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable.

Well decommissioning procedures are as follows:

- Measure total depth of the well to ensure the well depth is consistent with the recorded construction depth.

- Remove the steel manhole or steel stickup protective casing with an effort being made to ensure that the riser does not splinter and/or become structurally unstable for pulling.

- The bottom of the casing shall be punctured and the casing freed from the hole using suitable equipment (i.e., drill rig cable system). Well materials shall be disposed of at a licensed disposal facility.

- The well shall be tremie-grouted with a cement bentonite grout while removing the casing. The grout shall be completed to a depth of approximately 5 ft below grade.

- A bentonite seal shall be placed on top of the grout.

- The remaining riser shall be sealed with a Portland cement plug to the ground surface.

In the event the casing or well screen is severed during casing pulling, or if a borehole collapse occurs, the remaining materials will be removed by over-drilling using the conventional augering method described below:

- Overdrilling shall be conducted by either using a hollow-stem auger with outward facing carbide cutting teeth with a diameter 2 in. larger than the casing and/or using a hollow-stem auger fitting with a plug used to grind the well materials which will be brought to the surface by the auger. Spoils shall be drummed and disposed of at a licensed disposal facility.

- Overdrilling shall be advanced 0.5 ft beyond the original bore depth.

- Once the desired drilling depth has been completed (using open ended hollow-stem auger method) the casing and screen shall be retrieved from the center of the augers.

- As the augers are being retracted, cement-bentonite grout shall be pumped down the center of the augers.

- Bore hole shall be grouted and sealed with bentonite and Portland cement as described above.

Replacement wells shall be constructed using methods consistent with those used during the RI. Monitoring well construction logs are provided in Appendix C.

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

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's Commissioner Policy – 43 Groundwater Monitoring Well Decommissioning Policy (NYSDEC 2009)[5]. Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

5 NYSDEC. 2009. Commissioner Policy–43 Groundwater Monitoring Well Decommissioning Policy. 3 November.

3.3.2 Indoor Air Monitoring

Indoor air sampling is to take place in the existing office building and warehouse (Figure 14), as discussed in Section 1.3 of this plan, onsite on an annual basis to monitor effectiveness of SSDSs and potential SVI. Samples are to be analyzed by an Environmental Laboratory Analytical Program-certified laboratory for VOCs using U.S. Environmental Protection Agency (EPA) Method TO-15. In accordance with the NYSDOH guidance for evaluating SVI, the analysis for the indoor air samples is to achieve detection limits of 0.25 $\mu g/m^3$ for each compound.

Prior to collection of indoor air, an inspection of general site conditions is to be performed. The inspection is to include the following activities:

- Completion of the NYSDOH Indoor Air Quality Questionnaire and Building Inventory included in Indoor Air Sampling and Analysis Guidance (NYSDOH 2006)[4]. A sample of the questionnaire is provided in Appendix D. As directed by NYSDEC, a limited product inventory will be prepared. Sections 1 through 12 of the questionnaire will be completed with the exception of Section 4. In addition, a floor plan sketch of the first floor will not be required.

- Documentation of weather conditions outside and temperature inside.

- Ambient air (indoor and outdoor) screening using field equipment (i.e., parts per billion photoionization detector).

- Selection of air sampling locations.

An active approach, utilizing laboratory batch-certified Summa canisters, regulated for a 24-hour sample collection, will be used to monitor the indoor air conditions. The following procedures will be used for all indoor air sampling:

- Visually assess the building to be sampled. Select an area for sampling that is approximately 3-4 ft above the floor surface, out of the line of traffic, and away from any vents or windows.

- Place a canister in the selected sample location. The canister must be certified clean in accordance with EPA Method TO-15 and under a vacuum pressure of no more than -30 in. of mercury in Hg. Flow controllers must be set for a 24-hour collection period.

- Record the serial number of the canister and associated regulator on the chain-of-custody form and field notebook/sample form. Assign a sample identification on the canister identification tag and record this on chain-of-custody and field notebook/sample form. For the property owner's privacy, do not use a sample identifier containing the name of the property owner or the address of the property.

- Record the gauge pressure; the vacuum gauge pressure must read -25 in Hg or less, or the canister cannot be used.

- Record the start time on the chain-of-custody form and on the air sampling form (Appendix D), and take a digital photograph of canister setup and the surrounding area.

To terminate the sample collection:

- Close the canister valve; record the stop time on the chain-of-custody form and in the field notebook/sample form.

- Record the final gauge pressure and disconnect the pressure gauge/flow controller from the canister.

- Install the plug on the canister inlet fitting and place the sample container in the original box.

- Complete the sample collection log with the appropriate information, and log each sample on the chain-of-custody form.

3.4 SITE-WIDE INSPECTION

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

- Compliance with all ICs, including site usage

- An evaluation of the condition and continued effectiveness of ECs

- General site conditions at the time of the inspection

- The site management activities being conducted including, where appropriate, sampling and a health and safety inspection

- Compliance with permits and schedules included in the Operation and Maintenance Plan

- Confirm that site records are up to date.

- Confirm that site use has not changed since the previous inspection.

SSDS inspections will take place as part of the annual site-wide inspection and are discussed in Section 4.0 of this plan.

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

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

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

3.6 MONITORING REPORTING REQUIREMENTS

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

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

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

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

Schedule of Monitoring/Inspection Reports	
Task	**Reporting Frequency[(1)]**
Letter Inspection and Monitoring Report	Twice a year for the first year only
Periodic Review Report	January 2014 (first), annually after [(1)]
(1) The frequency of events will be conducted as specified until otherwise approved by NYSDEC	

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate, monitor, and maintain the mechanical components of the remedy in place at the site. This Operation and Maintenance Plan:

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

Information on non-mechanical ECs (i.e., soil cover system) is provided in Section 2 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 SUB-SLAB DEPRESSURIZATION SYSTEM OPERATION AND MAINTENANCE

There are two SSDSs onsite: one in the small office building and another in the larger warehouse building. The systems serve to reduce sub-slab pressure and vent built-up soil gas outside of the building. The systems consist of slotted screen installed beneath the slabs, connected to polyvinyl chloride pipe, an in-line ventilation fan, and an exterior exhaust point. The pipe for the smaller office building runs up the exterior wall and vents above the roof of the building. The pipe for the larger warehouse building runs up an interior wall, along the ceiling, and out through an existing hole in a window. Both vent fans are outside of the buildings. Both exhaust points are covered with rain caps. System locations are shown on Figure 14. Both systems have run continuously since March 2005.

4.2.1 Scope

The SSDSs are continuously operational, and require minimal maintenance and oversight; however, annual inspections are required to verify continuous and effective operation. The following sections detail system startup, inspections, and maintenance.

4.2.1.2 System Startup and Testing

Prior to system startup, the building slab, including the system slab and wall penetration and any gaps between the slab and the walls are to be sealed with a polyurethane sealant. After the fan is

turned on, the operating pressure is to be marked on the pressure gauge located on the vertical pipe. The pressure is to be checked weekly during continuous operation, until the pressure is observed to be the same during two consecutive weeks.

Following system startup, a field test is to be conducted to check negative pressure beneath the slab. Starting approximately 5 ft from the system, a ¼-in. diameter hole is to be drilled completely through the concrete slab. The vacuum is to be measured using a handheld electric manometer at the test location. This is to be repeated an additional 5 ft from each previous test hole, until the furthest possible point on the slab has been tested. Each previously tested hole is to be filled with fast-setting concrete prior to the succeeding test. The system is working properly if all points tested show a pressure drop of 0.5 Pa or higher.

The system testing described above will be conducted if, in the course of the SSDS lifetime, significant changes are made to the system, and the system must be restarted.

4.2.1.3 System Operation: Equipment Maintenance

In the event that the annual inspection discussed in Section 4.3 reveals system failure or potential for system failure, the building owner and NYSDEC SSDS contact should be notified immediately. Faulty parts of the system should be replaced if possible, or cracks should be sealed using a polyurethane sealant. Depending on the complexity of the problem, an experienced professional should be consulted to return the system to service.

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

Sub-slab depressurization systems have been installed to mitigate possible SVI into occupied buildings. While the systems involve very little in the way of operation and maintenance, monitoring is necessary to verify system functionality and effectiveness. An annual inspection described in Section 4.3.1 will serve to verify that the system components are in working condition and are not compromised in any way. Annual air sampling as discussed in Section 4.3.2 will serve to verify that the system is effectively mitigating vapor intrusion.

4.3.1 General Equipment Monitoring

An annual inspection will be performed on both systems in conjunction with the annual site-wide inspection discussed in Section 3.4 of this plan. The inspection is to include the following:

- Inspect all visible system components, including the system piping, fans, manometer, etc. Note any cracks in piping or other operational issues
- Inspect slab for cracks, noting location and size of gaps, or where seals have begun to fail
- Make sure that contact information on the SSDS is up to date

- Note changes in building use and changes in heating, ventilation and air conditioning.

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

A complete list of components to be checked is provided in the Inspection Checklist, which is part of the site-wide inspection form presented in Appendix D. If any equipment readings are not within their typical range, if any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the SSDS is to be restarted.

4.3.2 Sampling Event Protocol

Indoor air monitoring is to take place on an annual basis, and is discussed in Section 3.3.2 of this plan. In the event that indoor air monitoring indicates VOC contamination in the air, or per NYSDEC's request, a full sub-slab soil vapor intrusion evaluation is to be completed. This would include the collection of an indoor air sample, a sub-slab air sample, and an outdoor air sample. The indoor sample is to be collected as discussed in Section 3.3.2. The following procedures will be used for collection of sub-slab soil vapor samples:

- Visually assess the condition of the floor. Select an area for sampling that is out of the line of traffic and away from major cracks and other floor penetrations (sumps, pipes, etc.). Refer to historical sample forms (Appendix F) for ideal sample locations.

- Drill a ⅜-in. diameter hole completely through the concrete floor slab using an electric hammer drill.

- Sweep concrete dust away from the drill hole and wipe the floor with a dampened towel. Concrete dust can be cleaned up with a vacuum equipped with a high efficiency particulate air filter only after the sample tubing is properly sealed and sample collection has begun.

- Insert the Teflon-lined polyethylene tubing (¼-in. inside diameter × ⅜-in. outside diameter, approximately 3-ft long) into the hole drilled in the floor, extending no further than 2 in. below the bottom of the floor slab.

- Pour the melted beeswax around the tubing at the floor penetration, packing it in tightly around the tubing.

- Attach a syringe to the sample tube and purge approximately 100 mL of air/vapor. The syringe will be capped and the air released outside the building as to not interfere with the indoor air sample collection.

- Place a canister on the floor adjacent to the sample tube. The canister will be a 6-L canister (provided by an independent laboratory) with a vacuum gauge and flow controller. The canister must be certified clean in accordance with EPA Method TO-15 and under a vacuum pressure of no more than -30 in. of mercury in HG. Flow controllers must be set for a 24-hour collection period.

- Record the serial number of the canister and associated regulator on the chain-of-custody form and field notebook/sample form. Assign a sample identification on the canister identification tag and record this on the chain-of-custody form and field notebook/sample form. For the property owner's privacy, do not use a sample identifier containing the name of the property owner or the address of the property.

- Record the gauge pressure; the vacuum gauge pressure must read -25 in Hg or less, or the canister cannot be used.

- Record the start time on the chain-of-custody form and on the field record of air sampling (Appendix D), and take a digital photograph of canister setup and the surrounding area.

To complete the sample collection:

- Close the canister valve and record the stop time on the chain-of-custody form and in the field notebook/sample form.

- Record the final gauge pressure and disconnect the sample tubing and the pressure gauge/flow controller from the canister, if applicable.

- Install the plug on the canister inlet fitting and place the sample container in the original box.

- Complete the sample collection log with the appropriate information, and log each sample on the chain-of-custody form.

- Remove the temporary subsurface probe and properly seal the hole in the slab with hydraulic cement.

Field QC samples will include duplicates and trip blanks. Field duplicates will be collected at the rate of 1 duplicate per 20 original samples (20 percent). Field duplicates will be collected by installing an in-line "tee," which will essentially split the flow coming from the sample tubing penetrating the floor to two canisters set up adjacent to each other and each collecting vapors at identical flow rates.

Concurrently with the indoor air and sub-slab soil vapor monitoring program, one outdoor ambient air sample will be collected each day that indoor air monitoring occurs. The ambient air samples will be collected during the same 24-hour period as the indoor air samples, which

represent outdoor air conditions for the sampling area. The ambient air samples will be collected in a laboratory batch-certified Summa canister regulated for a 24-hour sample collection. A section of Teflon or polyethylene tubing that is identified as laboratory- or food-grade will be extended from the Summa canister to collect the ambient air sample from the breathing zone at approximately 3-5 ft above ground surface. Consistent with the indoor and sub-slab vapor sampling, the collecting rate of the outdoor air sample will be less than 0.2 L per minute.

Air samples will be analyzed by an Environmental Laboratory Analytical Program-certified laboratory for VOCs using EPA Method TO-15. In accordance with the NYSDOH Indoor Air Sampling and Analysis Guidance, the analysis for indoor and outdoor air samples will achieve a minimum reporting limit of 0.25 $\mu g/m^3$. The analysis for sub-slab soil vapor samples will achieve minimum reporting limit of 5 $\mu g/m^3$ for structures with full slab foundations, and a minimum 1 $\mu g/m^3$ for structures with less than a full slab foundation. For specific parameters identified by NYSDOH, where the selected parameters may have a higher detection limit (e.g., acetone), the higher detection limits will be designated by NYSDOH. The analytical turnaround time will be 14 days from receipt of sample containers. Analytical results will be provided as an electronic data deliverable.

4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be filed onsite. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report, as specified in the Section 5 of this SMP.

4.4.1 Maintenance Reports

During each maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities
- Presence of leaks
- Date of leak repair
- Other repairs or adjustments made to the system
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet)

- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

5. INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedule provided in Section 3 Monitoring Plan of this SMP. At a minimum, a site-wide inspection will be conducted twice a year. Inspections of remedial components (SSDS in this case) will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

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

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

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective
- The Monitoring Plan is being implemented
- Operation and maintenance activities are being conducted properly; and, based on the above items
- The site remedy continues to be protective of public health and the environment and is performing as designed in the Remedial Action Work Plan and Final Engineering Report.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a qualified environmental professional will prepare the following certification:

For each IC/EC identified for the site, I certify that all of the following statements are true:

- The inspection of the site to confirm the effectiveness of the ICs and ECs required by the remedial program was performed under my direction

- The IC and/or EC employed at this site is unchanged from the date the control was put in place, or last approved by the NYSDEC

- Nothing has occurred that would impair the ability of the control to protect the public health and environment

- Nothing has occurred that would constitute a violation or failure to comply with any SMP for this control

- Access to the site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control

- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document

- Use of the site is compliant with the EE

- The EC systems are performing as designed and are effective

- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program

- The information presented in this report is accurate and complete.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative]. The signed certification will be included in the Periodic Review Report described below.

For each IC identified for the site, I certify that all of the following statements are true:

- The IC employed at this site is unchanged from the date the control was put in place, or last approved by the NYSDEC

- Nothing has occurred that would impair the ability of the control to protect the public health and environment

- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control

- Access to the site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control

- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document

- Use of the site is compliant with the EE.

- The information presented in this report is accurate and complete.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative]

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the NYSDEC every year, beginning 18 months after approval of the Final Engineering Report. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A (ALTA Survey). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment, and certification of all ECs/ICs required by the remedy for the site

- Results of the required annual site inspections and severe condition inspections, if applicable

- All applicable inspection forms and other records generated for the site during the reporting period in electronic format

- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions

- Data summary tables and graphical representations of contaminants of concern by media (e.g., groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format

- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific Remedial Action Work Plan, ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
    - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
    - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in electronic-copy format, to the NYSDEC Central Office and Regional Office in which the site is located, and in electronic format to NYSDEC Central and Regional Offices, and the NYSDOH Bureau of Environmental Exposure Investigation.

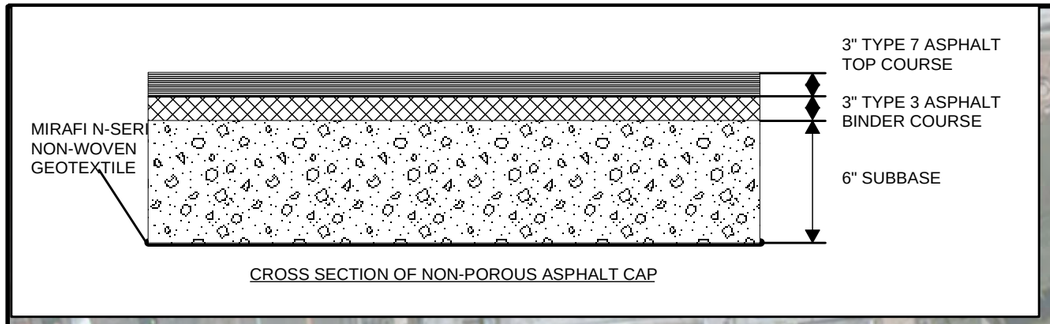
5.4 CORRECTIVE MEASURES PLAN

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

	FREEPORT METAL ETCHING SITE MANAGEMENT PLAN FREEPORT, NEW YORK			FIGURE 1 Site Location and Boundary Map		0 25 50 100 Feet		
	PROJECT MGR: RSC	DESIGNED BY: RSC	CREATED BY: MEM	CHECKED BY: RSC	PROJECT NO: 14474.37	DATE: AUGUST 2012	SCALE: AS SHOWN	FILE NO: G:\Projects\SMP\FIG1

Site Boundary
PropertyParcels
Existing Buildings
Approximate Locations of Former Buildings
Site Location

Source: NYS GIS Clearing House



CROSS SECTION OF NON-POROUS ASPHALT CAP

CROSS SECTION OF POROUS PAVEMENT SYSTEM AND BACKFILL FOR MAX. 5 FOOT DEPTH EXCAVATION AREAS

FREEPORT METAL ETCHING
SITE MONITORING PLAN
FREEPORT, NEW YORK

FIGURE 2
Cross Sections

0 25 50 100 Feet

Source: NYS GIS Clearing House

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\Fig2

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 3
Extent of Remedial Action Performed

0 12.5 25 50 75 100 Feet

Source: NYS GIS Clearing House

Legend

- Surveyed Location of Excavated Underground Storage Tanks 1 and 2
- Excavation Area Boundaries
- Approxmate Location of Excavated Underground Storage Tanks 3 and 4
- Cross Section

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG3

N

MW-06

MW-01

0.7

0.6

0.5

Ray Street

MW-2S/2D
(0.54/0.5)

0.4

MW-05

MW-7S/7D
(0.38/0.35)

MW-04
(0.73)

Main Street

MW-3D
(0.32)

MW-3S
(0.35)

		FREEPORT METAL ETCHING SITE MANAGEMENT PLAN FREEPORT, NEW YORK		FIGURE 4 Groundwater Contours June 2008	0 25 50 100 Feet			Source: NYS GIS Clearing House
		PROJECT MGR: RSC	DESIGNED BY: RSC	CREATED BY: MEM	CHECKED BY: RSC	PROJECT NO: 14474.37	DATE: AUGUST 2012	SCALE: AS SHOWN	FILE NO: G:\MegalEtching\ SMP\Fig4

Legend

- Monitoring Well (Groundwater Elevation ft amsl)
- Groundwater Contours
- Groundwater Flow Direction

MAP DERIVED FROM
TOPOGRAPHIC MAP OF
DESCRIBED PROPERTY
AND
LOT NOS. 24 & 25
MAP OF
SUNSHINE PARK
SITUATED AT
FREEPORT
TOWN OF HEMPSTEAD
NASSAU COUNTY, NEW YORK
NASSAU COUNTY MAP NO. 179
NASSAU COUNTY CASE NO. 1528
FILED: JUNE 4, 1921
GUARANTEED ONLY TO:
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION

N

0 60' 120'

GRAPHIC SCALE

RAY STREET

SOUTH MAIN STREET

SOUTH END PLACE

ADJOINING PROPERTY

STORM SEWER DRAIN OUTFALL

FREEPORT CREEK

ONE STORY CONCRETE BLOCK

1 STORY CONCRETE BLOCK

1 STORY BRICK

1 STORY CONC. BLOCK

CREEK GAUGE

MH-01

SG-01 SG-02 SG-03 SG-04 SG-05 SG-06

SD-01 SD-06

SB-01 SB-02 SB-03 SB-04 SB-05 SB-06 SB-07 SB-08 SB-09 SB-10 SB-11 SB-12 SB-13 SB-14 SB-15 SB-16 SB-17 SB-18 SB-19 SB-20 SB-21 SB-22 SB-23 SB-24 SB-25 SB-26 SB-27 SB-28 SB-29 SB-30 SB-31 SB-32 SB-33 SB-34 SB-35 SB-36 SB-37 SB-38 SB-39 SB-40 SB-41 SB-42 SB-43 SB-44 SB-45 SB-46 SB-47 SB-48 SB-50 SB-51 SB-52 SB-53 SB-54 SB-55 SB-56 SB-57 SB-58 SB-59 SB-60 SB-61 SB-62 SB-63 SB-64 SB-65 SB-66 SB-67 SB-68 SB-69

P01 P02 P03 P04 P05 P06 P07 P08 P09 P10 P11

MW-01 MW-02D MW-02S MW-03D MW-03S MW-04 MW-05 MW-06 MW-07D MW-07S

VP-01

SED-01 SED-02 SED-03 SED-04 SED-05 SED-06 SED-07

SW-01 SW-02 SW-03 SW-04 SW-05 SW-06 SW-07

LEGEND

- SB-64 SOIL BORING
- P09 PIEZOMETER
- MW-03D MONITORING WELL
- SG-01 SOIL GAS POINT
- VP-01 VERTICAL PROFILE
- SED-08 SEDIMENT SAMPLE
- SW-08 SURFACE WATER SAMPLE
- MANHOLE
- STUDY AREA
- SITE
- STORM SEWER DRAIN

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 5
Remedial Investigation Soil and Sediment Sample Locations

Source: ERM Remedial Investigation (2007) Figure 2-2

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG2

SB-23	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	3.9	[52]	[1500]	[120]
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	4	4.3	[130]	10
Nickel	13	4.5 U	4.5 U	[33]	4.4 U
Zinc	20	7.3	4.5 U	[40]	4.4 U

SB-24	NYSDEC RSCOs	0.50	2.50	7.00	12.00	16.00	20.00	24.00	33.00
Constituent									
Chromium	50	29	29	[190]	[140]	43	35	[58]	38
Chromium(Hexavalent)	NA	NA	NA	6.52	NA	NA	NA	NA	NA
Copper	25	2.8 U	2.7 U	[25]	5.1	5.2 U	<4.7 U	<4.9 U	[25]
Nickel	13	4.6 U	4.5 U	4.1 U	5.1 U	5.2 U	<4.7 U	<4.9 U	[19]
Zinc	20	4.6 U	4.5 U	4.7 U	5.1 U	5.2 U	<4.7 U	<4.9 U	[51]

SB-18	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	[120]	3.3	33	23
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	25	[30]	2.8 U	2.9 U
Nickel	13	[46]	4.6 U	[16]	3.7 U
Zinc	20	[81]	6.4	[77]	4.9

SB-39	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	3.5	10	3.1	2 U
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	5.6	20	2.8 U	2.9 U
Nickel	13	4.8 U	7.6	4.6 U	4.9 U
Zinc	20	8.2	[41]	19	4.9 U

SB-69	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	6.7	3	2.8	3.5
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	9.7	3.6	3.5	4.1
Nickel	13	4.5	2.2 U	2.3 U	2.2 U
Zinc	20	[23]	4.8	4.5	3.2

SB-20	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	39	4.7	23	[98]
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	16	3.6	4.3	6.9
Nickel	13	8.5	7.3	5.3 U	12
Zinc	20	18	6.8	6.6	5.1

SB-19	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	5.7	2.9	[51]	[85]
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	5	3.9	12	14
Nickel	13	5.2 U	4.5 U	4.4 U	6.2
Zinc	20	8	5.4	7.4	12

SB-12	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	[220]	[640]	[500]	28
Chromium(Hexavalent)	NA	88.9	NA	218	NA
Copper	25	3.2	2.8	2.7	4.1
Nickel	13	4.2	3.6	8.1	[25]
Zinc	20	3.6	4.1	3.7	3.6

SB-65	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	3.9	9.9	2.5	6
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	3.6	[65]	2	20
Nickel	13	2.2 U	11	2 U	3.6
Zinc	20	6.2	[29]	3.1	[20]

SB-38	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	9.5	3.7	1.7	1.8
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	4.9	7.1	2.5 U	2.5
Nickel	13	4.2 U	5.2 U	4.2 U	3.8 U
Zinc	20	6	[33]	4.2 U	3.8 U

SB-52	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	[100]	34	7	7
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	9.7	[180]	3.5	[45]
Nickel	13	6.2	[21]	3.7 U	4.1 U
Zinc	20	[48]	[1200]	[350]	[150]

SB-16	NYSDEC RSCOs	0.50	2.50	7.00	12.00	16.00	20.00	37.00
Constituent								
Chromium	50	[120]	[1100]	[180]	[80]	48	37	2
Chromium(Hexavalent)	NA	4.26 U	19.4	5.94	NA	NA	NA	NA
Copper	25	[40]	[48]	13	3	5.2	7	<2.6 U
Nickel	13	2.3 U	2.2 U	5	4.3	4.5 U	<3.9 U	<4.4 U
Zinc	20	4.9	2.2	7.3	2.9	4.5 U	6.4	<4.4 U

SB-17	NYSDEC RSCOs	0.50	2.50	7.00	12.00	0.50
Constituent						
Chromium	50	[470]	[160]	17	20	
Chromium(Hexavalent)	NA	NA	NA	NA	NA	4.58 U
Copper	25	16	12	5.1	5.8	
Nickel	13	4.5	5.2 U	4.6 U	3.7 U	
Zinc	20	4.5	5.2 U	4.6 U	3.7 U	

SB-11	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	6.9	36	5.2	2.8
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[100]	[130]	6.3	2.9
Nickel	13	[440]	[1300]	9.6	4.2 U
Zinc	20	[180]	[290]	7.3	4.2 U

SB-32	NYSDEC RSCOs	7.00	12.00
Constituent			
Chromium	50	4.3	2.1
Chromium(Hexavalent)	NA	NA	NA
Copper	25	6.6	2.9 U
Nickel	13	11	4.2 U
Zinc	20	8.4	4.8 U

SB-01	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	14	13	14	3.4
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[530]	[5700]	[220]	15
Nickel	13	9	9.3	6.9	5 U
Zinc	20	[140]	[790]	[170]	5 U

SB-67	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	[310]	[68]	10	[76]
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[890]	[31]	10	13
Nickel	13	[280]	8.4	5.5	4.1
Zinc	20	[160]	7.1	14	6.1

SB-15	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	9.7	4.7	38	36
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[110]	9.5	3.5	2.7
Nickel	13	[13]	2.8	2.2	2.2 U
Zinc	20	[58]	[44]	3.9	3

SB-14	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	13	4.4	9.1	15
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[64]	4.6	3.1	3.3
Nickel	13	[170]	2.4	3.2	2.4 U
Zinc	20	[67]	[21]	6.9	4

SB-47	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	31	2.5	[57]	22
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[55]	3.5	7.6	7.9
Nickel	13	[24]	3.5 U	5.4 U	4.4 U
Zinc	20	[25]	4.5	5.4 U	4.4 U

SB-68	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	42	7.3	3.4	5.5
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[540]	[35]	[160]	24
Nickel	13	10	4.4	2.2 U	3
Zinc	20	[200]	[110]	[31]	[160]

SB-31	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	[150]	21	3.9	4.1
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[330]	24	2.7 U	5.3
Nickel	13	[13]	[15]	4.5 U	4.4 U
Zinc	20	[140]	[140]	9.5	12

SB-50	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	[50]	18	[75]	49
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	9.5	[110]	8.4	2.6
Nickel	13	4.5 U	[320]	4.5 U	3.6 U
Zinc	20	5.8	[78]	4.5 U	3.6 U

SB-02	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	7	[1200]	13	9.5
Chromium(Hexavalent)	NA	NA	24.3	NA	NA
Copper	25	[50]	[160]	[93]	[44]
Nickel	13	9.1	[19]	[24]	7.8
Zinc	20	[110]	[1200]	[130]	[42]

SB-21	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	4.3	[170]	[59]	[73]
Chromium(Hexavalent)	NA	NA	NA	7.21	NA
Copper	25	5.6	[110]	7.5	3.4
Nickel	13	5 U	9.8	8.7	5
Zinc	20	6.8	[32]	7.6	4.8 U

SB-13	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	15	10	9.5	8
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[310]	6.2	[44]	3.3
Nickel	13	[140]	[53]	[380]	2.4 U
Zinc	20	[310]	8.8	[47]	2.9

SB-03	NYSDEC RSCOs	7.00	0.50	2.50	12.00
Constituent					
Chromium	50	22	[57]	13	15
Chromium(Hexavalent)	NA	NA	4.56 U	NA	NA
Copper	25	[640]	[2000]	[180]	11
Nickel	13	[20]	[7]	13	5.2 U
Zinc	20	[360]	[1600]	[240]	13

SB-40	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	5.6	35	36	25
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	20	8.6	3.8	5.3
Nickel	13	5.5	10	5.2	4.7 U
Zinc	20	[81]	[26]	4.8 U	5.1

SB-22	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	4	3.5	36	2.4
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	3	4.1	10	3
Nickel	13	4.7 U	4.7 U	4.8	4.2 U
Zinc	20	6.7	9.3	4.5 U	9.6

SB-04	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	14	5.7	22	22
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[39]	[40]	[100]	10
Nickel	13	5 U	5 U	[15]	9.9
Zinc	20	[22]	[20]	[160]	[31]

SB-26	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	9	12	[82]	[120]
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[210]	[310]	7.5	9.6
Nickel	13	11	[13]	4.4 U	4.5 U
Zinc	20	[640]	[810]	4.5	4.9

SB-25	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	43	11	5.3	3
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[960]	[290]	6.9	12
Nickel	13	[240]	[32]	[13]	5 U
Zinc	20	[3600]	[910]	[24]	7.9

SB-05	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	30	11	8.6	1.9
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[87]	[69]	9.6	2.9
Nickel	13	9.3	7.7	5 U	4.2 U
Zinc	20	[70]	[67]	[56]	4.2 U

SB-41	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	6.4	6.9	3	3.3
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[51]	[29]	6.9	3.6
Nickel	13	[220]	9.8	5.7	3.8 U
Zinc	20	[46]	[320]	13	6

SB-57	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	8.5	7.3	2.5	7.9
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	14	5.3	4	5.5
Nickel	13	4.7 U	4.3	4.9 U	5 U
Zinc	20	[34]	11	4.9 U	12

SB-49	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	14	9.5	16	11
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[32]	17	[25]	[37]
Nickel	13	7	4.9	9.8	8.5
Zinc	20	[73]	[160]	[84]	[54]

SB-09	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	10	2.5	2.3	2.1
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	18	2.8 U	3.4	3.3
Nickel	13	6	4.7 U	4.7 U	9.9
Zinc	20	[37]	[27]	[33]	[31]

SB-61	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	5.1	8.4	3.2	2.7
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	14	4.9	3.1 U	2.9 U
Nickel	13	4.8 U	5.4	5.2 U	4.8 U
Zinc	20	[69]	14	5.2 U	4.8 U

SB-60	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	4.6	6.1	1.9	4.9
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	8	5.3	2.4	4.3
Nickel	13	4.2 U	4.8 U	3.8 U	5.4 U
Zinc	20	[63]	13	3.8 U	5.4 U

SB-06	NYSDEC RSCOs	2.50	0.50	7.00	12.00
Constituent					
Chromium	50	7.1	35	3.6	9
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[90]	[31]	9.1	2.7 U
Nickel	13	9.4	6	4.7 U	4.5 U
Zinc	20	[130]	[83]	[50]	4.5 U

SB-66	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	13	6.4	1.8	6.6
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[26]	6.4	2.5	3.2
Nickel	13	6.4	4.3	2.7	2.3 U
Zinc	20	[110]	11	6.5	10

SB-62	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	6.7	8.6	3.8	3.5
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	2.5 U	4.2	2.8	3.2 U
Nickel	13	4.3	5.2 U	4 U	5.3 U
Zinc	20	13	13	6.2	5.3 U

SB-30	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	12	13	2.4	1.7
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[31]	[48]	2.7 U	2.1 U
Nickel	13	11	6.1	4.5 U	3.5
Zinc	20	[62]	[49]	4.5 U	4.6

SB-46	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	44	6.9	20	5.8
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[140]	15	[130]	5.3
Nickel	13	[18]	4.9 U	6	4.5 U
Zinc	20	[100]	[23]	[52]	5.6

SB-55	NYSDEC RSCOs	8.00	14.00	24.00	34.00
Constituent					
Chromium	50	12	13	32	19
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	21	[140]	7.7	7.9
Nickel	13	5 U	4.7	4.2 U	4.7 U
Zinc	20	[59]	[87]	4.2 U	4.7 U

SB-08	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	18	12	3.1	3.4
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[81]	13	3.1 U	2.7
Nickel	13	[34]	6.7	5.2 U	4.5 U
Zinc	20	[110]	[46]	5.2 U	4.5 U

SB-29	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	4.6	5.4	2.2 U	4.9
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	9.6	8.7	3.3 U	6.8
Nickel	13	5.4 U	5.1 U	5.6 U	5 U
Zinc	20	[22]	[57]	13	[67]

SB-07	NYSDEC RSCOs	0.50	7.00	12.00	2.50	0.50
Constituent						
Chromium	50	[740]	[690]	3.9	[320]	
Chromium(Hexavalent)	NA	NA	9.93	NA	13.6	4.39 U
Copper	25	[20]	[94]	2.4 U	[130]	
Nickel	13	[37]	[240]	4 U	[45]	
Zinc	20	[280]	[99]	4 U	[180]	

SB-48	NYSDEC RSCOs	12.00	0.50	2.50	7.00
Constituent					
Chromium	50	8.1	26	5.3	24
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[180]	[43]	[150]	
Nickel	13	6.2	[99]	[21]	[49]
Zinc	20	10	[240]	[28]	[85]

SB-37	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	[74]	8.5	3.6	7.7
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[3600]	[110]	22	[53]
Nickel	13	[23]	[20]	4.6 U	5 U
Zinc	20	[470]	[79]	[24]	[130]

SB-36	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	23	6	12	3.1
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[65]	9.6	[64]	2.2 U
Nickel	13	[20]	4.9 U	9.9	3.7 U
Zinc	20	[420]	[32]	[140]	3.7 U

SB-42	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	1.8 U	3.9	2.3	2 U
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	6.2	10	2.9	2.9 U
Nickel	13	4.5 U	5.3 U	4.8 U	4.9 U
Zinc	20	7.6	[28]	5.6	4.9 U

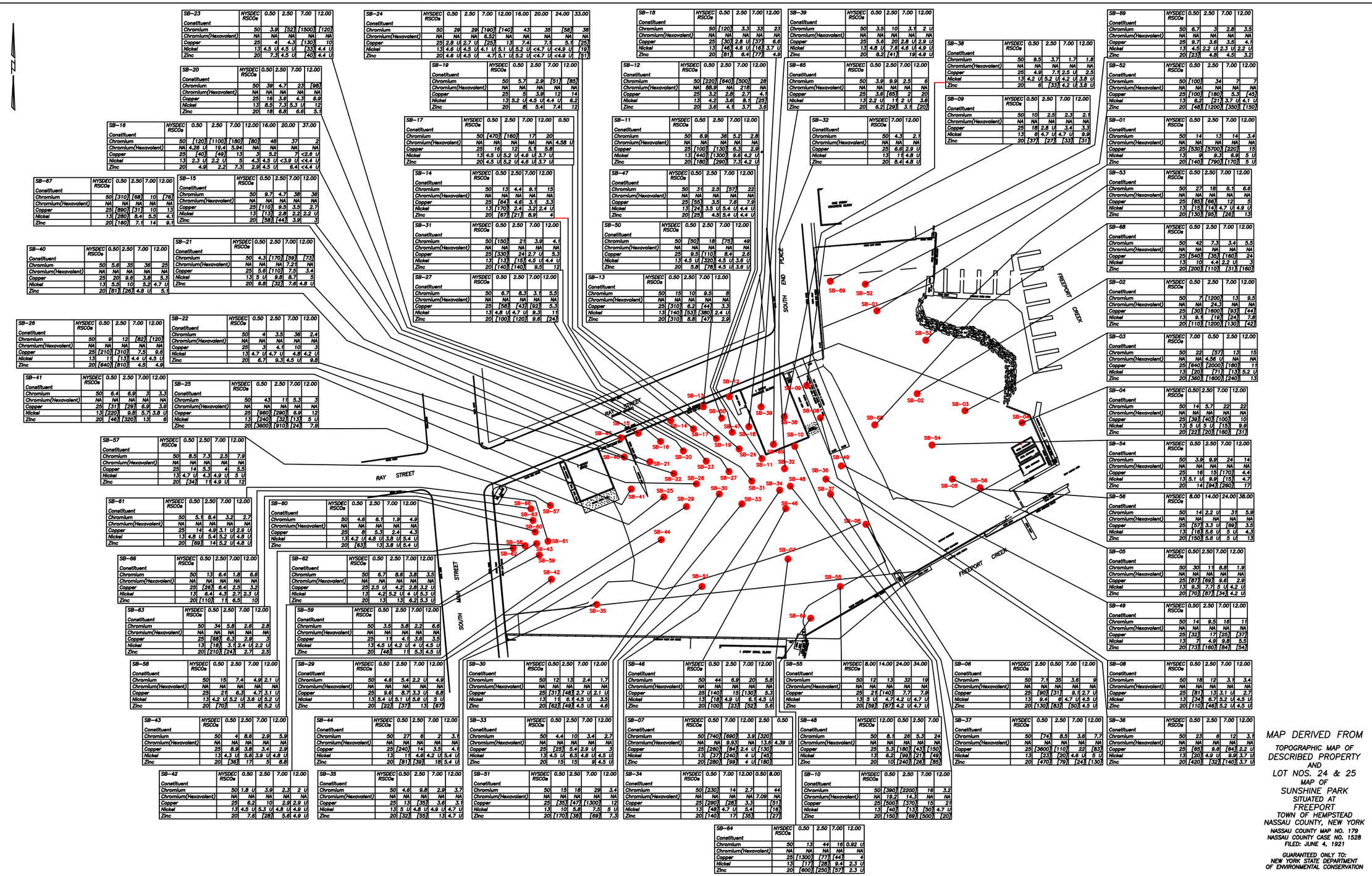
SB-35	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	4.6	9.8	2.9	3.7
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	13	[35]	3.6	3.1
Nickel	13	5 U	4.8 U	4.9 U	4.7 U
Zinc	20	[32]	[55]	13	4.7 U

SB-51	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	15	18	29	3.4
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[35]	[47]	[1300]	12
Nickel	13	10	5.8	7.5	5 U
Zinc	20	[170]	[38]	[69]	7.3

SB-34	NYSDEC RSCOs	0.50	7.00	12.00	0.50	8.00
Constituent						
Chromium	50	[230]	14	2.7		44
Chromium(Hexavalent)	NA	NA	NA	NA	7.09	NA
Copper	25	[290]	[28]	3.3		[51]
Nickel	13	[48]	4.7 U	5.4		[16]
Zinc	20	[140]	17	[35]		[27]

SB-10	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	[390]	[2200]	16	3.2
Chromium(Hexavalent)	NA	19.2	14.3	NA	NA
Copper	25	[500]	[370]	15	21
Nickel	13	[40]	[13]	[50]	4.7 U
Zinc	20	[150]	[69]	[500]	[20]

SB-64	NYSDEC RSCOs	0.50	2.50	7.00	12.00
Constituent					
Chromium	50	13	44	16	0.92 U
Chromium(Hexavalent)	NA	NA	NA	NA	NA
Copper	25	[1300]	[77]	[44]	4
Nickel	13	[17]	[28]	9.4	2.3 U
Zinc	20	[900]	[250]	[57]	2.3 U



MAP DERIVED FROM
TOPOGRAPHIC MAP OF DESCRIBED PROPERTY AND LOT NOS. 24 & 25 MAP OF SUNSHINE PARK SITUATED AT FREEPORT TOWN OF HEMPSTEAD NASSAU COUNTY, NEW YORK
NASSAU COUNTY MAP NO. 179
NASSAU COUNTY CASE NO. 1528
FILED: JUNE 4, 1921

GUARANTEED ONLY TO:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

Figure 5A
Remedial Investigation
Soil Sample Results - Metals

0 50' 100'

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	1447437	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG5A

Legend

SB-57 ● Soil boring location

Concentrations of constituents are shown in milligrams per kilogram (mg/kg)

[ ] Detected soil concentration is above NYSDEC TAGM SCO's

U Not Detected at indicated detection limit

Note: Map was developed for the 2007 Remedial Investigation by Environmental Remedial Management, Inc.

N

SED–01 Constituent	Units	ER–M	08/24/04
Chromium	(mg/kg)	370	34.7
Mercury	(mg/kg)	0.71	2.5 J
Nickel	(mg/kg)	51.6	15.4 J
Zinc	(mg/kg)	410	338 J

SED–06 Constituent	Units	ER–M	08/24/04
Chromium	(mg/kg)	370	89.2 J
Mercury	(mg/kg)	0.71	0.61 J
Nickel	(mg/kg)	51.6	26.8 J
Zinc	(mg/kg)	410	417 J

SED–02 Constituent	Units	ER–M	08/24/04
Chromium	(mg/kg)	370	16.0
Mercury	(mg/kg)	0.71	0.065 J
Nickel	(mg/kg)	51.6	8.8 J
Zinc	(mg/kg)	410	93.2 J

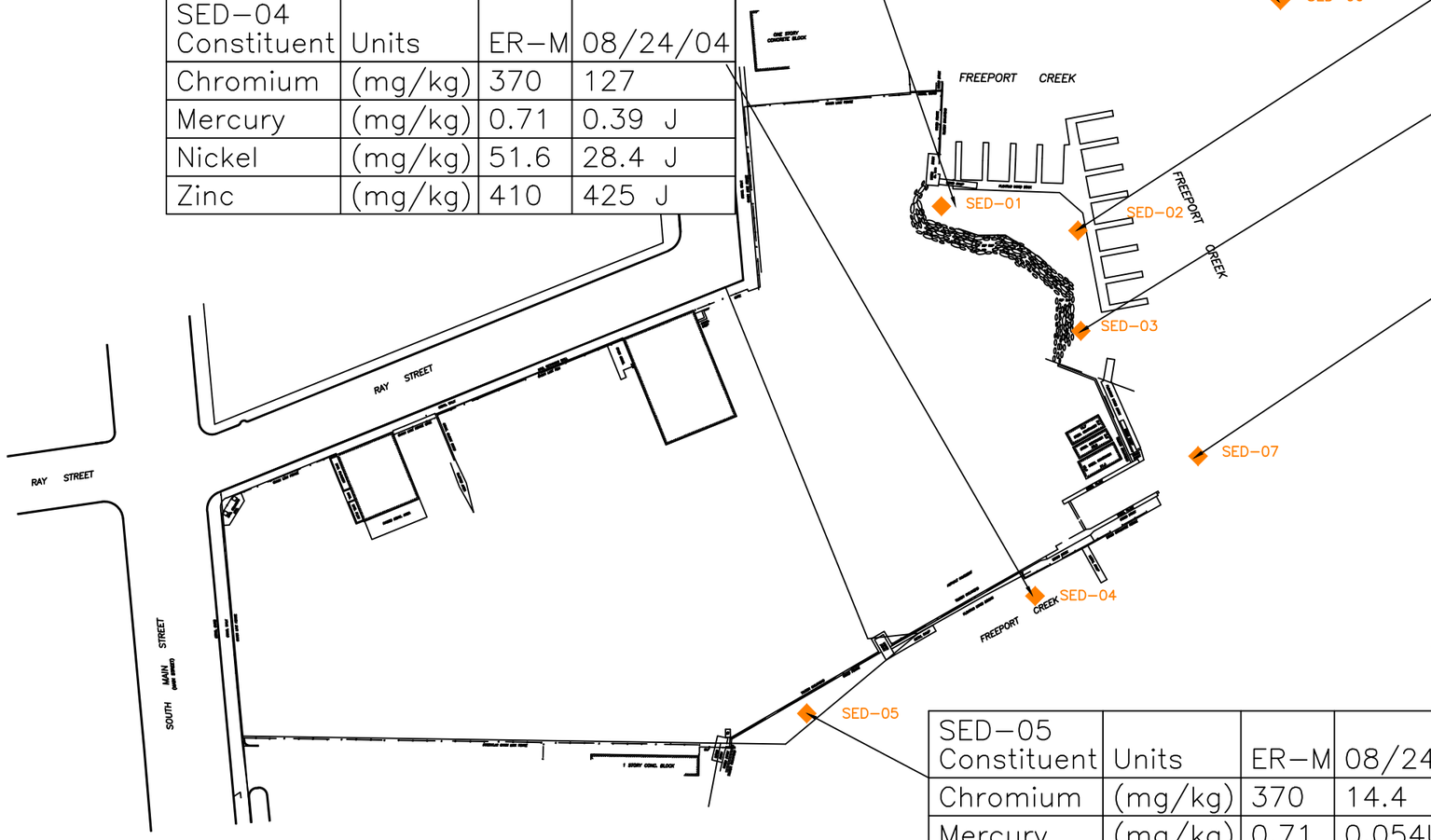
SED–04 Constituent	Units	ER–M	08/24/04
Chromium	(mg/kg)	370	127
Mercury	(mg/kg)	0.71	0.39 J
Nickel	(mg/kg)	51.6	28.4 J
Zinc	(mg/kg)	410	425 J

SED–03 Constituent	Units	ER–M	08/24/04
Chromium	(mg/kg)	370	3.3
Mercury	(mg/kg)	0.71	0.059U J
Nickel	(mg/kg)	51.6	3.2 J
Zinc	(mg/kg)	410	59.7 J

SED–07 Constituent	Units	ER–M	08/24/04
Chromium	(mg/kg)	370	3.4
Mercury	(mg/kg)	0.71	0.047U J
Nickel	(mg/kg)	51.6	1.4 J
Zinc	(mg/kg)	410	16.5 J

SED–08 Constituent	Units	ER–M	08/24/04
Chromium	(mg/kg)	370	6.5
Mercury	(mg/kg)	0.71	0.089 J
Nickel	(mg/kg)	51.6	2.6 J
Zinc	(mg/kg)	410	26.5 J

SED–05 Constituent	Units	ER–M	08/24/04
Chromium	(mg/kg)	370	14.4
Mercury	(mg/kg)	0.71	0.054U J
Nickel	(mg/kg)	51.6	2.3 J
Zinc	(mg/kg)	410	46.5 J



TOPOGRAPHIC MAP OF DESCRIBED PROPERTY AND LOT NOS. 24 & 25 MAP OF SUNSHINE PARK SITUATED AT FREEPORT TOWN OF HEMPSTEAD NASSAU COUNTY, NEW YORK NASSAU COUNTY MAP NO. 179 NASSAU COUNTY CASE NO. 1528 FILED: JUNE 4, 1921

GUARANTEED ONLY TO: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

Figure 5B
Remedial Investigation
Sediment Sample Results - Metals

0 80' 160'

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	1447437	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG5B

Legend

SED–07 Sediment sample location

ER-M Effect Range-Median- Values derived from NYSDEC Technical Guidance for Screening Contaminated Sediments (NYSDEC 1999)

Note: Map was developed for the 2007 Remedial Investigation by Environmental Remedial Management, Inc.

SB-31 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	240 U	240 U	260 U	270 U
Toluene	1500	240 U	60 J	260 U	70 J
Ethylbenzene	5500	240 U	240 U	260 U	270 U
Xylenes (total)	1200	240 U	240 U	260 U	270 U
Methyl-tert-butyl-ether	120	240 U	240 U	[280]	70 J
Naphthalene	13000	240 U	240 U	260 U	270 U
Tetrachloroethene	1400	710	240 U	260 U	60 J
Trichloroethene	700	240 U	240 U	260 U	270 U
trans-1,2-Dichloroethene	300	240 U	240 U	260 U	270 U
cis-1,2-Dichloroethene		240 U	240 U	260 U	270 U
Vinyl chloride	200	240 U	240 U	260 U	270 U
Chlorobenzene	1700	240 U	240 U	260 U	270 U

SB-11 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	260 U	250 U	270 U	250 U
Toluene	1500	80 J	870	270 U	250 U
Ethylbenzene	5500	260 U	250 J	270 U	250 U
Xylenes (total)	1200	260 U	620	270 U	250 U
Methyl-tert-butyl-ether	120	260 U	[200] J	270 U	250 U
Naphthalene	13000	260 U	250 U	270 U	250 U
Tetrachloroethene	1400	520	[3700]	270 U	250 U
Trichloroethene	700	100 J	580	270 U	250 U
trans-1,2-Dichloroethene	300	260 U	250 U	270 U	250 U
cis-1,2-Dichloroethene		270	990	270 U	250 U
Vinyl chloride	200	260 U	100 J	270 U	250 U
Chlorobenzene	1700	260 U	250 U	270 U	250 U

SB-10 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	250 U	240 U	270 U	240 U
Toluene	1500	60 J	240 U	90 J	240 U
Ethylbenzene	5500	250 U	240 U	270 U	240 U
Xylenes (total)	1200	250 U	240 U	270 U	240 U
Methyl-tert-butyl-ether	120	250 U	240 U	270 U	240 U
Naphthalene	13000	250 U	240 U	270 U	240 U
Tetrachloroethene	1400	250 U	200 J	270 U	240 U
Trichloroethene	700	100 J	[1700]	270 U	240 U
trans-1,2-Dichloroethene	300	250 U	240 U	270 U	240 U
cis-1,2-Dichloroethene		70 J	200 J	70 J	240 U
Vinyl chloride	200	260 U	240 U	270 U	240 U
Chlorobenzene	1700	250 U	240 U	270 U	240 U

SB-48 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	12.00	0.50	2.50	7.00
Benzene	60	270 U	260 U	270 U	250 U
Toluene	1500	270 U	260 U	270 U	60 J
Ethylbenzene	5500	270 U	260 U	270 U	250 U
Xylenes (total)	1200	270 U	260 U	270 U	80 J
Methyl-tert-butyl-ether	120	[450]	260 U	80 J	250 U
Naphthalene	13000	100 J	260 U	200 J	640
Tetrachloroethene	1400	270 U	260 U	270 U	200 J
Trichloroethene	700	200 J	260 U	80 J	[730]
trans-1,2-Dichloroethene	300	270 U	260 U	270 U	250 U
cis-1,2-Dichloroethene		60 J	260 U	270 U	70 J
Vinyl chloride	200	270 U	260 U	270 U	250 U
Chlorobenzene	1700	270 U	260 U	270 U	250 U

SB-41 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	250 U	260 U	270 U	250 U
Toluene	1500	250 U	260 U	270 U	250 U
Ethylbenzene	5500	250 U	260 U	270 U	250 U
Xylenes (total)	1200	250 U	260 U	270 U	250 U
Methyl-tert-butyl-ether	120	250 U	260 U	270 U	250 U
Naphthalene	13000	250 U	260 U	270 U	250 U
Tetrachloroethene	1400	250 U	260 U	270 U	250 U
Trichloroethene	700	250 U	[1200]	270 U	250 U
trans-1,2-Dichloroethene	300	250 U	260 U	270 U	250 U
cis-1,2-Dichloroethene		250 U	260 U	270 U	250 U
Vinyl chloride	200	250 U	260 U	270 U	250 U
Chlorobenzene	1700	250 U	260 U	270 U	250 U

SB-52 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	240 U	250 U	250 U	260 U
Toluene	1500	240 U	250 U	360	80 J
Ethylbenzene	5500	240 U	250 U	5200	1500
Xylenes (total)	1200	240 U	250 U	[4000]	[1700]
Methyl-tert-butyl-ether	120	240 U	250 U	250 U	260 U
Naphthalene	13000	240 U	250 U	6700	2800
Tetrachloroethene	1400	240 U	250 U	250 U	260 U
Trichloroethene	700	240 U	250 U	250 U	260 U
trans-1,2-Dichloroethene	300	240 U	250 U	250 U	260 U
cis-1,2-Dichloroethene		240 U	250 U	250 U	260 U
Vinyl chloride	200	240 U	250 U	250 U	260 U
Chlorobenzene	1700	240 U	250 U	250 U	260 U

SB-63 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	250 U	230 U	250 U	220 U
Toluene	1500	250 U	230 U	250 U	220 U
Ethylbenzene	5500	250 U	230 U	1600	220 U
Xylenes (total)	1200	250 U	230 U	[3100]	220 U
Methyl-tert-butyl-ether	120	250 U	230 U	250 U	220 U
Naphthalene	13000	200 J	80 J	[19000]	1600
Tetrachloroethene	1400	250 U	230 U	250 U	220 U
Trichloroethene	700	250 U	230 U	250 U	220 U
trans-1,2-Dichloroethene	300	250 U	230 U	250 U	220 U
cis-1,2-Dichloroethene		250 U	230 U	250 U	220 U
Vinyl chloride	200	250 U	230 U	250 U	220 U
Chlorobenzene	1700	250 U	230 U	250 U	220 U

SB-02 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	250 U	260 U	250 U	260 U
Toluene	1500	250 U	260 U	250 U	260 U
Ethylbenzene	5500	250 U	1600	200 J	260 U
Xylenes (total)	1200	250 U	[2000]	60 J	260 U
Methyl-tert-butyl-ether	120	250 U	260 U	250 U	260 U
Naphthalene	13000	250 U	1200	3800	350
Tetrachloroethene	1400	250 U	260 U	250 U	260 U
Trichloroethene	700	250 U	260 U	250 U	260 U
trans-1,2-Dichloroethene	300	250 U	260 U	250 U	260 U
cis-1,2-Dichloroethene		250 U	260 U	250 U	260 U
Vinyl chloride	200	250 U	260 U	250 U	260 U
Chlorobenzene	1700	250 U	260 U	250 U	260 U

SB-56 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	8.00	14.00	24.00	38.00
Benzene	60	260 U	260 U	250 U	230 U
Toluene	1500	270	260 U	250 U	230 U
Ethylbenzene	5500	[14000]	280	250 U	230 U
Xylenes (total)	1200	[15000]	320	250 U	230 U
Methyl-tert-butyl-ether	120	260 U	260 U	250 U	230 U
Naphthalene	13000	11000	1200	60 J	230 U
Tetrachloroethene	1400	260 U	260 U	250 U	230 U
Trichloroethene	700	260 U	260 U	250 U	230 U
trans-1,2-Dichloroethene	300	260 U	260 U	250 U	230 U
cis-1,2-Dichloroethene		260 U	260 U	250 U	230 U
Vinyl chloride	200	260 U	260 U	250 U	230 U
Chlorobenzene	1700	[3700]	90 J	250 U	230 U

SB-60 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	260 U	270 U	260 U	260 U
Toluene	1500	260 U	270 U	260 U	260 U
Ethylbenzene	5500	260 U	270 U	3600	80 J
Xylenes (total)	1200	260 U	270 U	[11000]	200 J
Methyl-tert-butyl-ether	120	260 U	270 U	260 U	260 U
Naphthalene	13000	260 U	270 U	[25000]	4500
Tetrachloroethene	1400	260 U	270 U	260 U	260 U
Trichloroethene	700	260 U	270 U	260 U	260 U
trans-1,2-Dichloroethene	300	260 U	270 U	260 U	260 U
cis-1,2-Dichloroethene		260 U	270 U	260 U	260 U
Vinyl chloride	200	260 U	270 U	260 U	260 U
Chlorobenzene	1700	260 U	270 U	260 U	260 U

SB-36 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	250 U	250 U	250 U	230 U
Toluene	1500	[2800]	250 U	250 U	230 U
Ethylbenzene	5500	250 U	250 U	250 U	230 U
Xylenes (total)	1200	250 U	250 U	250 U	230 U
Methyl-tert-butyl-ether	120	250 U	250 U	250 U	230 U
Naphthalene	13000	250 U	250 U	250 U	230 U
Tetrachloroethene	1400	80 J	250 U	100 J	230 U
Trichloroethene	700	560	250 U	[1000]	230 U
trans-1,2-Dichloroethene	300	250 U	250 U	250 U	230 U
cis-1,2-Dichloroethene		470	200 J	300	230 U
Vinyl chloride	200	250 U	250 U	250 U	230 U
Chlorobenzene	1700	250 U	250 U	250 U	230 U

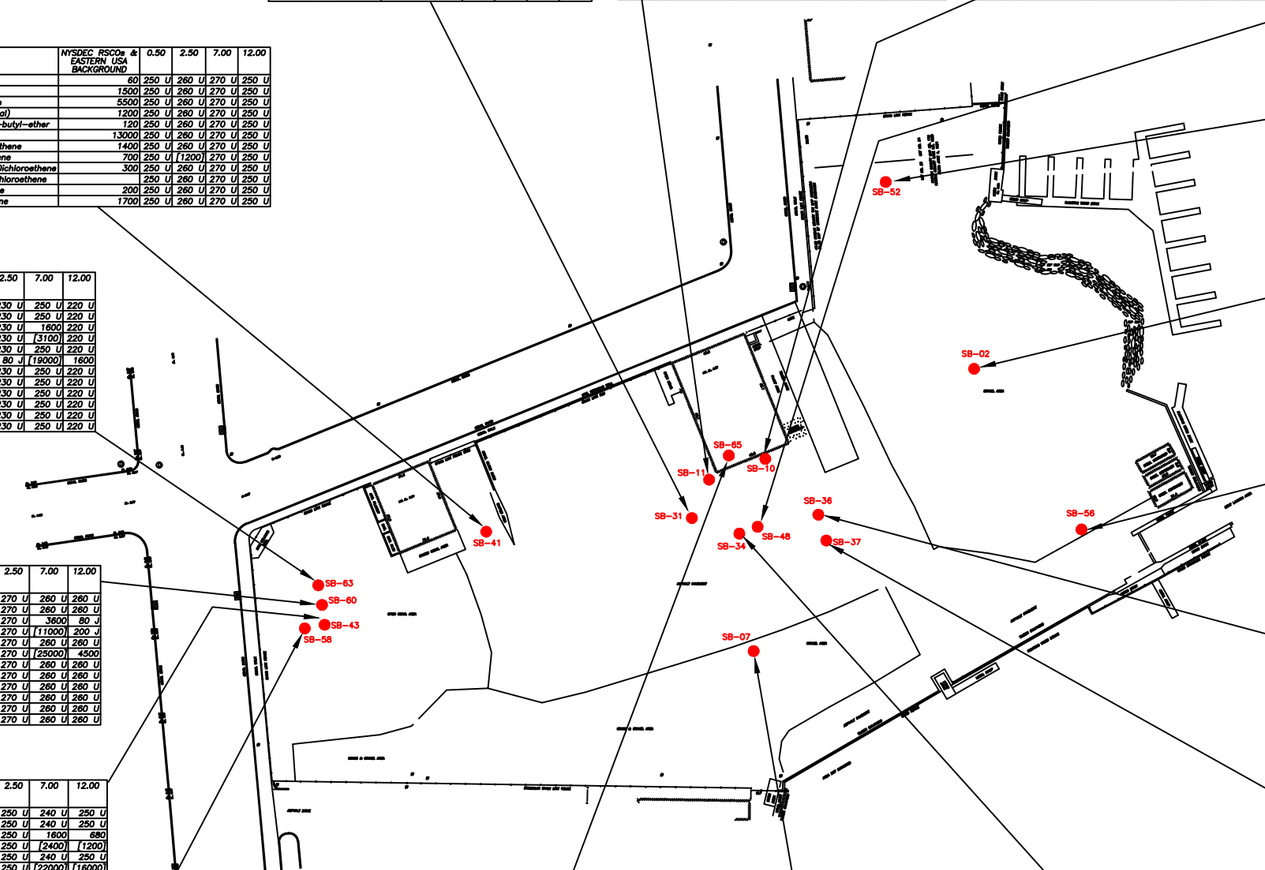
SB-37 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	270 U	260 U	250 U	250 U
Toluene	1500	80 J	260 U	250 U	250 U
Ethylbenzene	5500	270 U	260 U	250 U	250 U
Xylenes (total)	1200	270 U	260 U	250 U	250 U
Methyl-tert-butyl-ether	120	270 U	260 U	250 U	250 U
Naphthalene	13000	270 U	260 U	250 U	250 U
Tetrachloroethene	1400	[430]	200 J	100 J	100 J
Trichloroethene	700	[270]	80 J	250 U	70 J
trans-1,2-Dichloroethene	300	[300]	260 U	250 U	250 U
cis-1,2-Dichloroethene		[2000]	300 J	100 J	100 J
Vinyl chloride	200	[180]	260 U	250 U	250 U
Chlorobenzene	1700	270 U	260 U	250 U	250 U

SB-58 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	240 U	220 U	240 U	230 U
Toluene	1500	240 U	220 U	240 U	230 U
Ethylbenzene	5500	240 U	220 U	420	230 U
Xylenes (total)	1200	240 U	220 U	[4000]	230 U
Methyl-tert-butyl-ether	120	240 U	220 U	240 U	230 U
Naphthalene	13000	240 U	220 U	10000	1300
Tetrachloroethene	1400	240 U	220 U	240 U	230 U
Trichloroethene	700	240 U	220 U	240 U	230 U
trans-1,2-Dichloroethene	300	240 U	220 U	240 U	230 U
cis-1,2-Dichloroethene		240 U	220 U	240 U	230 U
Vinyl chloride	200	240 U	220 U	240 U	230 U
Chlorobenzene	1700	240 U	220 U	240 U	230 U

SB-65 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	2.50	7.00	12.00
Benzene	60	250 U	250 U	250 U	260 U
Toluene	1500	250 U	250 U	250 U	260 U
Ethylbenzene	5500	250 U	250 U	250 U	260 U
Xylenes (total)	1200	250 U	250 U	250 U	260 U
Methyl-tert-butyl-ether	120	250 U	250 U	250 U	260 U
Naphthalene	13000	250 U	250 U	250 U	260 U
Tetrachloroethene	1400	200 J	250 U	250 U	260 U
Trichloroethene	700	[10000]	100 J	250 U	[1100]
trans-1,2-Dichloroethene	300	250 U	250 U	250 U	260 U
cis-1,2-Dichloroethene		1700	250 U	250 U	200 J
Vinyl chloride	200	250 U	250 U	250 U	260 U
Chlorobenzene	1700	250 U	250 U	250 U	260 U

SB-07 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	7.00	12.00	2.50
Benzene	60	250 U	[480]	250 U	[1400]
Toluene	1500	250 U	350	250 U	1100
Ethylbenzene	5500	250 U	70 J	250 U	200 J
Xylenes (total)	1200	80 J	370	250 U	1000
Methyl-tert-butyl-ether	120	250 U	230 U	250 U	270 U
Naphthalene	13000	200 J	2600	310	8300
Tetrachloroethene	1400	250 U	230 U	250 U	270 U
Trichloroethene	700	250 U	230 U	250 U	270 U
trans-1,2-Dichloroethene	300	250 U	230 U	250 U	270 U
cis-1,2-Dichloroethene		250 U	230 U	250 U	270 U
Vinyl chloride	200	250 U	230 U	250 U	270 U
Chlorobenzene	1700	250 U	230 U	250 U	270 U

SB-34 Constituent	NYSDEC RSCOs & EASTERN USA BACKGROUND	0.50	7.00	12.00	8.00
Benzene	60	260 U	230 U	220 U	260 U
Toluene	1500	100 J	[35000]	200 J	[78000]
Ethylbenzene	5500	260 U	200 J	220 U	200 J
Xylenes (total)	1200	260 U	410	220 U	470
Methyl-tert-butyl-ether	120	[370]	[1500]	220 U	260 U
Naphthalene	13000	370	1300	220 U	680
Tetrachloroethene	1400	260 U	230 U	220 U	260 U
Trichloroethene	700	260 U	230 U	220 U	260 U
trans-1,2-Dichloroethene	300	260 U	230 U	220 U	260 U
cis-1,2-Dichloroethene		260 U	230 U	220 U	260 U
Vinyl chloride	200	260 U	230 U	220 U	260 U
Chlorobenzene	1700	260 U	230 U	220 U	260 U



TOPOGRAPHIC MAP OF
DESCRIBED PROPERTY
AND
LOT NOS. 24 & 25
MAP OF
SUNSHINE PARK
SITUATED AT
FREEPORT
TOWN OF HEMPSTEAD
NASSAU COUNTY, NEW YORK
NASSAU COUNTY MAP NO. 179
NASSAU COUNTY CASE NO. 1528
FILED: JUNE 4, 1921

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OF ENVIRONMENTAL CONSERVATION

NOTES: ELEVATIONS SHOWN ESTABLISHED FROM BENCHMARK 22011 EL. 9.842 FROM THE NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK BOOK. U.S.C. & G.S. DATUM.

HORIZONTAL DATUM IS N.A.D. 1927 ESTABLISHED FROM NASSAU COUNTY GIS GPS MONUMENTS 11ED6EN AND 11ED8NAZ.

BEARINGS SHOWN TAKEN FROM RECORD DESCRIPTIONS. ABSTRACT OF TITLE AND EASEMENTS FOR SUBJECT PARCEL AND ADJOINING PARCELS NOT PROVIDED FOR THE PREPERATION OF THIS SURVEY. ABSENCE OF EASEMENTS DOES NOT DENY THE EXISTENCE OF SAME.

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

Figure 5C
Remedial Investigation
Soil Sample Results - VOCs

0 30' 60'
GRAPHIC SCALE

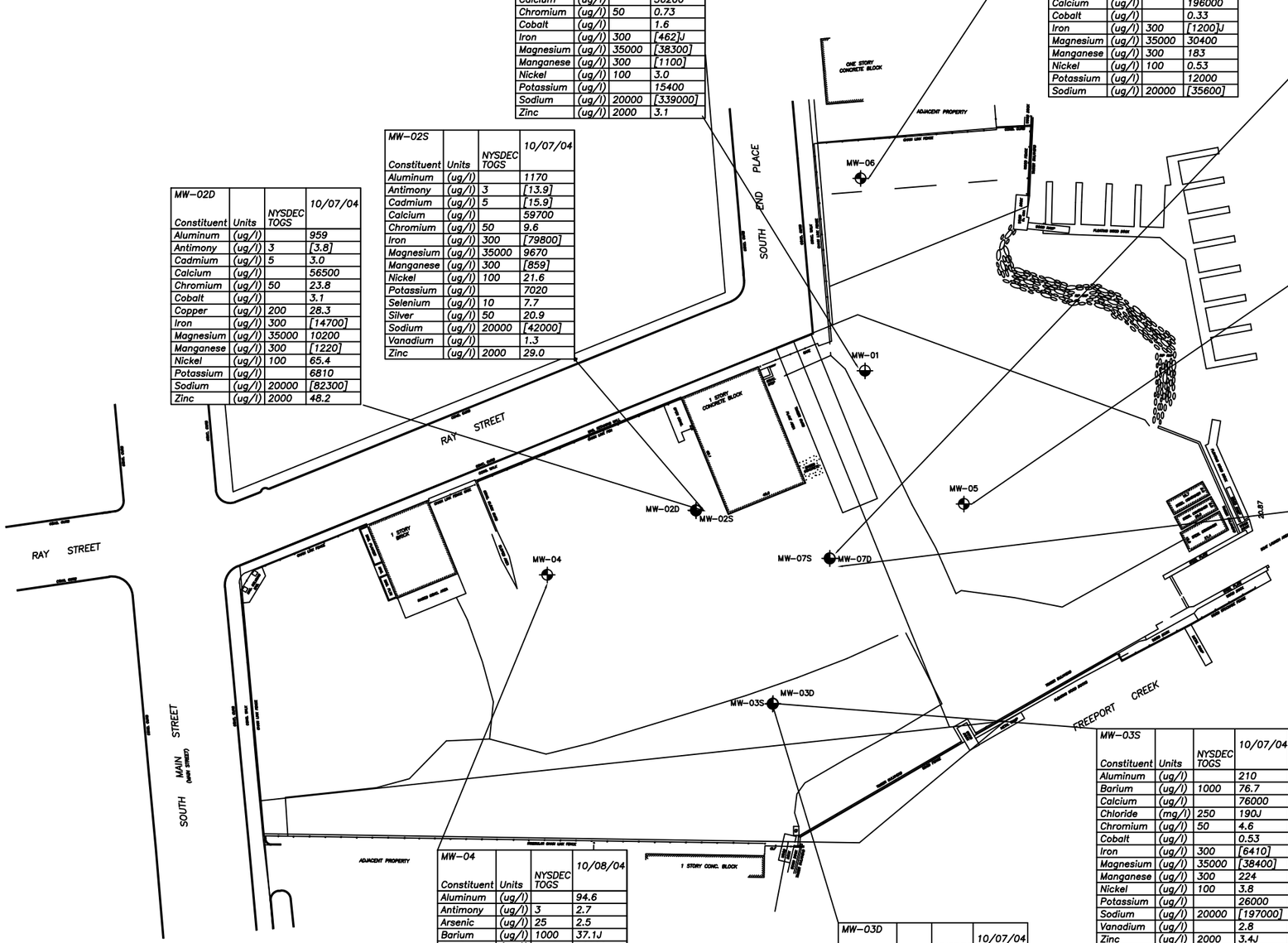
Legend

SB-56 ● Soil Boring location exceeding the NYSDEC RSCO (Recomended Soil Cleanup Objective per TAGM 4046)

Concentrations reported in micrograms per kilogram (ug/mg)

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	1447437	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG5C

Note: Map was developed for the 2007 Remedial Investigation by Environmental Remedial Management, Inc.



MW-01 Constituent	Units	NYSDEC TOGS	10/08/04
Aluminum	(ug/l)		26.4
Antimony	(ug/l)	3	[5.1]
Arsenic	(ug/l)	25	2.4
Barium	(ug/l)	1000	51.0J
Calcium	(ug/l)		36200
Chromium	(ug/l)	50	0.73
Cobalt	(ug/l)		1.6
Iron	(ug/l)	300	[462]J
Magnesium	(ug/l)	35000	[38300]
Manganese	(ug/l)	300	[1100]
Nickel	(ug/l)	100	3.0
Potassium	(ug/l)		15400
Sodium	(ug/l)	20000	[339000]
Zinc	(ug/l)	2000	3.1

MW-02D Constituent	Units	NYSDEC TOGS	10/07/04
Aluminum	(ug/l)		959
Antimony	(ug/l)	3	[3.8]
Cadmium	(ug/l)	5	3.0
Calcium	(ug/l)		56500
Chromium	(ug/l)	50	23.8
Cobalt	(ug/l)		3.1
Copper	(ug/l)	200	28.3
Iron	(ug/l)	300	[14700]
Magnesium	(ug/l)	35000	10200
Manganese	(ug/l)	300	[1220]
Nickel	(ug/l)	100	65.4
Potassium	(ug/l)		6810
Sodium	(ug/l)	20000	[82300]
Zinc	(ug/l)	2000	48.2

MW-02S Constituent	Units	NYSDEC TOGS	10/07/04
Aluminum	(ug/l)		1170
Antimony	(ug/l)	3	[13.9]
Cadmium	(ug/l)	5	[15.9]
Calcium	(ug/l)		59700
Chromium	(ug/l)	50	9.6
Iron	(ug/l)	300	[79800]
Magnesium	(ug/l)	35000	9670
Manganese	(ug/l)	300	[859]
Nickel	(ug/l)	100	21.6
Potassium	(ug/l)		7020
Selenium	(ug/l)	10	7.7
Silver	(ug/l)	50	20.9
Sodium	(ug/l)	20000	[42000]
Vanadium	(ug/l)		1.3
Zinc	(ug/l)	2000	29.0

MW-04 Constituent	Units	NYSDEC TOGS	10/08/04
Aluminum	(ug/l)		94.6
Antimony	(ug/l)	3	2.7
Arsenic	(ug/l)	25	2.5
Barium	(ug/l)	1000	37.1J
Calcium	(ug/l)		90900
Chromium	(ug/l)	50	14.7
Cobalt	(ug/l)		0.33
Iron	(ug/l)	300	171J
Magnesium	(ug/l)	35000	10000
Manganese	(ug/l)	300	21.3
Nickel	(ug/l)	100	16.5
Potassium	(ug/l)		10800
Sodium	(ug/l)	20000	[63500]
Zinc	(ug/l)	2000	10.9

MW-03D Constituent	Units	NYSDEC TOGS	10/07/04
Aluminum	(ug/l)		158
Chromium	(ug/l)	50	4.0
Iron	(ug/l)	300	[892]
Manganese	(ug/l)	300	[380]
Potassium	(ug/l)		6450
Zinc	(ug/l)	2000	2.8

MW-03S Constituent	Units	NYSDEC TOGS	10/07/04
Aluminum	(ug/l)		210
Barium	(ug/l)	1000	76.7
Calcium	(ug/l)		76000
Chloride	(mg/l)	250	190J
Chromium	(ug/l)	50	4.6
Cobalt	(ug/l)		0.53
Iron	(ug/l)	300	[6410]
Magnesium	(ug/l)	35000	[38400]
Manganese	(ug/l)	300	224
Nickel	(ug/l)	100	3.8
Potassium	(ug/l)		26000
Sodium	(ug/l)	20000	[197000]
Vanadium	(ug/l)		2.8
Zinc	(ug/l)	2000	3.4J

MW-05 Constituent	Units	NYSDEC TOGS	10/08/04
Aluminum	(ug/l)		96.8
Antimony	(ug/l)	3	[7.2]
Barium	(ug/l)	1000	[1050]J
Cadmium	(ug/l)	5	3.6
Calcium	(ug/l)		128000
Chloride	(mg/l)	250	[400]J
Chromium	(ug/l)	50	0.90
Chromium (Hexavalent)	(mg/l)	0.050	[0.069]J
Iron	(ug/l)	300	[17400]J
Lead	(ug/l)	25	6.2
Magnesium	(ug/l)	35000	[37800]
Manganese	(ug/l)	300	[529]
Nickel	(ug/l)	100	4.6
Potassium	(ug/l)		31300
Sodium	(ug/l)	20000	[243000]
Vanadium	(ug/l)		2.6
Zinc	(ug/l)	2000	7.2

MW-06 Constituent	Units	NYSDEC TOGS	10/08/04
Aluminum	(ug/l)		150
Antimony	(ug/l)	3	2.5
Arsenic	(ug/l)	25	3.8
Cadmium	(ug/l)	5	0.33
Calcium	(ug/l)		196000
Cobalt	(ug/l)		0.33
Iron	(ug/l)	300	[1200]J
Magnesium	(ug/l)	35000	30400
Manganese	(ug/l)	300	183
Nickel	(ug/l)	100	0.53
Potassium	(ug/l)		12000
Sodium	(ug/l)	20000	[35600]

MW-07D Constituent	Units	NYSDEC TOGS	10/07/04
Aluminum	(ug/l)		227
Antimony	(ug/l)	3	[4.1]
Barium	(ug/l)	1000	23.2
Cadmium	(ug/l)	5	1.3
Calcium	(ug/l)		18200
Chromium	(ug/l)	50	3.5
Cobalt	(ug/l)		1.7
Iron	(ug/l)	300	[6370]
Magnesium	(ug/l)	35000	4740
Manganese	(ug/l)	300	[680]
Nickel	(ug/l)	100	3.6
Potassium	(ug/l)		2740
Sodium	(ug/l)	20000	[42400]
Zinc	(ug/l)	2000	9.8

MW-07S Constituent	Units	NYSDEC TOGS	10/07/04
Aluminum	(ug/l)		64.5
Antimony	(ug/l)	3	[11.3]
Barium	(ug/l)	1000	310
Cadmium	(ug/l)	5	[6.2]
Calcium	(ug/l)		229000
Chromium	(ug/l)	50	2.0
Cobalt	(ug/l)		0.89
Iron	(ug/l)	300	[29200]
Magnesium	(ug/l)	35000	[58200]
Manganese	(ug/l)	300	[761]
Nickel	(ug/l)	100	2.8
Potassium	(ug/l)		31000
Sodium	(ug/l)	20000	[198000]
Vanadium	(ug/l)		0.60

TOPOGRAPHIC MAP OF
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SUNSHINE PARK
SITUATED AT
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NASSAU COUNTY, NEW YORK
NASSAU COUNTY MAP NO. 179
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FILED: JUNE 4, 1921

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OF ENVIRONMENTAL CONSERVATION

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

Figure 6A
Remedial Investigation
Groundwater Sample Results - Metals

0 60' 120'

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	1447437	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG6A

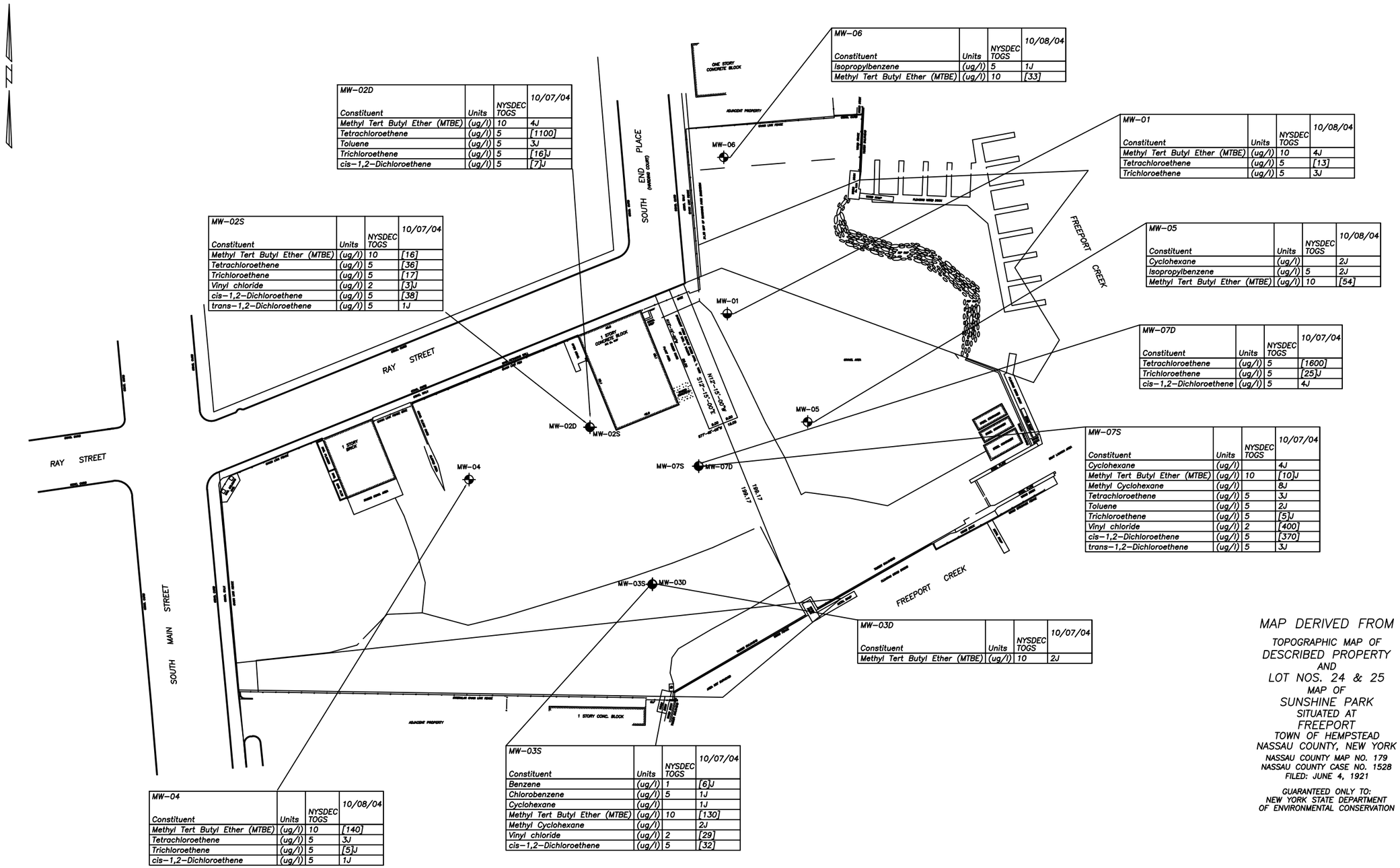
Legend

MW-05 Monitoring Well Location

[ ] Detected groundwater concentration is above NYSDEC TOGS Class GA Groundwater Standard

J Estimated value

Note: Map was developed for the 2007 Remedial Investigation by Environmental Remedial Management, Inc.



MW-06 Constituent	Units	NYSDEC TOGS	10/08/04
Isopropylbenzene	(ug/l)	5	1J
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	[33]

MW-02D Constituent	Units	NYSDEC TOGS	10/07/04
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	4J
Tetrachloroethene	(ug/l)	5	[1100]
Toluene	(ug/l)	5	3J
Trichloroethene	(ug/l)	5	[16]J
cis-1,2-Dichloroethene	(ug/l)	5	[7]J

MW-01 Constituent	Units	NYSDEC TOGS	10/08/04
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	4J
Tetrachloroethene	(ug/l)	5	[13]
Trichloroethene	(ug/l)	5	3J

MW-02S Constituent	Units	NYSDEC TOGS	10/07/04
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	[16]
Tetrachloroethene	(ug/l)	5	[36]
Trichloroethene	(ug/l)	5	[17]
Vinyl chloride	(ug/l)	2	[3]J
cis-1,2-Dichloroethene	(ug/l)	5	[38]
trans-1,2-Dichloroethene	(ug/l)	5	1J

MW-05 Constituent	Units	NYSDEC TOGS	10/08/04
Cyclohexane	(ug/l)		2J
Isopropylbenzene	(ug/l)	5	2J
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	[54]

MW-07D Constituent	Units	NYSDEC TOGS	10/07/04
Tetrachloroethene	(ug/l)	5	[1600]
Trichloroethene	(ug/l)	5	[25]J
cis-1,2-Dichloroethene	(ug/l)	5	4J

MW-07S Constituent	Units	NYSDEC TOGS	10/07/04
Cyclohexane	(ug/l)		4J
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	[10]J
Methyl Cyclohexane	(ug/l)		8J
Tetrachloroethene	(ug/l)	5	3J
Toluene	(ug/l)	5	2J
Trichloroethene	(ug/l)	5	[5]J
Vinyl chloride	(ug/l)	2	[400]
cis-1,2-Dichloroethene	(ug/l)	5	[370]
trans-1,2-Dichloroethene	(ug/l)	5	3J

MW-03D Constituent	Units	NYSDEC TOGS	10/07/04
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	2J

MW-03S Constituent	Units	NYSDEC TOGS	10/07/04
Benzene	(ug/l)	1	[6]J
Chlorobenzene	(ug/l)	5	1J
Cyclohexane	(ug/l)		1J
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	[130]
Methyl Cyclohexane	(ug/l)		2J
Vinyl chloride	(ug/l)	2	[29]
cis-1,2-Dichloroethene	(ug/l)	5	[32]

MW-04 Constituent	Units	NYSDEC TOGS	10/08/04
Methyl Tert Butyl Ether (MTBE)	(ug/l)	10	[140]
Tetrachloroethene	(ug/l)	5	3J
Trichloroethene	(ug/l)	5	[5]J
cis-1,2-Dichloroethene	(ug/l)	5	1J

MAP DERIVED FROM
TOPOGRAPHIC MAP OF
DESCRIBED PROPERTY
AND
LOT NOS. 24 & 25
MAP OF
SUNSHINE PARK
SITUATED AT
FREEPORT
TOWN OF HEMPSTEAD
NASSAU COUNTY, NEW YORK
NASSAU COUNTY MAP NO. 179
NASSAU COUNTY CASE NO. 1528
FILED: JUNE 4, 1921

GUARANTEED ONLY TO:
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

Figure 6B
Remedial Investigation
Groundwater Sample Results - VOCs

0 60' 120'

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	1447437	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG6B

Legend

MW-05 Monitoring Well Location

[ ] Detected groundwater concentration is above NYSDEC TOGS Class GA Groundwater Standard

J Estimated value

Note: Map was developed for the 2007 Remedial Investigation by Environmental Remedial Management, Inc.

433-SM-FF Constituent	Units	03/31/05
Acetone	(ug/m3)	19J
Benzene	(ug/m3)	1.3
Benzene, 1,2,4-trimethyl	(ug/m3)	0.78
Chloromethane	(ug/m3)	0.84
Dichlorodifluoromethane	(ug/m3)	2.6
Ethanol	(ug/m3)	3.6J
Ethylbenzene	(ug/m3)	4.4
m+p-Xylene	(ug/m3)	15
o-Xylene	(ug/m3)	3.2
Toluene	(ug/m3)	3.6
Trichlorofluoromethane	(ug/m3)	2.1

433-SM-CS Constituent	Units	03/31/05
Acetone	(ug/m3)	4.9J
Benzene	(ug/m3)	1.2
Benzene, 1,2,4-trimethyl	(ug/m3)	1
Chloromethane	(ug/m3)	0.65
Dichlorodifluoromethane	(ug/m3)	2.2
Ethanol	(ug/m3)	1.9J
Ethylbenzene	(ug/m3)	0.72
m+p-Xylene	(ug/m3)	2.8
o-Xylene	(ug/m3)	0.84
Toluene	(ug/m3)	3.6
Trichlorofluoromethane	(ug/m3)	1.7

433-SM-B Constituent	Units	03/31/05
Acetone	(ug/m3)	6.8J
Benzene	(ug/m3)	1.7
Benzene, 1,2,4-trimethyl	(ug/m3)	0.83
Chloromethane	(ug/m3)	0.63
Dichlorodifluoromethane	(ug/m3)	2.4
Ethanol	(ug/m3)	1.8J
Ethylbenzene	(ug/m3)	1.1
m+p-Xylene	(ug/m3)	3.1
o-Xylene	(ug/m3)	0.84
Toluene	(ug/m3)	3.4
Trichlorofluoromethane	(ug/m3)	1.9

SG-01 Constituent	Units	07/15/04
1,1,1-Trichloroethane	(ug/m3)	22.97J
2-Butanone	(ug/m3)	57.81J
Acetone	(ug/m3)	736.39
Benzene	(ug/m3)	7.00J
Benzene, 1,2,4-trimethyl	(ug/m3)	66.36J
Benzene, 1,3,5-trimethyl-	(ug/m3)	42.77J
Carbon disulfide	(ug/m3)	106.50
Methyl Tertiary Butyl Ether	(ug/m3)	28.09J
n-Heptane	(ug/m3)	22.99J
p-Ethyltoluene	(ug/m3)	93.89J
Propylene	(ug/m3)	13.42J
Tetrachloroethene	(ug/m3)	292.32
Toluene	(ug/m3)	32.52J
Trichloroethene	(ug/m3)	187.01
Trichlorofluoromethane	(ug/m3)	16.29J

3-RAY-SG Constituent	Units	03/31/05
Acetone	(ug/m3)	2.5
Benzene	(ug/m3)	0.54
Chloromethane	(ug/m3)	0.57J
Dichlorodifluoromethane	(ug/m3)	1.4
Ethanol	(ug/m3)	2.6
m+p-Xylene	(ug/m3)	1.5
Toluene	(ug/m3)	1.1

SG-03 Constituent	Units	08/26/04
1,1,1-Trichloroethane	(ug/m3)	13.37J
2-Butanone	(ug/m3)	35.98
Acetone	(ug/m3)	189.56
Benzene	(ug/m3)	9.07J
Benzene, 1,2,4-trimethyl	(ug/m3)	16.27J
Benzene, 1,3,5-trimethyl-	(ug/m3)	5.01J
Carbon disulfide	(ug/m3)	6.76J
Cyclohexane	(ug/m3)	9.22J
Ethylbenzene	(ug/m3)	7.90J
Isooctane	(ug/m3)	20.88
m+p-Xylene	(ug/m3)	32.44J
Methyl Tertiary Butyl Ether	(ug/m3)	5.30J
n-Heptane	(ug/m3)	11.72J
n-Hexane	(ug/m3)	14.73
o-Xylene	(ug/m3)	12.03J
p-Ethyltoluene	(ug/m3)	7.91J
Propylene	(ug/m3)	15.58
Tetrachloroethene	(ug/m3)	318.10
Toluene	(ug/m3)	33.28
Xylene (total)	(ug/m3)	44.29J

433-4-ER-AA Constituent	Units	03/31/05
Acetone	(ug/m3)	15
Benzene	(ug/m3)	1.2
Benzene, 1,2,4-trimethyl	(ug/m3)	3
Benzene, 1,3,5-trimethyl-	(ug/m3)	1.1
Chloromethane	(ug/m3)	1.2J
Dichlorodifluoromethane	(ug/m3)	3
Ethanol	(ug/m3)	4.1
Ethylbenzene	(ug/m3)	1.9
m+p-Xylene	(ug/m3)	8.5
o-Xylene	(ug/m3)	2.6
Tetrahydrofuran	(ug/m3)	4.5
Toluene	(ug/m3)	6.7
Trichlorofluoromethane	(ug/m3)	1.6

4-ER-FF Constituent	Units	03/31/05
Acetone	(ug/m3)	13J
Benzene	(ug/m3)	1.5
Benzene, 1,2,4-trimethyl	(ug/m3)	2
Benzene, 1,3,5-trimethyl-	(ug/m3)	0.77
Chloroform	(ug/m3)	1.1
Chloromethane	(ug/m3)	0.72
Dichlorodifluoromethane	(ug/m3)	2.7
Ethanol	(ug/m3)	88J
Ethylbenzene	(ug/m3)	1.2
Isopropanol	(ug/m3)	11
m+p-Xylene	(ug/m3)	4.7
Methylene chloride	(ug/m3)	1.2
o-Xylene	(ug/m3)	1.4
Styrene	(ug/m3)	0.66
Toluene	(ug/m3)	24
Trichlorofluoromethane	(ug/m3)	2

SG-06 Constituent	Units	08/27/04
Acetone	(ug/m3)	6.32
Dichlorodifluoromethane	(ug/m3)	3.41J
Isopropanol	(ug/m3)	2.65J
Propylene	(ug/m3)	1.25J

4-PRESIDENT-SG Constituent	Units	03/31/05
Acetone	(ug/m3)	240
n-Heptane	(ug/m3)	760
Tetrachloroethene	(ug/m3)	0.64
Toluene	(ug/m3)	76
Trichloroethene	(ug/m3)	0.36

435-SM-SG Constituent	Units	03/31/05
Acetone	(ug/m3)	30
Dichlorodifluoromethane	(ug/m3)	8.2
Tetrachloroethene	(ug/m3)	15
Toluene	(ug/m3)	5.6
Trichloroethene	(ug/m3)	2.5
Trichlorofluoromethane	(ug/m3)	500

SG-05 Constituent	Units	08/27/04
1,1,1-Trichloroethane	(ug/m3)	4550.33
1,1-Dichloroethane	(ug/m3)	890.44
2-Butanone	(ug/m3)	26.93J
Acetone	(ug/m3)	185.29
Chloroethane	(ug/m3)	77.57
cis-1,2-Dichloroethene	(ug/m3)	27.48J
Cyclohexane	(ug/m3)	74.35
Isooctane	(ug/m3)	320.03
Methyl Tertiary Butyl Ether	(ug/m3)	44.71J
n-Heptane	(ug/m3)	25.86J
n-Hexane	(ug/m3)	58.86J
Propylene	(ug/m3)	148.18
Tetrachloroethene	(ug/m3)	40.76J
Trichloroethene	(ug/m3)	34.98J

4-ER-CS Constituent	Units	03/31/05
Acetone	(ug/m3)	3.6J
Benzene	(ug/m3)	1
Benzene, 1,2,4-trimethyl	(ug/m3)	1.1
Chloromethane	(ug/m3)	0.57
Dichlorodifluoromethane	(ug/m3)	2.2
Ethanol	(ug/m3)	2.3J
Ethylbenzene	(ug/m3)	0.65
m+p-Xylene	(ug/m3)	2.3
o-Xylene	(ug/m3)	0.88
Toluene	(ug/m3)	3.1
Trichlorofluoromethane	(ug/m3)	1.7

4-ER-B Constituent	Units	03/31/05
Acetone	(ug/m3)	4.4J
Benzene	(ug/m3)	1.1
Benzene, 1,2,4-trimethyl	(ug/m3)	1.2
Chloromethane	(ug/m3)	0.73
Dichlorodifluoromethane	(ug/m3)	2.8
Ethanol	(ug/m3)	3.4J
Ethylbenzene	(ug/m3)	0.75
m+p-Xylene	(ug/m3)	2.4
o-Xylene	(ug/m3)	0.7
Toluene	(ug/m3)	3.3
Trichlorofluoromethane	(ug/m3)	2

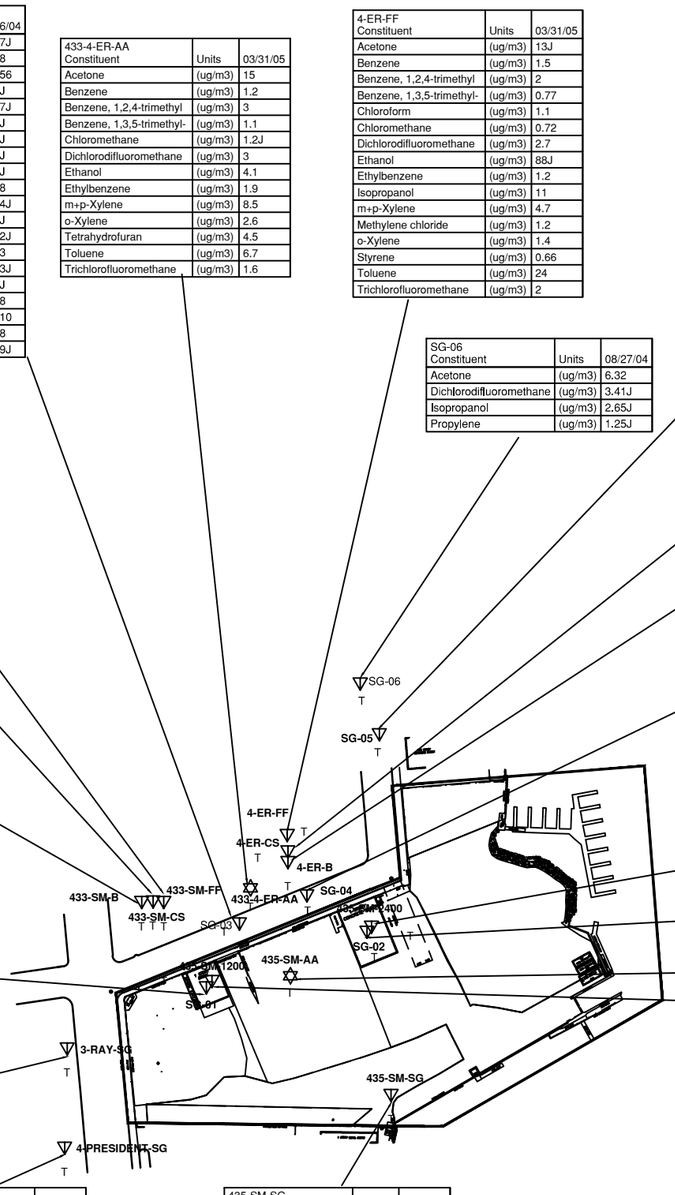
SG-04 Constituent	Units	08/27/04
1,1,1-Trichloroethane	(ug/m3)	136.95
2-Butanone	(ug/m3)	11.94
Acetone	(ug/m3)	89.55
Benzene	(ug/m3)	11.37
Benzene, 1,2,4-trimethyl	(ug/m3)	15.29
Benzene, 1,3,5-trimethyl-	(ug/m3)	4.12J
Carbon disulfide	(ug/m3)	10.25
Cyclohexane	(ug/m3)	4.47J
Dichlorodifluoromethane	(ug/m3)	4.83J
Ethylbenzene	(ug/m3)	6.60J
m+p-Xylene	(ug/m3)	20.50
Methylene chloride	(ug/m3)	1.97J
n-Heptane	(ug/m3)	5.37J
n-Hexane	(ug/m3)	8.07
o-Xylene	(ug/m3)	7.34J
p-Ethyltoluene	(ug/m3)	6.10J
Propylene	(ug/m3)	38.72
Tetrachloroethene	(ug/m3)	219.75
Toluene	(ug/m3)	21.56
Trichlorofluoromethane	(ug/m3)	3.76J
Xylene (total)	(ug/m3)	27.83

435-SM-2400 Constituent	Units	03/31/05
2-Butanone	(ug/m3)	12
Acetone	(ug/m3)	1800E
Benzene	(ug/m3)	30
Benzene, 1,2,4-trimethyl	(ug/m3)	320
Benzene, 1,3,5-trimethyl-	(ug/m3)	110
Cyclohexane	(ug/m3)	14
Dichlorodifluoromethane	(ug/m3)	13
Ethanol	(ug/m3)	120J
Ethylbenzene	(ug/m3)	290
Isopropanol	(ug/m3)	10
m+p-Xylene	(ug/m3)	1200
Methyl Tertiary Butyl Ether	(ug/m3)	390
n-Heptane	(ug/m3)	30
n-Hexane	(ug/m3)	64
n-Propylbenzene	(ug/m3)	87
o-Xylene	(ug/m3)	320
p-Ethyltoluene	(ug/m3)	410
Styrene	(ug/m3)	400
Tetrachloroethene	(ug/m3)	1
Toluene	(ug/m3)	370
Trichloroethene	(ug/m3)	2
Trichlorofluoromethane	(ug/m3)	21

SG-02 Constituent	Units	07/15/04
1,1,1-Trichloroethane	(ug/m3)	35.19J
2-Butanone	(ug/m3)	56.92J
Acetone	(ug/m3)	84.80
Benzene	(ug/m3)	4.79J
Benzene, 1,2,4-trimethyl	(ug/m3)	634.13
Benzene, 1,3,5-trimethyl-	(ug/m3)	321.00
Carbon disulfide	(ug/m3)	129.24
cis-1,2-Dichloroethene	(ug/m3)	283.88
n-Heptane	(ug/m3)	29.14J
o-Xylene	(ug/m3)	28.75J
p-Ethyltoluene	(ug/m3)	702.95
Propylene	(ug/m3)	10.46J
Tetrachloroethene	(ug/m3)	5771.83
Toluene	(ug/m3)	14.66J
trans-1,2-Dichloroethene	(ug/m3)	33.46J
Trichloroethene	(ug/m3)	16014.00
Trichlorofluoromethane	(ug/m3)	10.84J
Xylene (total)	(ug/m3)	63.40J

435-SM-AA Constituent	Units	03/31/05
Acetone	(ug/m3)	24
Benzene	(ug/m3)	0.83
Benzene, 1,2,4-trimethyl	(ug/m3)	2.7
Benzene, 1,3,5-trimethyl-	(ug/m3)	1.1
Bromomethane	(ug/m3)	0.72
Chloromethane	(ug/m3)	1.2J
Dichlorodifluoromethane	(ug/m3)	3.1
Ethanol	(ug/m3)	1.5
Ethylbenzene	(ug/m3)	2.2
m+p-Xylene	(ug/m3)	9.3
o-Xylene	(ug/m3)	2.6
Toluene	(ug/m3)	11
Trichlorofluoromethane	(ug/m3)	1.5

435-SM-1200 Constituent	Units	03/31/05
2-Butanone	(ug/m3)	8.7
Acetone	(ug/m3)	20J
Benzene	(ug/m3)	1.2
Benzene, 1,2,4-trimethyl	(ug/m3)	2.5
Benzene, 1,3,5-trimethyl-	(ug/m3)	0.81
Chloromethane	(ug/m3)	0.62
Dichlorodifluoromethane	(ug/m3)	2.4
Ethanol	(ug/m3)	9.4J
Ethylbenzene	(ug/m3)	1.3
Isopropanol	(ug/m3)	3.4
m+p-Xylene	(ug/m3)	4.2
o-Xylene	(ug/m3)	1.5
Styrene	(ug/m3)	6.8
Tetrahydrofuran	(ug/m3)	5
Toluene	(ug/m3)	12
Trichloroethene	(ug/m3)	1
Trichlorofluoromethane	(ug/m3)	1.8



MAP DERIVED FROM
TOPOGRAPHIC MAP OF
AND
MAP OF
SITUATED AT
TOWN OF HEMPSTEAD
NASSAU COUNTY, NEW YORK
NASSAU COUNTY MAP NO. 179
NASSAU COUNTY CASE NO. 1628
FILED: JUNE 6, 1921
GUARANTEED ONLY TO:
NEW YORK STATE DEPARTMENT
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LEGEND

AMBIENT AIR

T

SG-01 = 1200 Square Foot Building Sub-Slab Sample
SG-02 = 2400 Square Foot Building Sub-Slab Sample
SG-03 = Subsurface Soil Gas
SG-04 = Subsurface Soil Gas
SG-05 = Subsurface Soil Gas
SG-06 = Subsurface Soil Gas
433-SM-CS = 433 South Main-Crawl Space
433-SM-B = 433 South Main-Basement
433-SM-First Floor = 433 South Main-First Floor
4-ER-CS = 4-East Ray-Crawl Space
4-ER-B = 4 East Ray-Basement
4-ER-First Floor = 4 East Ray-First Floor
435-SM-1200 = 435 South Main-1200 (Small Show Room Building Indoor Air)
435-SM-2400 = 435 South Main-2400 (Larger Garage/Maintenance Building Indoor Air)
433-4-ER-AA = 433 South Main & 4 East Ray-Ambient Air
435-SM-AA = 435 South Main-Ambient Air
4-President-SG = 4 President-Soil Gas
435-SM-SG = 435 South Main-Soil Gas
3-Ray-SG = 3 Ray-Soil Gas

DEPARTMENT OF ENVIRONMENTAL CONSERVATION - NEW YORK STATE

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

Figure 7
Remedial Investigation
Soil Vapor Data

0 75' 150'

Note: Map was developed for the 2007 Remedial Investigation by Environmental Remedial Management, Inc.

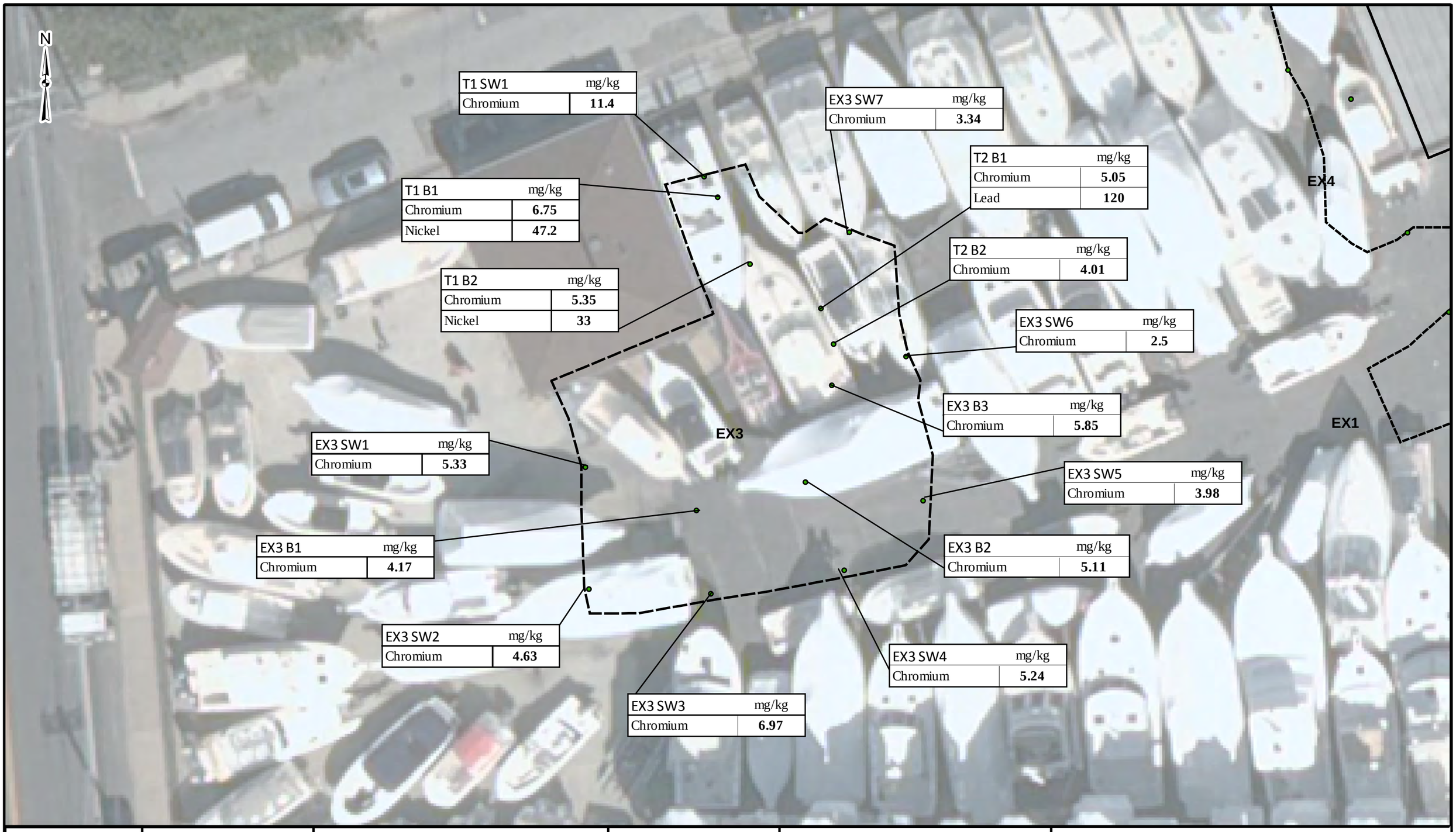
PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	1447437	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG7

	FREEPORT METAL ETCHING SITE MANAGEMENT PLAN FREEPORT, NEW YORK			FIGURE 8 Documentation Soil & Sedment Sample Locations		0 20 40 80 Feet		
	PROJECT MGR: RSC	DESIGNED BY: RSC	CREATED BY: MEM	CHECKED BY: RSC	PROJECT NO: 14474.37	DATE: AUGUST 2012	SCALE: AS SHOWN	FILE NO: G:\Projects\Fig8

Legend

Source: NYS GIS Clearing House

- Documentation Sample Locations
- Excavation Area Boundaries



FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 8A
Documentation Sample Locations with Exceedences of Unrestricted Levels in EX-3

0 5 10 20 Feet

Source: NYS GIS Clearing House

Legend

- Documentation Sample Location
- Excavation Area Boundaries

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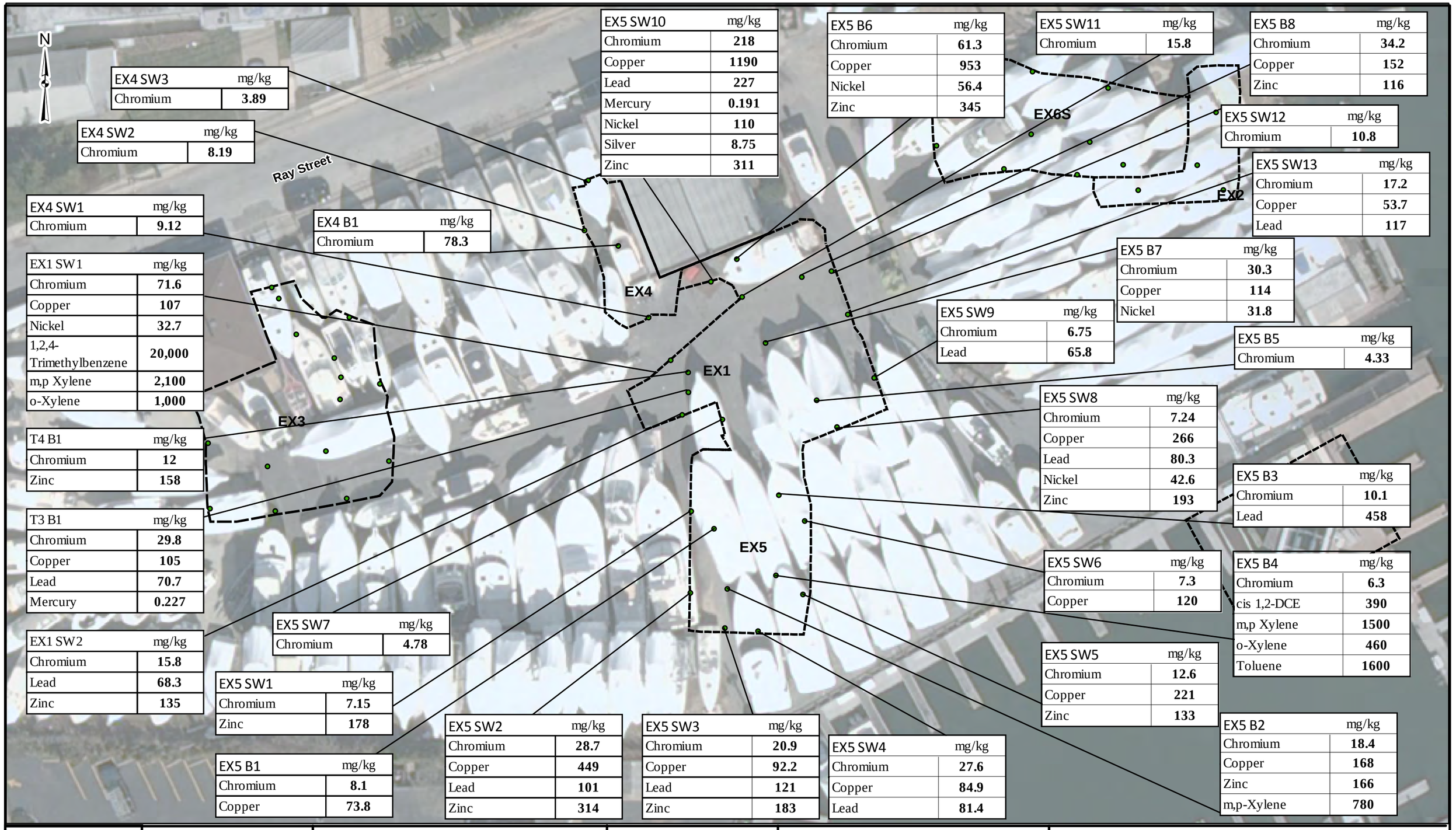


EX4 SW3	mg/kg
Chromium	**3.89**

EX4 SW2	mg/kg
Chromium	**8.19**

EX4 SW1	mg/kg
Chromium	**9.12**

EX4 B1	mg/kg
Chromium	**78.3**

EX1 SW1	mg/kg
Chromium	**71.6**
Copper	**107**
Nickel	**32.7**
1,2,4-Trimethylbenzene	**20,000**
m,p Xylene	**2,100**
o-Xylene	**1,000**

T4 B1	mg/kg
Chromium	**12**
Zinc	**158**

T3 B1	mg/kg
Chromium	**29.8**
Copper	**105**
Lead	**70.7**
Mercury	**0.227**

EX1 SW2	mg/kg
Chromium	**15.8**
Lead	**68.3**
Zinc	**135**

EX5 SW10	mg/kg
Chromium	**218**
Copper	**1190**
Lead	**227**
Mercury	**0.191**
Nickel	**110**
Silver	**8.75**
Zinc	**311**

EX5 B6	mg/kg
Chromium	**61.3**
Copper	**953**
Nickel	**56.4**
Zinc	**345**

EX5 SW11	mg/kg
Chromium	**15.8**

EX5 B8	mg/kg
Chromium	**34.2**
Copper	**152**
Zinc	**116**

EX5 SW12	mg/kg
Chromium	**10.8**

EX5 SW13	mg/kg
Chromium	**17.2**
Copper	**53.7**
Lead	**117**

EX5 B7	mg/kg
Chromium	**30.3**
Copper	**114**
Nickel	**31.8**

EX5 SW9	mg/kg
Chromium	**6.75**
Lead	**65.8**

EX5 B5	mg/kg
Chromium	**4.33**

EX5 SW8	mg/kg
Chromium	**7.24**
Copper	**266**
Lead	**80.3**
Nickel	**42.6**
Zinc	**193**

EX5 B3	mg/kg
Chromium	**10.1**
Lead	**458**

EX5 SW6	mg/kg
Chromium	**7.3**
Copper	**120**

EX5 B4	mg/kg
Chromium	**6.3**
cis 1,2-DCE	**390**
m,p Xylene	**1500**
o-Xylene	**460**
Toluene	**1600**

EX5 SW5	mg/kg
Chromium	**12.6**
Copper	**221**
Zinc	**133**

EX5 SW7	mg/kg
Chromium	**4.78**

EX5 SW1	mg/kg
Chromium	**7.15**
Zinc	**178**

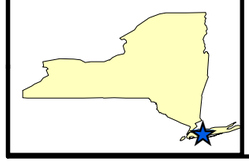
EX5 B1	mg/kg
Chromium	**8.1**
Copper	**73.8**

EX5 SW2	mg/kg
Chromium	**28.7**
Copper	**449**
Lead	**101**
Zinc	**314**

EX5 SW3	mg/kg
Chromium	**20.9**
Copper	**92.2**
Lead	**121**
Zinc	**183**

EX5 SW4	mg/kg
Chromium	**27.6**
Copper	**84.9**
Lead	**81.4**

EX5 B2	mg/kg
Chromium	**18.4**
Copper	**168**
Zinc	**166**
m,p-Xylene	**780**



FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 8B
Documentation Sample Locations with Exceedences of Unrestricted Levels in EX-1, -4, & -5

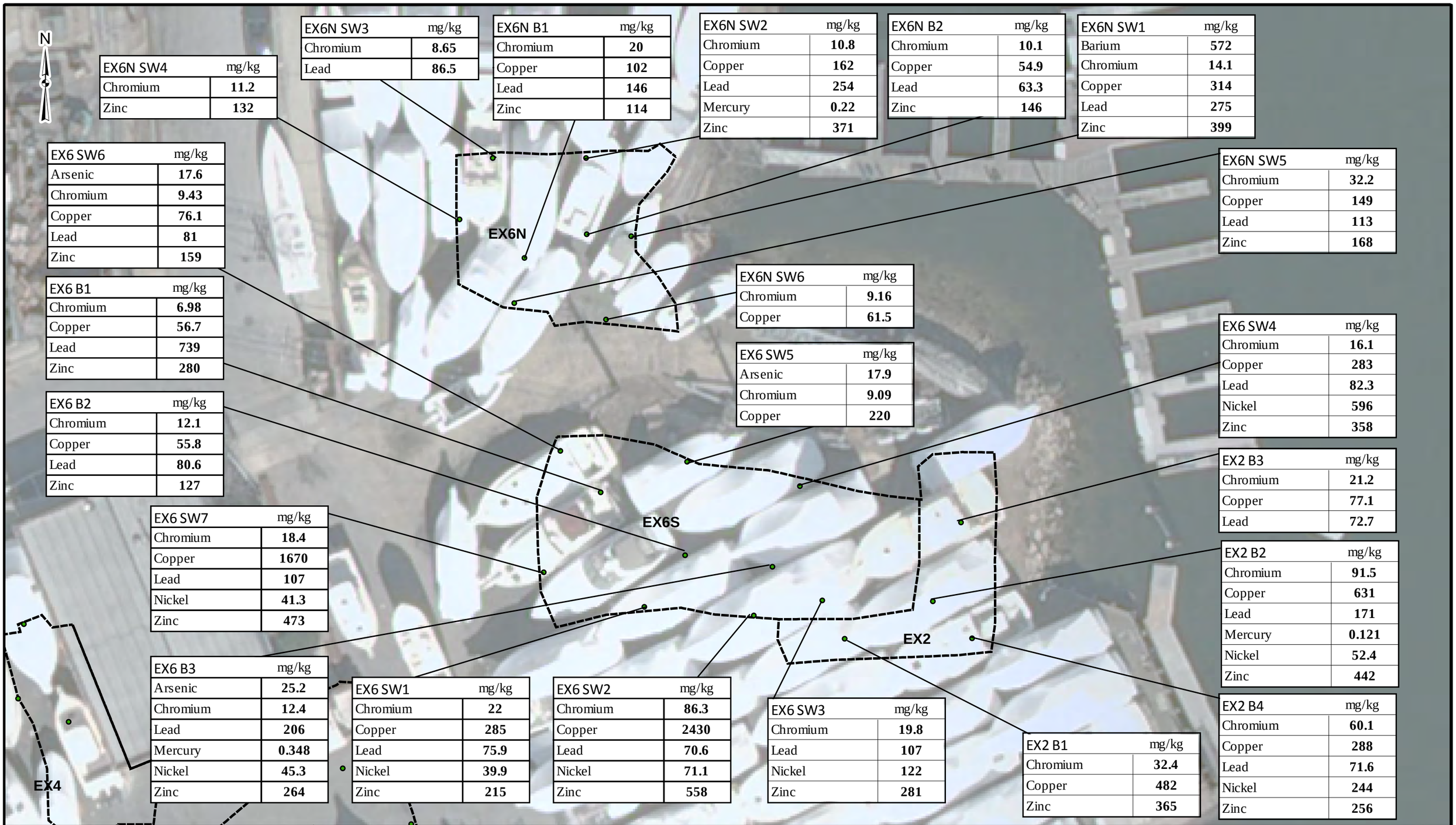
0 15 30 60 Feet

Source: NYS GIS Clearing House

Legend

- Documentation Sample Location
- Excavation Area Boundaries

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\Fig8B



EX6N SW4	mg/kg
Chromium	**11.2**
Zinc	**132**

EX6N SW3	mg/kg
Chromium	**8.65**
Lead	**86.5**

EX6N B1	mg/kg
Chromium	**20**
Copper	**102**
Lead	**146**
Zinc	**114**

EX6N SW2	mg/kg
Chromium	**10.8**
Copper	**162**
Lead	**254**
Mercury	**0.22**
Zinc	**371**

EX6N B2	mg/kg
Chromium	**10.1**
Copper	**54.9**
Lead	**63.3**
Zinc	**146**

EX6N SW1	mg/kg
Barium	**572**
Chromium	**14.1**
Copper	**314**
Lead	**275**
Zinc	**399**

EX6 SW6	mg/kg
Arsenic	**17.6**
Chromium	**9.43**
Copper	**76.1**
Lead	**81**
Zinc	**159**

EX6N SW5	mg/kg
Chromium	**32.2**
Copper	**149**
Lead	**113**
Zinc	**168**

EX6 B1	mg/kg
Chromium	**6.98**
Copper	**56.7**
Lead	**739**
Zinc	**280**

EX6N SW6	mg/kg
Chromium	**9.16**
Copper	**61.5**

EX6 SW5	mg/kg
Arsenic	**17.9**
Chromium	**9.09**
Copper	**220**

EX6 SW4	mg/kg
Chromium	**16.1**
Copper	**283**
Lead	**82.3**
Nickel	**596**
Zinc	**358**

EX6 B2	mg/kg
Chromium	**12.1**
Copper	**55.8**
Lead	**80.6**
Zinc	**127**

EX2 B3	mg/kg
Chromium	**21.2**
Copper	**77.1**
Lead	**72.7**

EX6 SW7	mg/kg
Chromium	**18.4**
Copper	**1670**
Lead	**107**
Nickel	**41.3**
Zinc	**473**

EX2 B2	mg/kg
Chromium	**91.5**
Copper	**631**
Lead	**171**
Mercury	**0.121**
Nickel	**52.4**
Zinc	**442**

EX6 B3	mg/kg
Arsenic	**25.2**
Chromium	**12.4**
Lead	**206**
Mercury	**0.348**
Nickel	**45.3**
Zinc	**264**

EX6 SW1	mg/kg
Chromium	**22**
Copper	**285**
Lead	**75.9**
Nickel	**39.9**
Zinc	**215**

EX6 SW2	mg/kg
Chromium	**86.3**
Copper	**2430**
Lead	**70.6**
Nickel	**71.1**
Zinc	**558**

EX6 SW3	mg/kg
Chromium	**19.8**
Lead	**107**
Nickel	**122**
Zinc	**281**

EX2 B4	mg/kg
Chromium	**60.1**
Copper	**288**
Lead	**71.6**
Nickel	**244**
Zinc	**256**

EX2 B1	mg/kg
Chromium	**32.4**
Copper	**482**
Zinc	**365**

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 8C
Documentation Sample Locations with Exceedences of Unrestricted Levels in EX-2 & -6

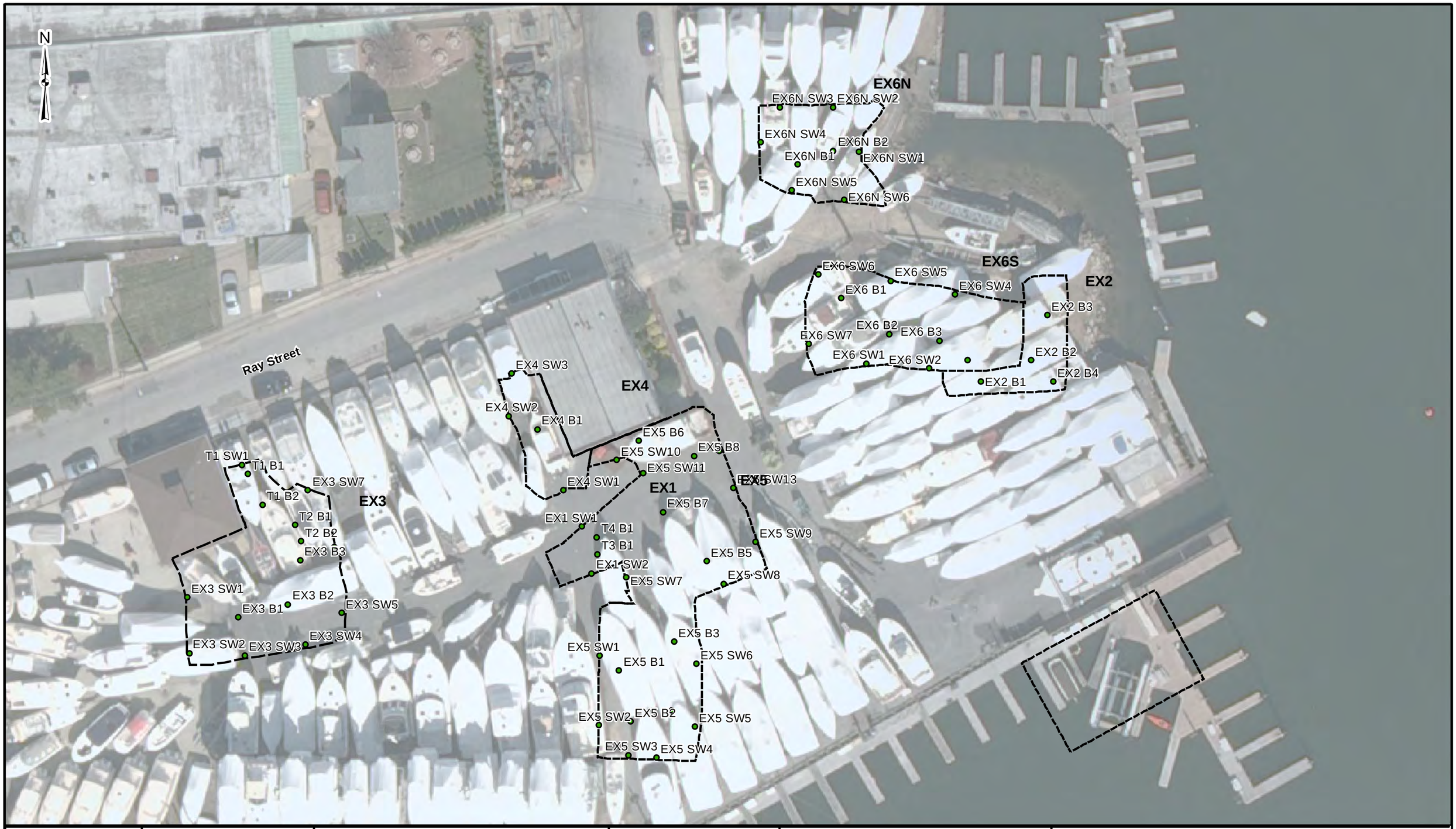
0 10 20 40 Feet

Source: NYS GIS Clearing House

Legend

- Documentation Sample Location
- Excavation Area Boundaries

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\Fig8C

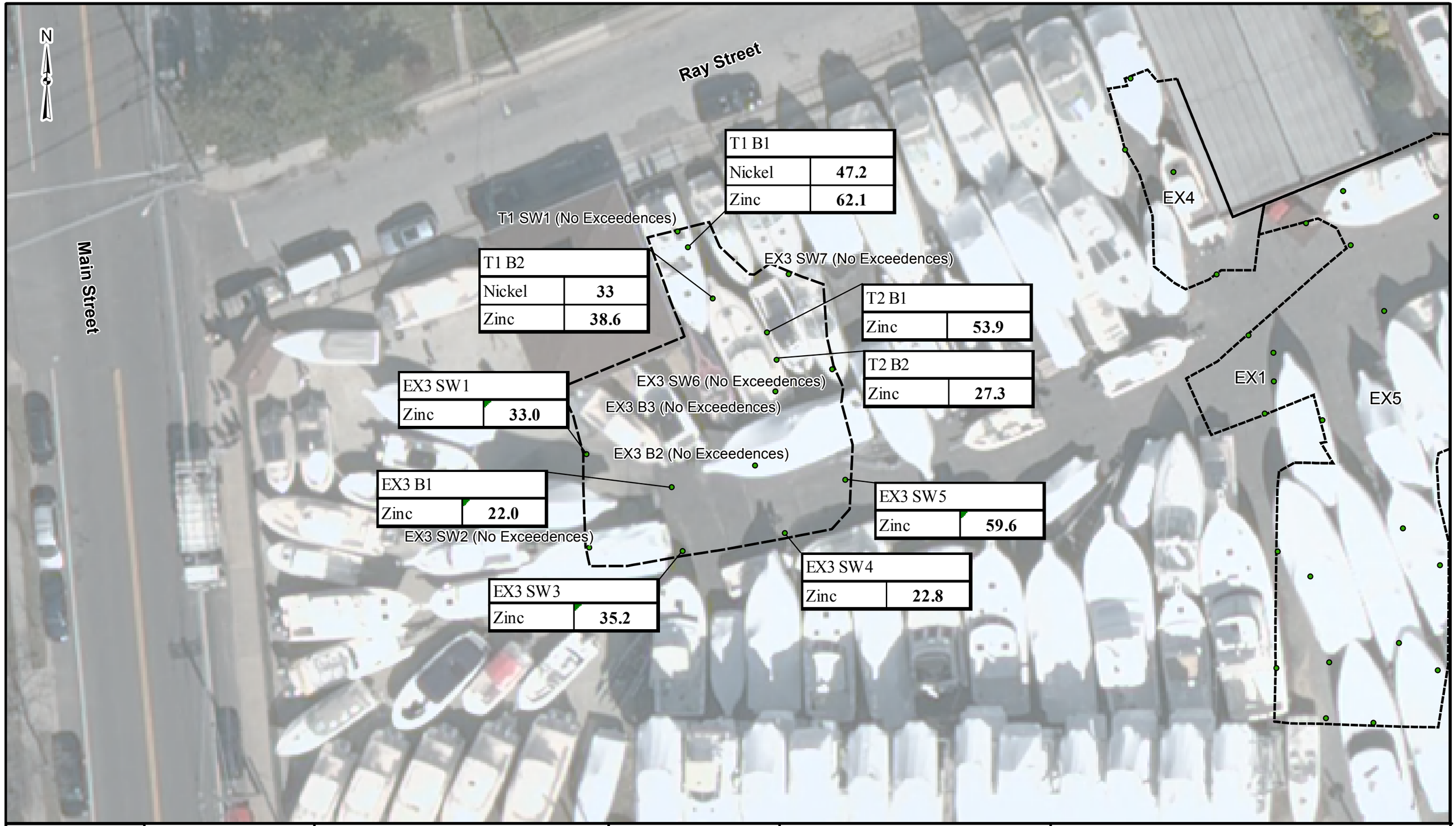


		FREEPORT METAL ETCHING SITE MANAGEMENT PLAN FREEPORT, NEW YORK		FIGURE 9 Documentation Soil & Sedment Sample Locations		0 15 30 60 Feet		
		PROJECT MGR: RSC	DESIGNED BY: RSC	CREATED BY: MEM	CHECKED BY: RSC	PROJECT NO: 14474.37	DATE: AUGUST 2012	SCALE: AS SHOWN	FILE NO: G:\Projects\Fig9

Legend

- Documentation Sample Locations
- Excavation Area Boundaries

Source: NYS GIS Clearing House



FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 9A
Documentation Sample Locations with Exceedances of Site-Specific SCO's
EX3

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\Fig9A

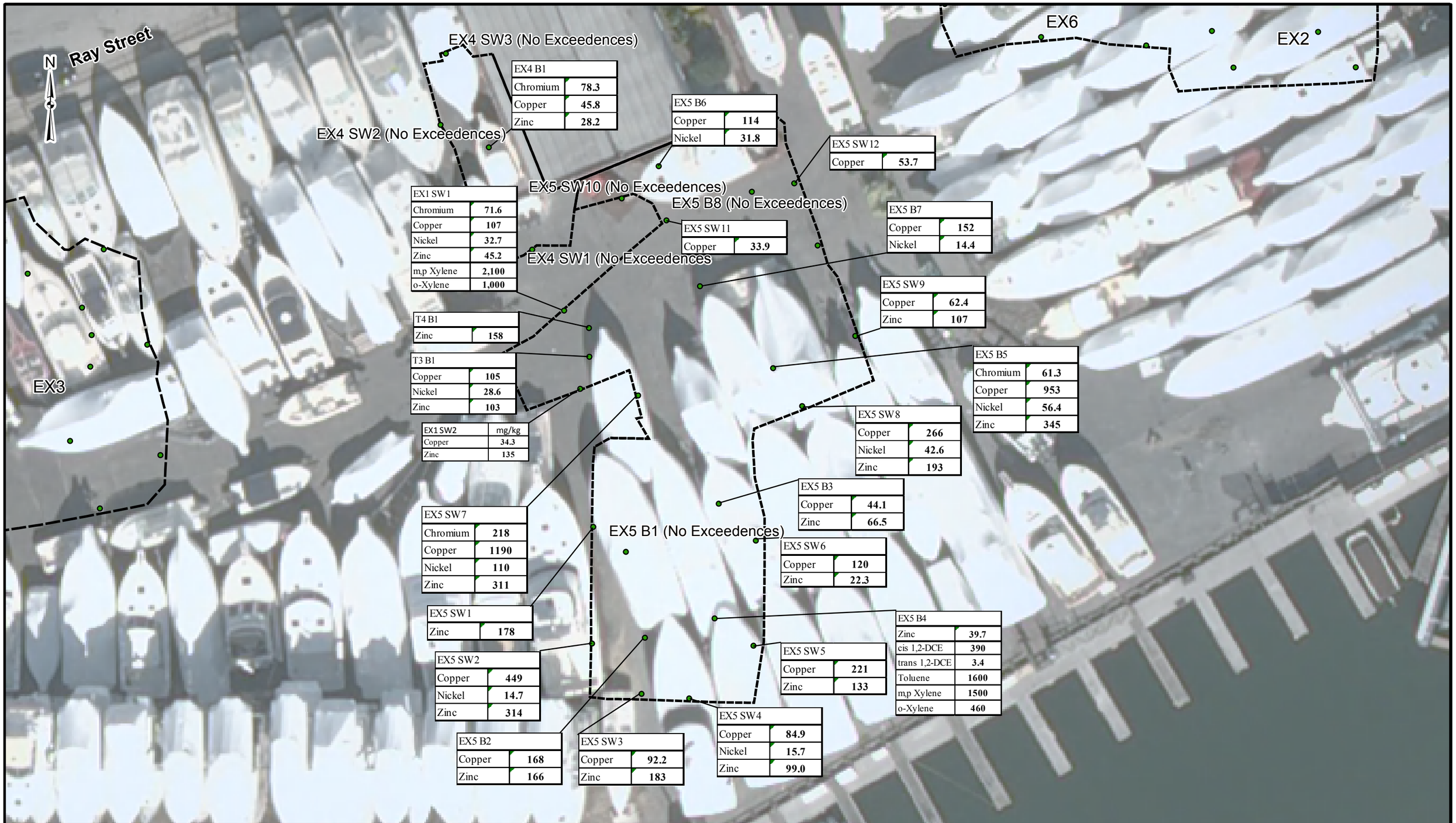
0 12.5 25 50 Feet

Source: NYS GIS Clearing House

Legend

- Documentation Sample Locations
- Excavation Area Boundaries

NOTE: VOC results in ug/kg, Metals results in mg/kg



FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 9B
Documentation Sample Locations
with Exceedances of
Site-Specific SCO's
EX1, EX4 and EX5

0 10 20 40 Feet

Source: NYS GIS Clearing House

Legend

- Documentation Sample Locations
- Excavation Area Boundaries

NOTE: VOC results in ug/kg, Metals results in mg/kg

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\Fig9B

N

EX6N SW3	
Zinc	69.0

EX6N SW2	
Copper	162
Zinc	371

EX6N B2	
Copper	54.9
Nickel	14.6
Zinc	146

EX6N SW4	
Zinc	132

EX6N SW1	
Copper	314
Zinc	399

EX6N B1	
Copper	102
Zinc	114

EX6N SW5	
Copper	149
Nickel	19.3
Zinc	168

EX6N SW6	
Copper	61.5
Zinc	75.7

EX6 SW5	
Copper	220
Zinc	84.3

EX6 SW6	
Copper	76.1
Nickel	23.2
Zinc	159

EX6 B2	
Copper	55.8
Nickel	16.3
Zinc	127

EX6 SW4	
Copper	283
Nickel	596
Zinc	358

EX2 B4	
Chromium	60.1
Copper	288
Nickel	244
Zinc	256

EX6 B1	
Copper	56.7
Zinc	280

EX6 B3	
Copper	40.9
Nickel	45.3
Zinc	264

EX2 B3	
Copper	77.1
Zinc	96.5

EX6 SW7	
Copper	1670
Nickel	41.3
Zinc	473

EX6 SW1	
Copper	285
Nickel	39.9
Zinc	215

EX6 SW2	
Chromium	86.3
Copper	2430
Nickel	71.1
Zinc	558

EX2 B2	
Chromium	91.5
Copper	631
Nickel	52.4
Zinc	442

EX2 B1	
Copper	482
Nickel	21.2
Zinc	365

EX6 SW3	
Copper	49.5
Nickel	122
Zinc	281

EX4

EX5

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 9C
Documentation Sample Locations
with Exceedances of
Site-Specific SCO's
EX2 and EX6

0 10 20 40 Feet

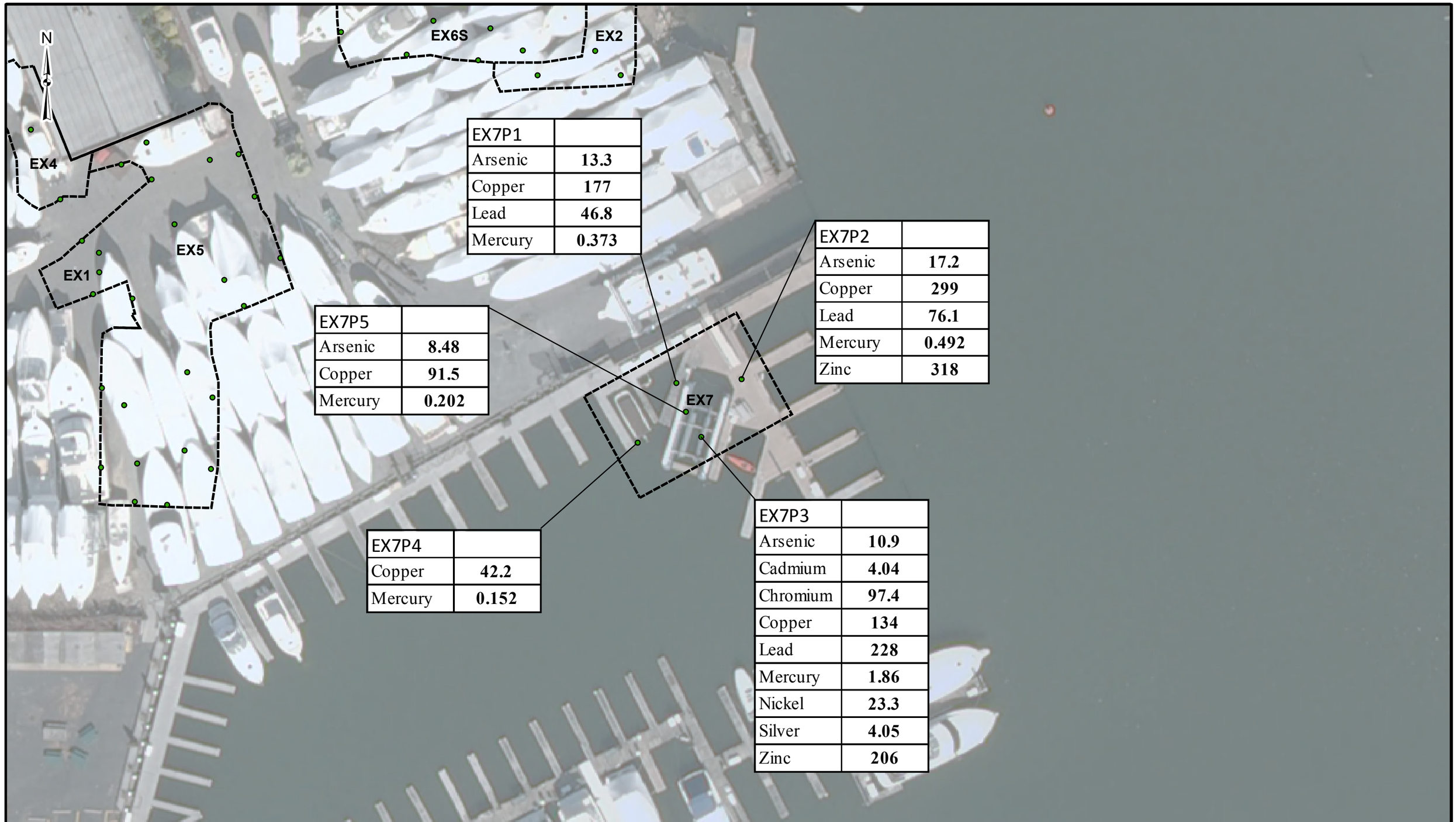
PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\Fig9C

Legend

- Documentation Sample Location
- Excavation Area Boundaries

NOTE: VOC results in ug/kg, Metals results in mg/kg

Source: NYS GIS Clearing House



FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 9D
Documentation Sample Locations with Exceedences of SCOs in EX7

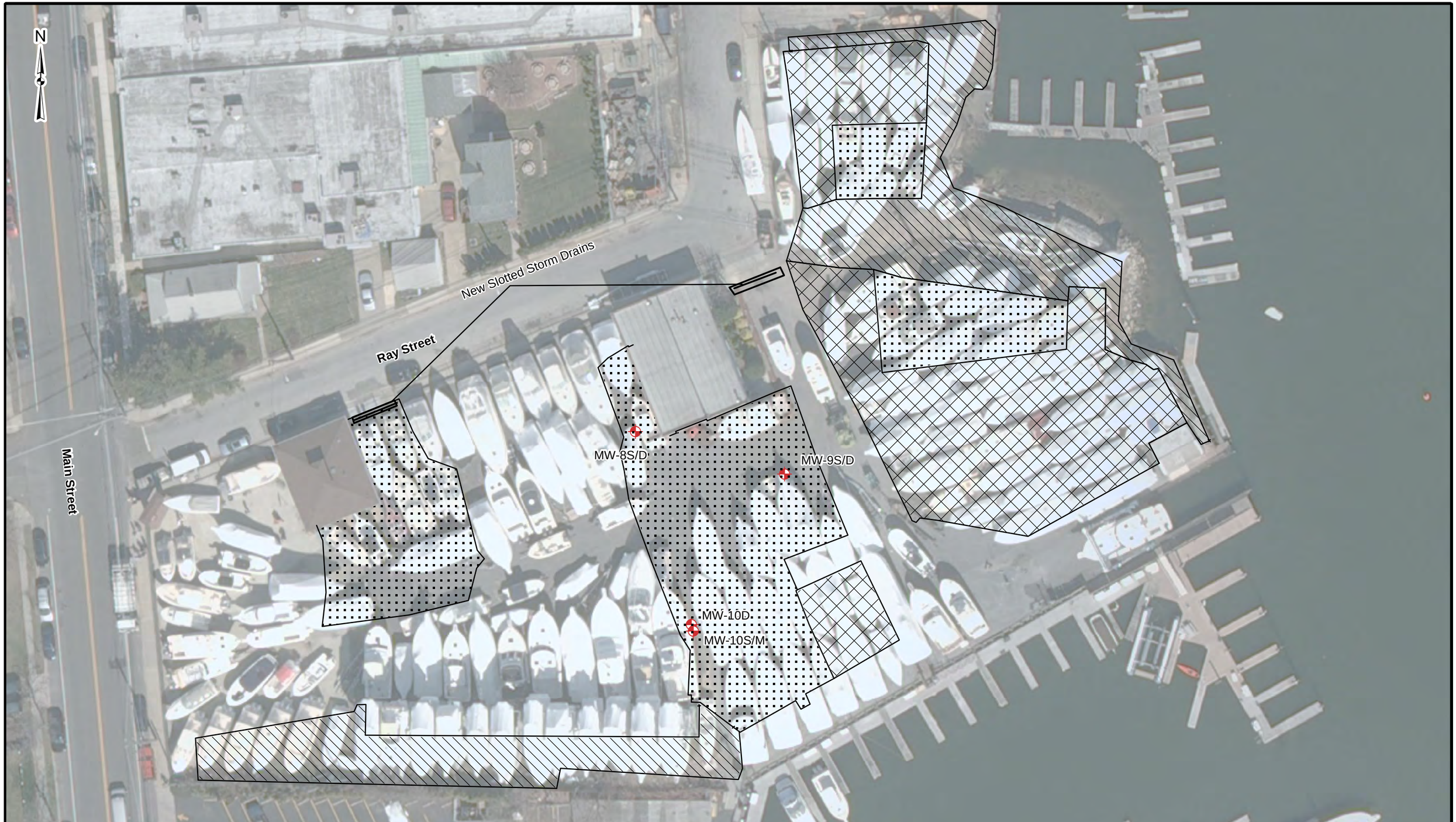
0 15 30 60 Feet

Source: NYS GIS Clearing House

Legend

- Documentation Sample Locations
- Excavation Area Boundaries

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\Fig9D



FREEPORT METAL ETCHING
SITE MONITORING PLAN
FREEPORT, NEW YORK

FIGURE 10
Location of Cover System Types

0 20 40 80 Feet

Source: NYS GIS Clearing House

Legend

- New Monitoring Wells
- Asphalt Cover
- Porous Pavement Cover
- Stone Cover

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\Fig10

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 11
Area of Soil Vapor Concern

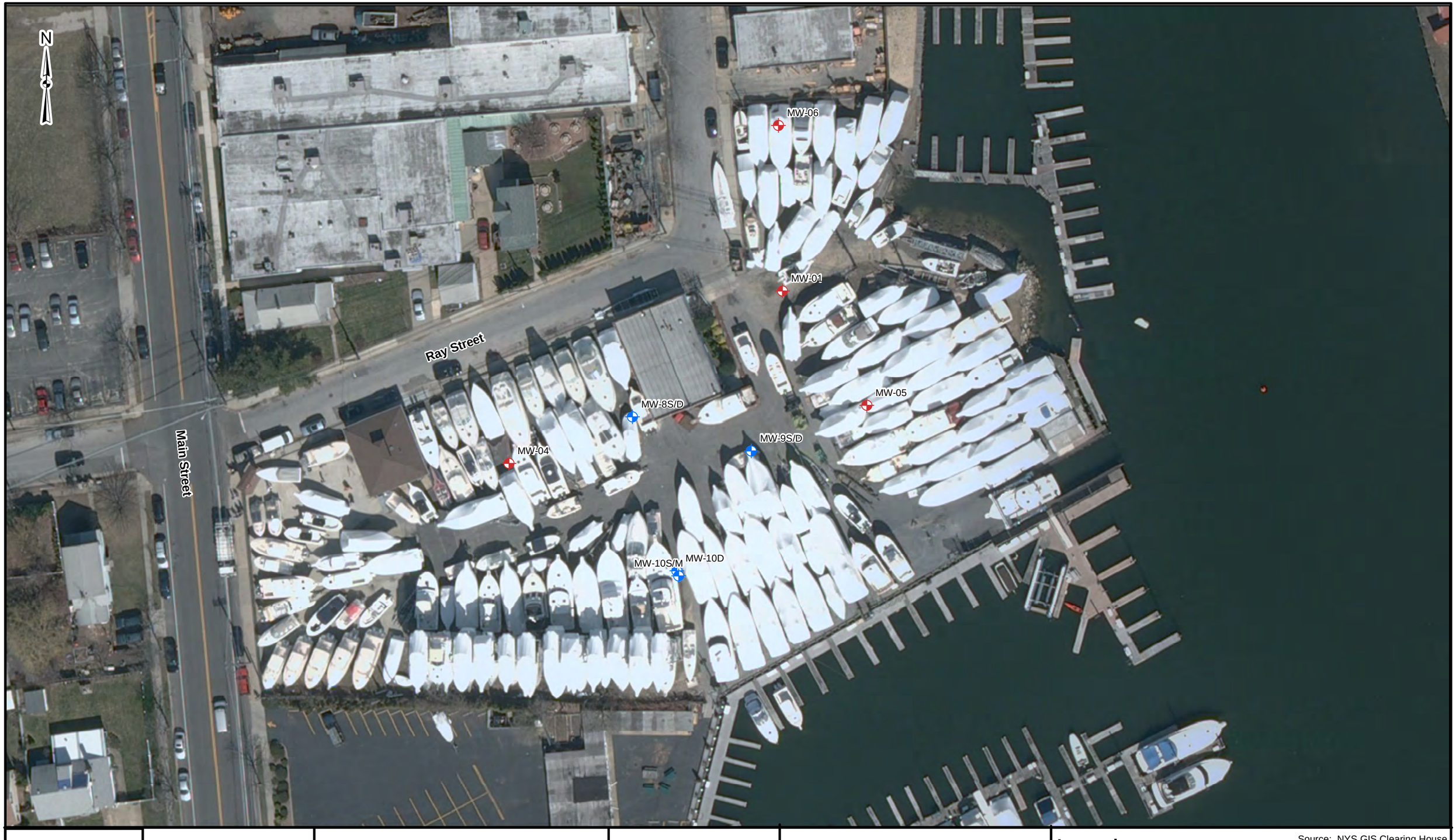
0 25 50 100 Feet

Source: NYS GIS Clearing House

Legend

Area of Soil Vapor Intrusion Concern

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG11



FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 12
Groundwater Monitoring
Well Network

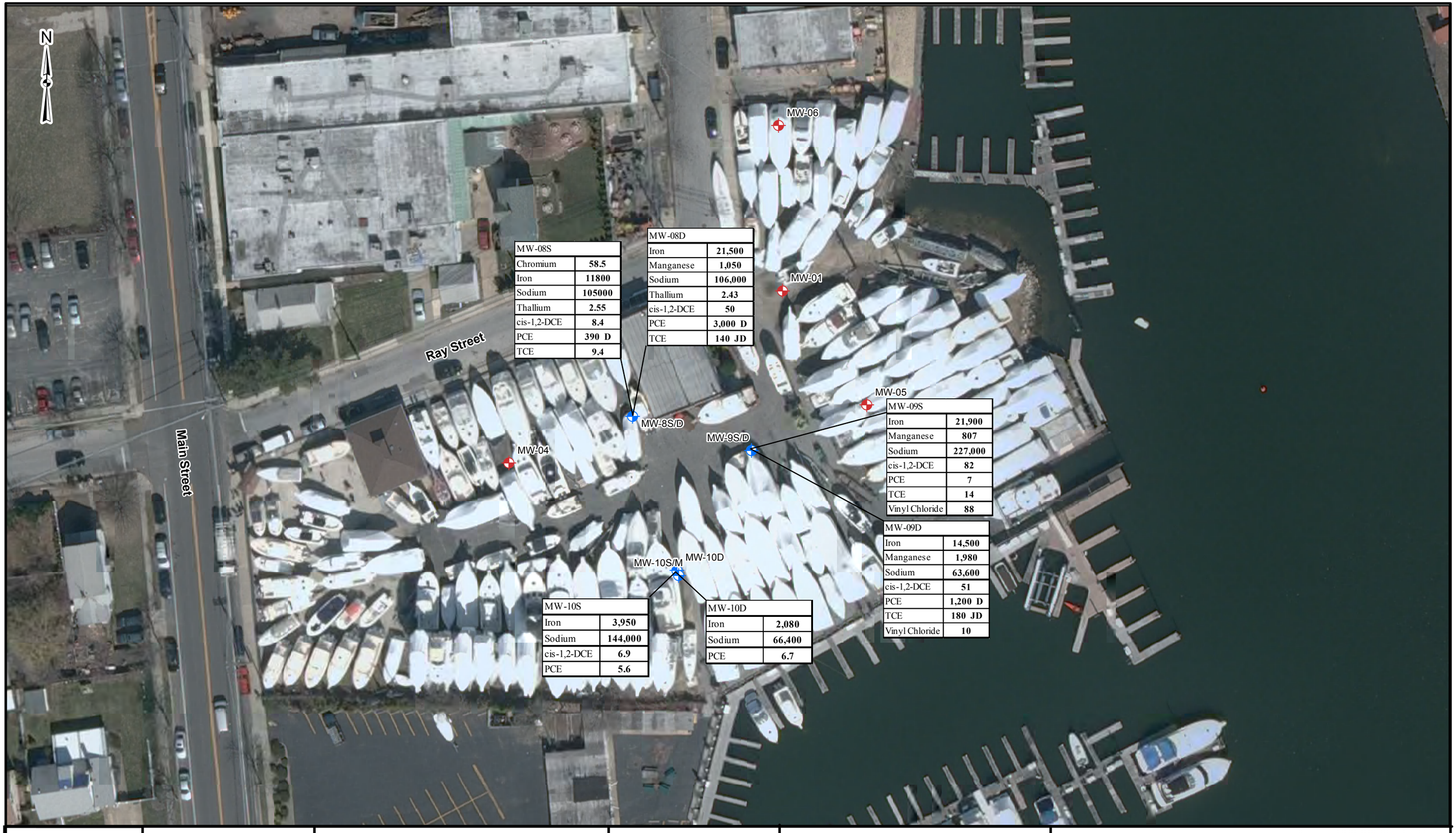
0 25 50 100 Feet

Source: NYS GIS Clearing House

Legend

- Existing Monitoring Wells
- New Monitoring Wells

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\MegalEtching\SMP\Fig12



FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 13
Baseline Post-Remediation
Groundwater Quality

0 25 50 100 Feet

Source: NYS GIS Clearing House

Legend

- Existing Monitoring Wells
- New Monitoring Wells

NOTE: Results are in ug/L

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\MegalEtching\SMP\Fig13

FREEPORT METAL ETCHING
SITE MANAGEMENT PLAN
FREEPORT, NEW YORK

FIGURE 14
Location of Remedial
Treatment Systems

0 20 40 80 Feet

Source: NYS GIS Clearing House

Legend

Location of Sub Slab Depressurization System

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	RSC	MEM	RSC	14474.37	AUGUST 2012	AS SHOWN	G:\Projects\SMP\FIG12

TABLE 1 REMEDIAL INVESTIGATION SOIL CONTAMINATION SUMMARY

Chemical	Maximum Detected Concentration	TAGM RSCO Level	Direct Contact Criteria	Protection of Groundwater Criteria
VOCs (µg/kg)				
Trans-1,2-dichloroethene	300	300	2,000,000	300
Benzene	1,400	60	24,000	60
Chlorobenzene	3,700	2,700	2,000,000	1700
Ethylbenzene	14,000	5,500	8,000,000	5500
Methyl-tert-butyl ether	1,500	120	-	120
Naphthalene	25,000	13,000	300,000	13000
Tetrachloroethene	4,300	1,400	800,000	1400
Toluene	78,000	1,500	20,000,000	1500
Trichloroethene	10,000	700	64,000	700
Xylene	15,000	1,200	200,000,000	1200
Vinyl Chloride	1,800	200	-	120

NOTE: TAGM = Technical and Administrative Guidance Memorandum
RSCO = Recommended Soil Cleanup Objective
VOC = Volatile Organic Compound
µg/kg = Micrograms per kilogram
Direct Contact Criteria Values obtained from TAGM #4046 EPA Health Based Column.
Protection of Groundwater Criteria obtained from the TAGM #4046 Protection of Groundwater.

Constituent	Maximum Detected Concentration (mg/kg)	Eastern US Background[1] (mg/kg)	New York Region[2] (mg/kg)	NYSDEC RSCO (mg/kg)	Frequency of Detection Above RSCOs
METALS					
Arsenic	29	<0.1 - 73	3 - 12	7.5 or SB	11/273
Barium	970	10 - 1500	15 - 600	300 or SB	1/273
Beryllium	1	<1 - 7	0 - 1.75	0.16 or SB	12/273
Cadmium	78	N/A	0.1 - 1	10	2/273
Calcium	72000	100 - 280000	130 - 35000	SB	5/273
Chromium	2200	1 - 1000	1.5 - 40	50	40/273
Chromium-Hexavalent	218			50	-
Cobalt	91	0.3 - 70	2.5 - 60	30 or SB	3/273
Copper	5700	<1 - 700	<1 - 50	25 or SB	91/273
Iron	43000	100 - >100000	2000 - 550000	2,000 or SB	239/273
Lead	3900	<10 - 300	200 - 500	SB	6/273
Magnesium	22000	50 - 50000	100 - 5000	SB	0/273
Nickel	1300	<5 - 700	0.5 - 25	13 or SB	52/273
Selenium	6.7	<0.1 - 3.9	<0.1 - 3.9	2 or SB	11/273
Zinc	3600	<5 - 2900	9 - 50	20 or SB	126/273

1. Shacklette, HT and JG Boerngen, 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, USGS Professional Paper 1270

2. Background Concentrations of 20 Elements in Soils with Special Regard for New York State, E. Carol McGovern,NYSDEC Wildlife Resources Center. These values are the same as the background concentrations listed in TAGM 4046.

NOTE: NYSDEC = New York State Department of Environmental Conservation
mg/kg = Milligram per kilogram
SB = Site Background

Shaded cells represent chemicals detected above both Eastern US Background and New York Region Background.

TABLE 2 REMEDIAL INVESTIGATION GROUNDWATER CONTAMINATION SUMMARY

Constituents	Screening Levels [1]	MW-01 C1292-03 10/8/2004	MW-02D C1282-03 10/7/2004	MW-02S C1282-02 10/7/2004	MW-03D C1282-05 10/7/2004	MW-03S C1282-04 10/7/2004	MW-04 C1292-04 10/8/2004	MW-05 C1292-01 10/8/2004	MW-06 C1292-02 10/8/2004	MW-07D C1282-07 10/7/2004	MW-07S C1282-06 10/7/2004
VOLATILE ORGANIC COMPOUNDS (µg/L)											
Benzene	1900					6 J					
Benzene, 1-methylethyl-	na							2 J	1 J		
Bromoform	na				2 J						
Chlorobenzene	50					1 J					
cis-1,2-Dichloroethylene	na		7 J	38		32	1 J			4 J	370
Cyclohexane	na					1 J		2 J			4 J
Ethene, 1,2-dichloro-, (E)-	na			1 J							3 J
Methylcyclohexane	na					2 J					8 J
Methyltert-butylether	na	4 J	4 J	16	2 J	130	140	54	33		10
Tetrachloroethylene	na	13	1100	36			3 J			1600	3 J
Toluene	920		3 J								2 J
Trichloroethylene	400 a	3 J	16	17			5 J			25	5 J
Vinyl chloride	na			3 J		29					400
SEMIVOLATILE ORGANIC COMPOUNDS (µg/L)											
2-Methylnaphthalene	42										1 J
Acenaphthene	66								3 J		2 J
Bis(2-ethylhexyl)phthalate (BEHP)	na			1 J							1 J
Carbazole	na										1 J
Dibenzofuran	na										1 J
Fluorene	25								3 J		1 J
Naphthalene	160					2 J					6 J
N-Nitrosodiphenylamine	na										15
Phenanthrene	15										2 J
METALS (µg/L)											
Aluminum	na	26.4	959	1170	158	210	94.6	96.8	150	227	64.5
Antimony	na	5.1	3.8	13.9		3.1	2.7	7.2	2.5	4.1	11.3
Arsenic	630	2.4				3.2	2.5		3.8		
Barium	na	51 J			34.2	76.7	37.1 J	1050 J		23.2	310
Cadmium	77		3	15.9		1.4		3.6	0.33	1.3	6.2
Calcium	na	36200	56500	59700	24400	76000	90900	1E+05	2E+05	18200	2E+05
Chloride	na					190 J		400 J			
Chromium	na	0.73	23.8	9.6	4	4.6	14.7	0.9		3.5	2
Chromium (Hexavalent)	540							0.069 J			
Cobalt	na	1.6	3.1		0.31	0.53	0.33		0.33	1.7	0.89
Copper	34		28.3								
Iron	na	462 J	14700	79800	892	6410	171 J	17400 J	1200 J	6370	29200
Lead	80							6.2			
Magnesium	na	38300	10200	9670	15600	38400	10000	37800	30400	4740	58200
Manganese	na	1100	1220	859	380	224	21.3	529	183	680	761
Nickel	82	3	65.4	21.6	2.8	3.8	16.5	4.6	0.53	3.6	2.8
Potassium	na	15400	6810	7020	6450	26000	10800	31300	12000	2740	31000
Selenium	na			7.7							
Silver	na			20.9							
Sodium	na	3E+05	82300	42000	1E+05	2E+05	63500	2E+05	35600	42400	2E+05
Vanadium	na			1.3		2.8		2.6			0.6
Zinc	660	3.1	48.2	29	2.8	3.4 J	10.9	7.2		9.8	
PESTICIDES (µg/L)											
Endrin ketone	na										0.079 J

1. Screening Levels shown were obtained from New York State Department of Environmental Conservation Water Quality Regulations: Surface Water and Groundwater Classifications and Standards (New York State Codes, Rules and Regulations; Title 6, Chapter X Parts 700-706, Amendments through August 4, 1999) - Fish Propagation (saline waters) values used unless otherwise noted.

NOTE: µg/L = Micrograms per liter
J = Estimated value. The value was designated as estimated as a result of the data validation criteria. Also used to indicate when an organic compound is present, but the concentration is less than the Contract Required Quantitation Limit (CRQL). The value is usable as an estimated result.
na = Not Available
a = Human Consumption of Fish (saline) value used
No qualifier indicates the analyte was positively identified at the associated numerical value which is the concentration of the analyte in the sample.
All screening levels are multiplied by 10 to adjust for ground water to surface water dilution (see text).
Only detected values are shown on this table.

TABLE 3 REMEDIAL INVESTIGATION SOIL VAPOR DATA SUMMARY

Soil Gas Survey Sample Point Identification	Sample Serial Number	Installation Date/Time	Initial Reading	Sustained Reading
Gore Sorbers				
GS-01	452988	7/15/2004 / 8:16:00 AM	0.0 ppm	0.0 ppm
GS-02	452989	7/16/2004 / 9:00:00 AM	9.5 ppm	9.5 ppm
GS-03	452990	7/16/2004 / 9:15:00 AM	0.6 ppm	0.6 ppm
GS-04	452991	7/16/2004 / 10:20:00 AM	0.0 ppm	0.0 ppm
GS-05	452992	7/16/2004 / 10:30:00 AM	0.0 ppm	0.0 ppm
GS-06	452993	7/16/2004 / 11:00:00 AM	0.0 ppm	0.0 ppm
GS-07	452994	7/16/2004 / 11:30:00 AM	0.9 ppm	0.9 ppm
GS-08	452995	7/16/2004 / 11:45:00 AM	0.0 ppm	0.0 ppm
GS-09	452996	7/16/2004 / 12:50:00 PM	30 ppm	30 ppm
GS-10	452997	7/16/2004 / 1:29:00 PM	1.5 ppm	1.5 ppm

NOTE: ppm = parts per million.

TABLE 4 REMEDIAL INVESTIGATION SEDIMENT CONTAMINATION SUMMARY

	ER-L mg/kg (Metals); ug/kg (PCBs, VOCs, SVOCs)	ER-M mg/kg (Metals); ug/kg (PCBs, VOCs, SVOCs)	SED-01 C1024-01 8/24/2004 Primary	SED-01 C1024-09 8/24/2004 Duplicate	SED-02 C1024-02 8/24/2004 Primary	SED-03 C1024-03 8/24/2004 Primary	SED-04 C1024-04 8/24/2004 Primary	SED-05 C1024-05 8/24/2004 Primary	SED-07 C1024-07 8/24/2004 Primary	Background Locations SED-06 C1024-06 8/24/2004 Primary	Background Locations SED-08 C1024-08 8/24/2004 Primary
VOCs (ug/kg)											
Acetone	NA	NA	24	17	18	13 U	36	13 U	7	560	17
Carbon disulfide	NA	NA	14 U	12 U	13 U	13 U	7	13 U	12 U	87	13 U
Methylene chloride	NA	NA	14 U	12 U	10	13 U	19 U	13 U	12 U	19	10
Methyl-tert-butyl-ether	NA	NA	14 U	12 U	13 U	13 U	19 U	3	13 U	42 U	12 U
Sum of Constituents			**24**	**17**	**28**	**0**	**43**	**3**	**7**	**751**	**27**
SVOCs (ug/kg)											
2-Methylnaphthalene	70	670	480 U	400 U	410 U	430 U	610 U	430 U	390 U	1400 U	430 U
4-Methylphenol	NA	NA	480 U	400 U	86	430 U	610 U	430 U	390 U	1400 U	430 U
Acenaphthene	16	500	110	80	410 U	430 U	610 U	260	390 U	1400 U	430 U
Acetophenone	NA	NA	480 U	42	410 U	66	610 U	430 U	390 U	1400 U	430 U
Anthracene	85.3	1100	280	260	97	430 U	610 U	660	390 U	1400 U	430 U
Benzaldehyde	NA	NA	130	69	410 U	430 U	610 U	430 U	390 U	1400 U	430 U
Benzo(a)anthracene	261	1600	1100	930	340	61	410	3000	390 U	350	430 U
Benzo(a)pyrene	430	1600	1200	940	380	64	250	3000	390 U	410	430 U
Benzo(b)fluoranthene	NA	NA	2200	1600	620	95	490	4000	43	750	76
Benzo(ghi)perylene	NA	NA	290	260	110	430 U	610 U	690	390 U	250	430 U
Benzo(k)fluoranthene	NA	NA	740	570	250	46	160	2000	390 U	280	430 U
Bis(2-ethylhexyl)phthalate	NA	NA	6000	1700	690	100	1000	270	160	1400	240
Butyl benzyl phthalate	NA	NA	810	400	120	430 U	610 U	430 U	390 U	1400 U	430 U
Carbazole	NA	NA	200	140	50	430 U	610 U	390	390 U	1400 U	430 U
Chrysene	384	2800	1400	1500	430	79	350	3400	390 U	550	58
Dibenzo(a,h)anthracene	63.4	260	180	150	69	430 U	610 U	460	390 U	1400 U	430 U
Dibenzofuran	NA	NA	65	51	410 U	430 U	610 U	130	390 U	1400 U	430 U
Dimethyl phthalate	NA	NA	140	93	410 U	430 U	610 U	430 U	390 U	1400 U	430 U
Di-n-butyl phthalate	NA	NA	310	250	410 U	430 U	610 U	430 U	390 U	1400 U	430 U
Di-n-octyl phthalate	NA	NA	91	53	410 U	430 U	610 U	430 U	390 U	1400 U	430 U
Fluoranthene	600	5100	2500	1900	650	110	510	5100	390 U	470	61
Fluorene	19	540	130	140	410 U	430 U	610 U	270	390 U	1400 U	430 U
Indeno(1,2,3-cd)pyrene	NA	NA	740	570	240	430 U	610 U	1700	390 U	330	430 U
Naphthalene	160	2100	480 U	400 U	410 U	430 U	610 U	50	390 U	1400 U	430 U
Pentachlorophenol	NA	NA	1200 U	73	1000 U	1100 U	1500 U	1100 U	970 U	3500 U	1100 U
Phenanthrene	240	1500	1600	1400	410	58	610 U	3200	390 U	160	430 U
Pyrene	665	2600	3100	2300	910	130	3000	5200	42	930	75
Sum of Constituents			**23316**	**15471**	**5452**	**809**	**6170**	**33780**	**245**	**5880**	**510**
Pest/PCBs (ug/kg)											
4,4'-DDD	NA	NA	4.1	10	4.1 U	3.7	6.1 U	4.3 U	3.9 U	14 U	4.3 U
4,4'-DDE	2.2	27	2.3	19	4.1 U	4.2	4.3	4.3 U	3.9 U	14 U	4.3 U
4,4'-DDT	1.58	46.1	4.8 U	8.2	4.1 U	4.3 U	6.1 U	4.3 U	3.9 U	14 U	4.3 U
Aldrin	NA	NA	2.5 U	2 U	2.1 U	2.2 U	3.1 U	2.2 U	2 U	7.1 U	2.2 U
alpha-BHC	NA	NA	2.5 U	2 U	2.1 U	2.2 U	3.1 U	2.2 U	2 U	7.1 U	2.2 U
alpha-Chlordane	0.5	6	2.5 U	2 U	2.7	1.9	3.1 U	1.2	2 U	7.1 U	2.2 U
Dieldrin	0.02	8	4.8 U	4 U	4.1 U	4.3 U	6.1 U	4.3 U	3.9 U	14 U	4.3 U
Endosulfan I	NA	NA	2.5 U	2 U	2.1 U	2.2 U	3.1 U	2.2 U	2 U	7.1 U	2.2 U
Endosulfan sulfate	NA	NA	4.8 U	4 U	4.1 U	4.3 U	6.1 U	4.3 U	3.9 U	14 U	4.3 U
Endrin aldehyde	NA	NA	4.8 U	17	4.1 U	4.3 U	6.9	4.3 U	3.9 U	14 U	4.3 U
Endrin ketone	0.02	45	4.8 U	4 U	4.1 U	4.3 U	8.9	4.3 U	3.9 U	14 U	4.3 U
gamma-Chlordane	0.5	6	1.7	12	2.5	2.3	3.1 U	2.2 U	2 U	7.1 U	2.2 U
Heptachlor epoxide	NA	NA	2.5 U	2 U	2.1 U	2.2 U	3.1 U	2.2 U	2 U	7.1 U	2.2 U
Methoxychlor	NA	NA	25 U	14	21 U	22 U	12	22 U	20 U	71 U	22 U
Aroclor 1254	22.7	180	96	2300	70	86	170	43 U	39 U	140 U	43 U
Metals (mg/kg)											
Aluminum	NA	NA	3560	5120	2950	1310	8200	1670	1050	17800	1740
Arsenic	8.2	70	6.3	5.6	5.2	2.7	15	5.1	0.77	26	1.6
Barium	NA	NA	23.5	18.6	8	5	52.8	7.6	3.6	67.5	6.4
Beryllium	NA	NA	0.39	0.35	0.34	0.12	0.79	0.15	0.077	1.5	0.15
Cadmium	1.2	9.6	0.42	0.64	0.18	1.1 UJ	1	0.93 UJ	0.96	1	0.096
Calcium	NA	NA	16700	9050	11000	2090	2230	329	1680	12900	12700
Chromium	81	370	34.7	84.9	16	3.3	127	14.4	3.4	89.2	6.5
Cobalt	NA	NA	2.6	3	1.8	0.43	5.6	1	0.3	6.7	0.7
Copper	34	270	285	261	52.3	30.1	290	57.8	39	338	17.5
Iron [1]	2%	4%	11000	10500	6040	4840	21400	7100	1910	39300	3210
Lead	46.7	218	63.8	105	98.6	17.1	134	19	6	154	15.2
Magnesium	NA	NA	11400	8590	1430	2200	3880	553	529	11500	994
Manganese [1]	460	1100	64.3	83.6	36.5	32.5	116	38.9	13.1	268	25.6
Mercury	0.15	0.71	2.5	0.083	0.065	0.12 UJ	0.39	0.11 UJ	0.094 UJ	0.61	0.089
Nickel	20.9	51.6	15.4	40.4	8.8	3.2	28.4	2.3	1.4	26.8	2.6
Potassium	NA	NA	627	585	450	230	1850	358	284	5730	479
Silver	1	3.7	0.67	0.69	0.33	0.22	1.8	0.39		3.4	0.13
Sodium	NA	NA	4990	3940	2680	1700	6200	473	1580	33300	3260
Thallium	NA	NA	1.8	1.1	0.63	2.1 UJ	2.1	1.9 UJ	1.9 UJ	4.8	0.76
Vanadium	NA	NA	31.5	20.6	10.6	9.4	40.7	7.5	3.4	81.7	5.9
Zinc	150	410	338	315	93.2	59.7	425	46.5	16.5	417	26.5

Above Effects Range Low (ER-L) and above SED-06 & SED-08
Above Effects Range Medium (ER-M) and above SED-06 & SED-08

NA Not applicable
U : Chemical was not detected at indicated chemical limit.
UJ: Chemical was undetected but estimated to be at indicated level.

1. Persaud, D., Jaagumagi, R., and A. Hayton, 1992. Guidelines for the Protection and Managament of Aquatic Sediment Quality in Ontario. Ontario Ministry of the Environment, Queen's Printer for Ontario.

TABLE 5A SITE-SPECIFIC SOIL AND GROUNDWATER CLEANUP OBJECTIVES

Constituent	Standards, Criteria, and Guidance	Units
VOLATILE ORGANIC COMPOUNDS - SOIL		
Tetrachloroethylene (PCE)	1.4	mg/Kg
Trichloroethylene (TCE)	0.7	mg/Kg
1,2-Dichloroethylene (DCE)	0.3	mg/Kg
Vinyl Chloride	0.2	mg/Kg
Benzene	0.06	mg/Kg
Toluene	1.5	mg/Kg
Ethylbenzene	5.5	mg/Kg
Xylene	1.2	mg/Kg
Naphthalene	13	mg/Kg
Chlorobenzene	17	mg/Kg
INORGANICS (METALS) - SOIL		
Chromium	50	mg/Kg
Copper	25	mg/Kg
Nickel	13	mg/Kg
Zinc	20	mg/Kg
VOLATILE ORGANIC COMPOUNDS - GROUNDWATER		
Tetrachloroethylene (PCE)	5	µg/L
Trichloroethylene (TCE)	5	µg/L
1,2-Dichloroethylene (DCE)	5	µg/L
Vinyl Chloride	2	µg/L
Methyl Tert Butyl Ether (MTBE)	10	µg/L
INORGANICS (METALS) - GROUNDWATER		
Chromium	50	µg/L
Copper	200	µg/L
Nickel	100	µg/L
Zinc	2000	µg/L
NOTE: Soil Cleanup Objectives developed for 2007 Record of Decision		

TABLE 5B SITE-SPECIFIC SEDIMENT CLEANUP OBJECTIVES

Constituent	Effects Range-Low	Effects Range-High	Units
INORGANICS (METALS)			
Arsenic	8.2	70	mg/Kg
Cadmium	1.2	9.6	mg/Kg
Chromium	81	370	mg/Kg
Copper	34	270	mg/Kg
Iron[(a)]	2%	4%	mg/Kg
Lead	46.7	218	mg/Kg
Manganese[(a)]	460	1100	mg/Kg
Mercury	0.15	0.71	mg/Kg
Nickel	20.9	51.6	mg/Kg
Silver	1	3.7	mg/Kg
Zinc	150	410	mg/Kg

a) Persaud, D., Jaagumagi, R., and A. Hayton, 1992. Guidelines for the Protection and Managament of Aquatic Sediment Quality in Ontario. Ontario Ministry of the Environment, Queen's Printer for Ontario.

TABLE 6A SUMMARY OF REMAINING SOIL CONTAMINATION ABOVE UNRESTRICTED LEVELS FOR VOCs

Parameter List EPA Method 8260B	Sample ID	EX1SW1		EX1SW2		T3B1		T4B1		EX2B1		EX2B2		EX2B3		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3524-03		C3524-04		C3524-01		C3524-02		C3109-07		C3109-08		C3109-09		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/25/2011		8/25/2011		8/25/2011		8/25/2011		7/21/2011		7/21/2011		7/21/2011		
1,2,4-Trimethylbenzene	(µg/kg)	**20,000**	D	3.2	D		U		U		U		U		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	250
m,p-Xylene	(µg/kg)	**2,100**	D		D		U		U		U		U		U	260[a]
o-Xylene	(µg/kg)	**1,000**	D		D		U		U		U		U		U	260[a]
Toluene	(µg/kg)	13					U		U		U		U		U	700

Parameter List EPA Method 8260B	Sample ID	EX2B4		EX3B1		EX3B2		EX3B3		EX3SW1		EX3SW2		EX3SW3		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3109-10		C3068-06		C3068-07		C3109-02		C3068-01		C3068-02		C3068-03		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/21/2011		7/19/2011		7/19/2011		7/21/2011		7/19/2011		7/19/2011		7/19/2011		
1,2,4-Trimethylbenzene	(µg/kg)		U		U		U		U		U		U		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	250
m,p-Xylene	(µg/kg)		U		U		U		U		U		U		U	260[a]
o-Xylene	(µg/kg)		U		U		U		U		U		U		U	260[a]
Toluene	(µg/kg)		U		U		U		U		U		U		U	700

Parameter List EPA Method 8260B	Sample ID	EX3SW4		EX3SW5		EX3SW6		EX3SW7		T1B1		T1B2		T1SW1		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3068-04		C3068-05		C3109-01		C3153-06		C3153-01		C3153-02		C3153-05		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/19/2011		7/19/2011		7/21/2011		7/27/2011		7/27/2011		7/27/2011		7/27/2011		
1,2,4-Trimethylbenzene	(µg/kg)		U		U		U		U		U		U		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	250
m,p-Xylene	(µg/kg)		U		U		U		U		U		U		U	260[a]
o-Xylene	(µg/kg)		U		U		U		U		U		U		U	260[a]
Toluene	(µg/kg)		U		U		U		U		U		U		U	700

Parameter List EPA Method 8260B	Sample ID	T2B1		T2B2		EX4B1		EX4SW1		EX4SW2		EX4SW3		EX5B1		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3153-03		C3153-04		C3473-06		C3473-01		C3473-02		C3473-03		C3265-04		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/27/2011		7/27/2011		8/22/2011		8/22/2011		8/22/2011		8/22/2011		8/4/2011		
1,2,4-Trimethylbenzene	(µg/kg)	7.5		31			U	1.1	J		U		U		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U	1.7	J		U		U		U		U	250
m,p-Xylene	(µg/kg)		U		U		U	7.2	J		U		U		U	260[a]
o-Xylene	(µg/kg)		U	1.4	J		U	1.0	J		U		U		U	260[a]
Toluene	(µg/kg)		U		U		U	1.1	J		U		U		U	700

Parameter List EPA Method 8260B	Sample ID	EX5B2		EX5B3		EX5B4		EX5B5		EX5B6		EX5B7		EX5B8		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3265-05		C3355-04		C3355-05		C3355-09		C3473-08		C3622-04		C3622-05		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/4/2011		8/11/2011		8/11/2011		8/22/2011		8/22/2011		9/7/2011		9/7/2011		
1,2,4-Trimethylbenzene	(µg/kg)	2,700	D		U	1,300	D		U	1.9	J	2.4	J		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U	1.4	J	**390**	JD		U	22		1.9	J		U	250
m,p-Xylene	(µg/kg)	**780**	JD		U	**1,500**	D		U		U		U		U	260[a]
o-Xylene	(µg/kg)		U		U	**460**	JD		U		U		U		U	260[a]
Toluene	(µg/kg)	2	J		U	**1,600**	D		U	2.3	J	1.6	J		U	700

(a) Standards, Criteria, and Guidance is for total xylenes

NOTE: EPA = U.S. Enivronmental Protection Agency.
ID = Identification

µg/kg = micrograms per kilogram = parts per billion (ppb).

D = Indicates the reported value was obtained by analysis at a secondary dilution factor.

U = Non-detect, detection below the method detection limit.

J = Indicates the reported value was less than the Contract Required Detection Limit , but greater than or equal to the Instrument Detection Limit.

Data provided by Chemtech Consulting Group. Only analytes included in Table 1 of the ROD are included

Concentration values in **BOLD** indicate that analyte was detected above the site specific standards, criteria, and guidance.

Parameter List EPA Method 8260B	Sample ID	EX5SW1		EX5SW2		EX5SW3		EX5SW4		EX5SW5		EX5SW6		EX5SW7		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3265-01		C3265-02		C3265-03		C3355-01		C3355-02		C3355-03		C3355-06		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/4/2011		8/4/2011		8/4/2011		8/11/2011		8/11/2011		8/11/2011		8/22/2011		
1,2,4-Trimethylbenzene	(µg/kg)		U	8.3			U	4.3	J		U		U		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	250
m,p-Xylene	(µg/kg)		U	21			U		U		U		U		U	260[a]
o-Xylene	(µg/kg)		U		U		U		U		U		U		U	260[a]
Toluene	(µg/kg)		U		U		U		U		U		U		U	700

Parameter List EPA Method 8260B	Sample ID	EX5SW8		EX5SW9		EX5SW10		EX5SW11		EX5SW12		EX5SW13		EX6B1		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3355-07		C3355-08		C3473-07		C3622-03		C3622-01		C3622-02		C3109-03		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/16/2011		8/16/2011		9/7/2011		9/7/2011		9/7/2011		9/7/2011		7/21/2011		
1,2,4-Trimethylbenzene	(µg/kg)		U		U		U		U		U	4.5	J		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U	33		3.4	J		U		U		U	250
m,p-Xylene	(µg/kg)		U		U	5.9	J		U		U		U		U	260[a]
o-Xylene	(µg/kg)		U		U	2.5	J		U		U		U		U	260[a]
Toluene	(µg/kg)		U		U	13		2.6	J		U		U		U	700

Parameter List EPA Method 8260B	Sample ID	EX6B2		EX6B3		EX6SW1		EX6SW2		EX6SW3		EX6SW4		EX6SW5		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3109-04		C3109-05		C3100-01		C3100-02		C3100-03		C3100-04		C3100-05		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/21/2011		7/21/2011		7/20/2011		7/20/2011		7/20/2011		7/20/2011		7/20/2011		
1,2,4-Trimethylbenzene	(µg/kg)		U		U			33			U		U		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U				U		U		U		U	250
m,p-Xylene	(µg/kg)		U	3.1	J				U		U		U		U	260[a]
o-Xylene	(µg/kg)		U		U				U		U		U		U	260[a]
Toluene	(µg/kg)	3.2	J		U				U		U		U		U	700

Parameter List EPA Method 8260B	Sample ID	EX6SW6		EX6SW7		EX6NB1		EX6NB2		EX6NSW1		EX6NSW2		EX6NSW3		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3100-06		C3109-06		C3265-15		C3265-16		C3265-06		C3265-07		C3265-08		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/20/2011		7/21/2011		8/4/2011		8/4/2011		8/4/2011		8/4/2011		8/4/2011		
1,2,4-Trimethylbenzene	(µg/kg)		U		U		U		U		U		U	39		3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	250
m,p-Xylene	(µg/kg)		U		U		U		U		U		U	20		260[a]
o-Xylene	(µg/kg)		U		U		U		U		U		U	2.1	J	260[a]
Toluene	(µg/kg)		U		U		U		U		U		U		U	700

Parameter List EPA Method 8260B	Sample ID	EX6NSW4		EX6NSW5		EX6NSW6		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3265-09		C3265-13		C3265-14		
	Sample Type	Soil		Soil		Soil		
	Sample Date	8/4/2011		8/4/2011		8/4/2011		
1,2,4-Trimethylbenzene	(µg/kg)		U		U		U	3,600
cis-1,2-Dichloroethylene	(µg/kg)		U		U		U	250
m,p-Xylene	(µg/kg)		U		U		U	260[a]
o-Xylene	(µg/kg)		U		U		U	260[a]
Toluene	(µg/kg)		U		U		U	700

TABLE 6B SUMMARY OF REMAINING SOIL CONTAMINATION ABOVE UNRESTRICTED LEVELS FOR METALS

Parameter List EPA Method 6010B/7471A	Sample ID	EX1SW1		EX1SW2		T3B1		T4B1		EX2B1		EX2B2		EX2B3		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3524-03		C3524-04		C3524-01		C3524-02		C3109-07		C3109-08		C3109-09		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/25/2011		8/25/2011		8/25/2011		8/25/2011		7/21/2011		7/21/2011		7/21/2011		
Arsenic	(mg/kg)	4.490		5.410		3.110		1.840		3.080	*	3.300	*	6.840	*	13
Barium	(mg/kg)	14.8		23.5		50.7		7.740		32.6		107		38.8		350
Chromium (Total)	(mg/kg)	***71.6***		**15.8**		**29.8**		**12.0**		***32.4***		***91.5***		**21.2**		1[(a)], 30[(b)]
Copper	(mg/kg)	**107**		34.3		**105**		3.700		**482**		**631**		**77.1**		50
Lead	(mg/kg)	22.2		**68.3**		**70.7**		2.440		61.6		**171**		**72.7**		63
Mercury	(mg/kg)	0.056		0.105		**0.227**			U	0.058		**0.121**		0.077		0.18
Nickel	(mg/kg)	**32.7**		12.3		28.6		8.520		21.2		**52.4**		12.4		30
Silver	(mg/kg)	0.433	J	0.437		0.542			U	0.272	J	0.263	J	0.201	J	2
Zinc	(mg/kg)	45.2		**135**		103		**158**		**365**		**442**		96.5		109

Parameter List EPA Method 6010B/7471A	Sample ID	EX2B4		EX3B1		EX3B2		EX3B3		EX3SW1		EX3SW2		EX3SW3		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3109-10		C3068-06		C3068-07		C3109-02		C3068-01		C3068-02		C3068-03		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/21/2011		7/19/2011		7/19/2011		7/21/2011		7/19/2011		7/19/2011		7/19/2011		
Arsenic	(mg/kg)	6.93	*	1.270		1.510		2.16	*	2.150		6.950		4.090		13
Barium	(mg/kg)	32.4		12.0		6.900		8.270		28.3		13.9		24.3		350
Chromium (Total)	(mg/kg)	***60.1***		**4.170**		**5.110**		**5.850**		**5.330**		**4.630**		**6.970**		1[(a)], 30[(b)]
Copper	(mg/kg)	**288**		4.100		2.960		3.810		2.850		5.460		11.4		50
Lead	(mg/kg)	**71.6**		11.4		3.370		5.740		17.8		5.130		40.2		63
Mercury	(mg/kg)	0.084		0.094	*	0.013	*	0.013		0.036	*	0.012	*	0.031	*	0.18
Nickel	(mg/kg)	**244**		3.690		3.510		3.740		3.120		3.230		4.670		30
Silver	(mg/kg)		U	0.155	J	0.159	J		U		U	0.146	J	0.259	J	2
Zinc	(mg/kg)	**256**		22.0		11.8		14.8		33.0		16.5		35.2		109

Parameter List EPA Method 6010B/7471A	Sample ID	EX3SW4		EX3SW5		EX3SW6		EX3SW7		T1B1		T1B2		T1SW1		Part 375 Unrestricted Use Soil Cleanup Objectives
	Lab ID	C3068-04		C3068-05		C3109-01		C3153-06		C3153-01		C3153-02		C3153-05		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/19/2011		7/19/2011		7/21/2011		7/27/2011		7/27/2011		7/27/2011		7/27/2011		
Arsenic	(mg/kg)	2.310		1.220		0.6	J*	1.130		1.610		2.810		3.510		13
Barium	(mg/kg)	16.6		13.7		8.180		7.410		16.4		18.6		20.2		350
Chromium (Total)	(mg/kg)	**5.240**		**3.980**		**2.500**		**3.340**		**6.750**		**5.350**		**11.4**		1[(a)], 30[(b)]
Copper	(mg/kg)	3.900		6.600		6.870		2.880		10.1		13.6		4.770		50
Lead	(mg/kg)	8.780		31.0		2.620		2.720		26.1		18.6		5.580		63
Mercury	(mg/kg)	0.018	*	0.064	*	0.004	J	0.005	J	0.049		0.072		0.013		0.18
Nickel	(mg/kg)	3.490		3.430		3.850		3.730		**47.2**		**33.0**		6.420		30
Silver	(mg/kg)	0.216	J	0.178	J		U		U		U		U		U	2
Zinc	(mg/kg)	22.8		59.6		11.7		10.7	*	62.1	*	38.6	*	17.2	*	109

(a) Value is for hexavalent Chromium but is considered to be met if the analysis for total Chromium is below the specific SCO. **BOLD** concentrations exceed this specific SCO

(b) Value is for trivalent Chromium but is considered to be met if the analysis for total Chromium is below the specific SCO. *ITALICIZED* concentrations exceed this specific SCO

NOTE: EPA = U.S. Enivronmental Protection Agency.
Identification
mg/kg = Millirgrams per kilogram
* = Indicates the duplicate analysis was not within the control limits.
U = Non-detect, detection below the method detection limit.
J = Indicates the reported value was less than the Contract Required Detection Limit , but greater than or equal to the Method Detection Limit.
N = Indicates the spiked sample recovery was not within the control limits.
Data provided by Chemtech Consulting Group. Only analytes that were detected in at least one sample are shown.
Concentration values in **BOLD** indicate that analyte was detected above the site specific standards, criteria, and guidance.

Parameter List EPA Method 6010B/7471A	Sample ID Lab ID Sample Type Sample Date	T2B1 C3153-03 Soil 7/27/2011		T2B2 C3153-04 Soil 7/27/2011		EX4B1 C3473-06 Soil 8/22/2011		EX4SW1 C3473-01 Soil 8/22/2011		EX4SW2 C3473-02 Soil 8/22/2011		EX4SW3 C3473-03 Soil 8/22/2011		EX5B1 C3265-04 Soil 8/4/2011		Part 375 Unrestricted Use Soil Cleanup Objectives
Arsenic	(mg/kg)	2.340		1.820		0.88	J	2.500		3.620		0.67	J	4.040		13
Barium	(mg/kg)	34.7		13.0		20.4		13.6		1.370	J	6.170		27.7		350
Chromium (Total)	(mg/kg)	**5.050**		**4.010**		***78.3***		**9.120**		**8.190**		**3.890**		**8.1**	*	1[(a)], 30[(b)]
Copper	(mg/kg)	14.1		5.950		45.8		22.5		3.100		3.770		**73.8**		50
Lead	(mg/kg)	**120**		20.9		4.860	*	34.4	*	0.53	J*	1.580	*	52.2		63
Mercury	(mg/kg)	0.042		0.090		0.015		0.078		0.018		0.010	J	0.061	*	0.18
Nickel	(mg/kg)	6.120		5.070		5.700		8.160			U	10.8		8.420		30
Silver	(mg/kg)		U		U	0.16	J		U		U		U		U	2
Zinc	(mg/kg)	53.9	*	27.3	*	28.2		63.8		4.380		14.9		62.5		109

Parameter List EPA Method 6010B/7471A	Sample ID Lab ID Sample Type Sample Date	EX5B2 C3265-05 Soil 8/4/2011		EX5B3 C3355-04 Soil 8/11/2011		EX5B4 C3355-05 Soil 8/11/2011		EX5B5 C3355-09 Soil 8/22/2011		EX5B6 C3473-08 Soil 8/22/2011		EX5B7 C3622-04 Soil 9/7/2011		EX5B8 C3622-05 Soil 9/7/2011		Part 375 Unrestricted Use Soil Cleanup Objectives
Arsenic	(mg/kg)	2.620		2.220		2.440		1.560		2.560		3.440	N	3.090	N	13
Barium	(mg/kg)	25.6		35.2		20.1		11.4		34.8		30.9		36.8		350
Chromium (Total)	(mg/kg)	**18.4**	*	**10.1**		**6.300**		**4.330**		***61.3***		***30.3***		***34.2***		1(a), 30(b)
Copper	(mg/kg)	**168**		44.1		18.4		4.240		**953**		**114**		**152**		50
Lead	(mg/kg)	48.6		**458**		32.1		4.170		50.9	*	40.5		62.4		63
Mercury	(mg/kg)	0.096	*	0.036		0.032		0.048		0.055		0.034		0.069		0.18
Nickel	(mg/kg)	11.0		5.180		4.770		3.220		**56.4**		**31.8**		14.4		30
Silver	(mg/kg)		U		U	0.18	J		U	0.84			U		U	2
Zinc	(mg/kg)	**166**		66.5		39.7		10.6		**345**		88.6	N	**116**	N	109

Parameter List EPA Method 6010B/7471A	Sample ID Lab ID Sample Type Sample Date	EX5SW1 C3265-01 Soil 8/4/2011		EX5SW2 C3265-02 Soil 8/4/2011		EX5SW3 C3265-03 Soil 8/4/2011		EX5SW4 C3355-01 Soil 8/11/2011		EX5SW5 C3355-02 Soil 8/11/2011		EX5SW6 C3355-03 Soil 8/11/2011		EX5SW7 C3355-06 Soil 8/22/2011		Part 375 Unrestricted Use Soil Cleanup Objectives
Arsenic	(mg/kg)	1.690		5.300		6.600		2.920		3.970		1.940		1.740		13
Barium	(mg/kg)	13.6		59.6		81.0		25.9		63.4		20.9		12.4		350
Chromium (Total)	(mg/kg)	**7.15**	*	**28.7**	*	**20.9**	*	**27.6**		**12.6**		**7.300**		**4.780**		1[(a)], 30[(b)]
Copper	(mg/kg)	8.230		**449**		**92.2**		**84.9**		**221**		**120**		11.2		50
Lead	(mg/kg)	31.7		**101**		**121**		**81.4**		48.5		33.6		22.8		63
Mercury	(mg/kg)	0.085	*	0.124	*	0.174	*	0.057		0.097		0.035		0.036		0.18
Nickel	(mg/kg)	3.170		14.7		10.4		15.7		8.480		4.180		3.220		30
Silver	(mg/kg)		U		U		U	0.75		0.35	J		U		U	2
Zinc	(mg/kg)	**178**		**314**		**183**		99.0		**133**		22.3		25.0		109

Parameter List EPA Method 6010B/7471A	Sample ID Lab ID Sample Type Sample Date	EX5SW8 C3355-07 Soil 8/16/2011		EX5SW9 C3355-08 Soil 8/16/2011		EX5SW10 C3473-07 Soil 9/7/2011		EX5SW11 C3622-03 Soil 9/7/2011		EX5SW12 C3622-01 Soil 9/7/2011		EX5SW13 C3622-02 Soil 9/7/2011		EX6B1 C3109-03 Soil 7/21/2011		Part 375 Unrestricted Use Soil Cleanup Objectives
Arsenic	(mg/kg)	3.450		3.090		7.270		2.820	N	8.260	N	4.430	N	4.36	*	13
Barium	(mg/kg)	38.7		30.2		50.2		22.5		43.2		51.5		19.9		350
Chromium (Total)	(mg/kg)	**7.240**		**6.750**		***218***		**15.8**		**10.8**		**17.2**		**6.980**		1[(a)], 30[(b)]
Copper	(mg/kg)	**266**		62.4		**1190**		20.1		33.9		**53.7**		**56.7**		50
Lead	(mg/kg)	**80.3**		**65.8**		**227**	*	36.0		53.5		**117**		**739**		63
Mercury	(mg/kg)	0.079		0.068		**0.191**		0.024		0.070		0.081		0.109		0.18
Nickel	(mg/kg)	**42.6**		10.7		**110**		9.550		12.8		11.7		6.450		30
Silver	(mg/kg)		U		U	**8.750**			U		U		U		U	2
Zinc	(mg/kg)	**193**		107		**311**		67.1	N	51.3	N	95.7	N	**280**		109

Parameter List EPA Method 6010B/7471A	Sample ID Lab ID Sample Type Sample Date	EX6B2 C3109-04 Soil 7/21/2011		EX6B3 C3109-05 Soil 7/21/2011		EX6SW1 C3100-01 Soil 7/20/2011		EX6SW2 C3100-02 Soil 7/20/2011		EX6SW3 C3100-03 Soil 7/20/2011		EX6SW4 C3100-04 Soil 7/20/2011		EX6SW5 C3100-05 Soil 7/20/2011		Part 375 Unrestricted Use Soil Cleanup Objectives
Arsenic	(mg/kg)	11.2	*	**25.2**	*	9.760		4.640		7.630		11.6		**17.9**		13
Barium	(mg/kg)	59.7		59.6		35.0		39.7		44.2		30.5		45.5		350
Chromium (Total)	(mg/kg)	**12.1**		**12.4**		**22.0**		***86.3***		**19.8**		**16.1**		**9.090**		1[(a)], 30[(b)]
Copper	(mg/kg)	**55.8**		40.9		**285**		**2430**		49.5		**283**		**220**		50
Lead	(mg/kg)	**80.6**		**206**		**75.9**		**70.6**		**107**		**82.3**		51.5		63
Mercury	(mg/kg)	0.117		**0.348**		0.142		0.087		0.079		0.091		0.051		0.18
Nickel	(mg/kg)	16.3		**45.3**		**39.9**		**71.1**		**122**		**596**		11.2		30
Silver	(mg/kg)		U		U		U	0.602			U		U		U	2
Zinc	(mg/kg)	**127**		**264**		**215**		**558**		**281**		**358**		84.3		109

Parameter List EPA Method 6010B/7471A	Sample ID Lab ID Sample Type Sample Date	EX6SW6 C3100-06 Soil 7/20/2011		EX6SW7 C3109-06 Soil 7/21/2011		EX6NB1 C3265-15 Soil 8/4/2011		EX6NB2 C3265-16 Soil 8/4/2011		EX6NSW1 C3265-06 Soil 8/4/2011		EX6NSW2 C3265-07 Soil 8/4/2011		EX6NSW3 C3265-08 Soil 8/4/2011		Part 375 Unrestricted Use Soil Cleanup Objectives
Arsenic	(mg/kg)	**17.6**		7.03	*	4.610		4.220		4.060		4.300		3.210		13
Barium	(mg/kg)	24.3		65.7		94.2		26.8		**572**		126		28.5		350
Chromium (Total)	(mg/kg)	**9.430**		**18.4**		**20**	*	**10.1**	*	**14.1**	*	**10.8**	*	**8.65**	*	1(a), 30(b)
Copper	(mg/kg)	**76.1**		**1670**		**102**		**54.9**		**314**		**162**		23.6		50
Lead	(mg/kg)	**81.0**		**107**		**146**		**63.3**		**275**		**254**		**86.5**		63
Mercury	(mg/kg)	0.049		0.118			U*	0.075	*	0.052	*	**0.22**	*	0.092	*	0.18
Nickel	(mg/kg)	23.2		**41.3**		11.3		14.6		10.8		11.5		5.420		30
Silver	(mg/kg)		U		U		U		U		U	0.684			U	2
Zinc	(mg/kg)	**159**		**473**		**114**		**146**		**399**		**371**		69.0		109

Parameter List EPA Method 6010B/7471A	Sample ID Lab ID Sample Type Sample Date	EX6NSW4 C3265-09 Soil 8/4/2011		EX6NSW5 C3265-13 Soil 8/4/2011		EX6NSW6 C3265-14 Soil 8/4/2011		Part 375 Unrestricted Use Soil Cleanup Objectives
Arsenic	(mg/kg)	2.030		5.120		2.420		13
Barium	(mg/kg)	27.6		45.4		18.6		350
Chromium (Total)	(mg/kg)	**11.2**	*	***32.2***	*	**9.16**	*	1[(a)], 30[(b)]
Copper	(mg/kg)	13.8		**149**		**61.5**		50
Lead	(mg/kg)	58.2		**113**		46.6		63
Mercury	(mg/kg)	0.034	*	0.085	*	0.051	*	0.18
Nickel	(mg/kg)	7.790		19.3		8.060		30
Silver	(mg/kg)		U	0.161	J		U	2
Zinc	(mg/kg)	**132**		**168**		75.7		109

TABLE 7A SUMMARY OF REMAINING SOIL CONTAMINATION ABOVE SITE-SPECIFIC SOIL CLEANUP OBJECTIVES FOR VOCs

Parameter List EPA Method 8260B	Sample ID	EX1SW1		EX1SW2		T3B1		T4B1		EX2B1		EX2B2		EX2B3		Site Specific Standards, Criteria, and Guidance
	Lab ID	C3524-03		C3524-04		C3524-01		C3524-02		C3109-07		C3109-08		C3109-09		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/25/2011		8/25/2011		8/25/2011		8/25/2011		7/21/2011		7/21/2011		7/21/2011		
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
Ethylbenzene	(µg/kg)	570	D		U		U		U		U		U		U	5,500
Methyl tert-butyl ether	(µg/kg)	2	J		U		U	4	J		U		U		U	120
Naphthalene	(µg/kg)	13,000	D		U		U		U		U		U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U		U		U		U		U		U	1,400
Toluene	(µg/kg)	13			U		U		U		U		U		U	1,500
Trichloroethylene (TCE)	(µg/kg)		U		U		U		U		U		U		U	700
Vinyl chloride	(µg/kg)		U		U		U		U		U		U		U	200
m,p- Xylene	(µg/kg)	**2,100**	D		U		U		U		U		U		U	1,200[b]
o- Xylene	(µg/kg)	**1,000**	D		U		U		U		U		U		U	1,200[b]

Parameter List EPA Method 8260B	Sample ID	EX2B4		EX3B1		EX3B2		EX3B3		EX3SW1		EX3SW2		EX3SW3		Site Specific Standards, Criteria, and Guidance
	Lab ID	C3109-10		C3068-06		C3068-07		C3109-02		C3068-01		C3068-02		C3068-03		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/21/2011		7/19/2011		7/19/2011		7/21/2011		7/19/2011		7/19/2011		7/19/2011		
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
Ethylbenzene	(µg/kg)		U		U		U		U		U		U		U	5,500
Methyl tert-butyl ether	(µg/kg)		U		U		U		U		U		U		U	120
Naphthalene	(µg/kg)	3	J		U		U		U		U		U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U		U		U		U		U	6		1,400
Toluene	(µg/kg)		U		U		U		U		U		U		U	1,500
Trichloroethylene (TCE)	(µg/kg)		U		U		U		U		U		U		U	700
Vinyl chloride	(µg/kg)		U		U		U		U		U		U		U	200
m,p- Xylene	(µg/kg)		U		U		U		U		U		U		U	1,200[b]
o- Xylene	(µg/kg)		U		U		U		U		U		U		U	1,200[b]

(a) SCG is for the sum of cis 1,2-DCE and trans 1,2-DCE

(b) SCG is for total Xylenes

NOTE: EPA = U.S. Enivronmental Protection Agency.
ID = Identification
µg/kg = micrograms per kilogram = parts per billion (ppb).
U = Non-detect, detection below the method detection limit.
D = Indicates the reported value was obtained by analysis at a secondary dilution factor.
J = Indicates the reported value was less than the Contract Required Detection Limit , but greater than or equal to the Instrument Detection Limit.
Data provided by Chemtech Consulting Group. Only analytes included in Table 1 of the ROD are included
Concentration values in **BOLD** indicate that analyte was detected above the site specific standards, criteria, and guidance.

Parameter List EPA Method 8260B	Sample ID Lab ID Sample Type Sample Date	EX3SW4 C3068-04 Soil 7/19/2011		EX3SW5 C3068-05 Soil 7/19/2011		EX3SW6 C3109-01 Soil 7/21/2011		EX3SW7 C3153-06 Soil 7/27/2011		T1B1 C3153-01 Soil 7/27/2011		T1B2 C3153-02 Soil 7/27/2011		T1SW1 C3153-05 Soil 7/27/2011		Site Specific Standards, Criteria, and Guidance
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
Ethylbenzene	(µg/kg)		U		U		U		U		U		U		U	5,500
Methyl tert-butyl ether	(µg/kg)		U		U		U		U		U		U		U	120
Naphthalene	(µg/kg)		U		U		U		U		U		U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U		U		U		U		U		U	1,400
Toluene	(µg/kg)		U		U		U		U		U		U		U	1,500
Trichloroethylene (TCE)	(µg/kg)		U		U		U		U		U		U		U	700
Vinyl chloride	(µg/kg)		U		U		U		U		U		U		U	200
m,p- Xylene	(µg/kg)		U		U		U		U		U		U		U	1,200[b]
o- Xylene	(µg/kg)		U		U		U		U		U		U		U	1,200[b]

Parameter List EPA Method 8260B	Sample ID Lab ID Sample Type Sample Date	T2B1 C3153-03 Soil 7/27/2011		T2B2 C3153-04 Soil 7/27/2011		EX4B1 C3473-06 Soil 8/22/2011		EX4SW1 C3473-01 Soil 8/22/2011		EX4SW2 C3473-02 Soil 8/22/2011		EX4SW3 C3473-03 Soil 8/22/2011		EX5B1 C3265-04 Soil 8/4/2011		Site Specific Standards, Criteria, and Guidance
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U		U	1.7	J		U		U		U		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
Ethylbenzene	(µg/kg)		U		U		U		U		U		U		U	5,500
Methyl tert-butyl ether	(µg/kg)		U		U		U		U		U		U		U	120
Naphthalene	(µg/kg)		U	81	J		U		U		U		U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U	96	D	3	J		U		U		U	1,400
Toluene	(µg/kg)		U		U		U	1.1	J		U		U		U	1,500
Trichloroethylene (TCE)	(µg/kg)	5.2	J	3.4	J	12			U		U		U		U	700
Vinyl chloride	(µg/kg)		U		U		U		U		U		U		U	200
m,p- Xylene	(µg/kg)		U		U		U	7.2	J		U		U		U	1,200[b]
o- Xylene	(µg/kg)		U	1.4	J		U	1	J		U		U		U	1,200[b]

Parameter List EPA Method 8260B	Sample ID Lab ID Sample Type Sample Date	EX5B2 C3265-05 Soil 8/4/2011		EX5B3 C3355-04 Soil 8/11/2011		EX5B4 C3355-05 Soil 8/11/2011		EX5B5 C3473-08 Soil 8/22/2011		EX5B6 C3622-04 Soil 9/7/2011		EX5B7 C3622-05 Soil 9/7/2011		EX5SW1 C3265-01 Soil 8/4/2011		Site Specific Standards, Criteria, and Guidance
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U	1.4	J	**390**	JD	22		1.9	J		U		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U	**3.4**	J		U		U		U		U	300[a]
Ethylbenzene	(µg/kg)	430	JD		U	340	JD		U		U		U		U	5,500
Methyl tert-butyl ether	(µg/kg)		U		U		U		U		U		U		U	120
Naphthalene	(µg/kg)	470	JD		U	31	U		U	1.9	J		U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U	1.6	J	26			U		U		U	1,400
Toluene	(µg/kg)	2	J		U	**1,600**	D	2.3	J	1.6	J		U		U	1,500
Trichloroethylene (TCE)	(µg/kg)		U		U		U	36			U		U		U	700
Vinyl chloride	(µg/kg)		U		U	14	U		U		U		U		U	200
m,p- Xylene	(µg/kg)	780	JD		U	**1,500**	D		U		U		U		U	1,200[b]
o- Xylene	(µg/kg)		U		U	**460**	JD		U		U		U		U	1,200[b]

Parameter List EPA Method 8260B	Sample ID	EX5SW2		EX5SW3		EX5SW4		EX5SW5		EX5SW6		EX5SW7		EX5SW8		Site Specific Standards, Criteria, and Guidance
	Lab ID	C3265-02		C3265-03		C3355-01		C3355-02		C3355-03		C3473-07		C3355-07		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/4/2011		8/4/2011		8/11/2011		8/11/2011		8/11/2011		8/22/2011		8/16/2011		
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U	33			U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U	1.9	J		U	300[a]
Ethylbenzene	(µg/kg)	9.2			U		U		U		U		U		U	5,500
Methyl tert-butyl ether	(µg/kg)		U		U		U		U		U		U		U	120
Naphthalene	(µg/kg)	2.9	J		U		U		U	6			U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U		U		U		U	2.1	J		U	1,400
Toluene	(µg/kg)		U		U		U		U		U	13			U	1,500
Trichloroethylene (TCE)	(µg/kg)		U		U		U		U		U		U		U	700
Vinyl chloride	(µg/kg)		U		U		U		U		U	8.1			U	200
m,p- Xylene	(µg/kg)	21			U		U		U		U	5.9	J		U	1,200[b]
o- Xylene	(µg/kg)		U		U		U		U		U	2.5	J		U	1,200[b]

Parameter List EPA Method 8260B	Sample ID	EX5SW9		EX5SW10		EX5SW11		EX5SW12		EX6B1		EX6B2		EX6B3		Site Specific Standards, Criteria, and Guidance
	Lab ID	C3355-08		C3622-03		C3622-01		C3622-02		C3109-03		C3109-04		C3109-05		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/16/2011		9/7/2011		9/7/2011		9/7/2011		7/21/2011		7/21/2011		7/21/2011		
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U	3.4	J		U		U		U		U		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
Ethylbenzene	(µg/kg)		U		U		U		U		U		U		U	5,500
Methyl tert-butyl ether	(µg/kg)		U		U		U		U		U		U		U	120
Naphthalene	(µg/kg)	3.6	J		U		U	2.4	J		U		U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U		U		U		U		U		U	1,400
Toluene	(µg/kg)		U	2.6	J		U		U		U	3.2	J		U	1,500
Trichloroethylene (TCE)	(µg/kg)		U		U		U		U		U		U		U	700
Vinyl chloride	(µg/kg)		U		U		U		U		U		U		U	200
m,p- Xylene	(µg/kg)		U		U		U		U		U		U	3.1	J	1,200[b]
o- Xylene	(µg/kg)		U		U		U		U		U		U		U	1,200[b]

Parameter List EPA Method 8260B	Sample ID	EX6SW1		EX6SW2		EX6SW3		EX6SW4		EX6SW5		EX6SW6		EX6SW7		Site Specific Standards, Criteria, and Guidance
	Lab ID	C3100-01		C3100-02		C3100-03		C3100-04		C3100-05		C3100-06		C3109-06		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	7/20/2011		7/20/2011		7/20/2011		7/20/2011		7/20/2011		7/20/2011		7/21/2011		
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
Ethylbenzene	(µg/kg)		U		U		U		U		U		U		U	5,500
Methyl tert-butyl ether	(µg/kg)		U		U		U		U		U		U		U	120
Naphthalene	(µg/kg)		U	7.3			U		U		U		U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U		U		U		U		U		U	1,400
Toluene	(µg/kg)		U		U		U		U		U		U		U	1,500
Trichloroethylene (TCE)	(µg/kg)		U		U		U		U		U		U		U	700
Vinyl chloride	(µg/kg)		U		U		U		U		U		U		U	200
m,p- Xylene	(µg/kg)		U		U		U		U		U		U		U	1,200[b]
o- Xylene	(µg/kg)		U		U		U		U		U		U		U	1,200[b]

Parameter List EPA Method 8260B	Sample ID	EX6NB1		EX6NB2		EX6NSW1		EX6NSW2		EX6NSW3		EX6NSW4		EX6NSW5		Site Specific Standards, Criteria, and Guidance
	Lab ID	C3265-15		C3265-16		C3265-06		C3265-07		C3265-08		C3265-09		C3265-13		
	Sample Type	Soil		Soil		Soil		Soil		Soil		Soil		Soil		
	Sample Date	8/4/2011		8/4/2011		8/4/2011		8/4/2011		8/4/2011		8/4/2011		8/4/2011		
Benzene	(µg/kg)		U		U		U		U		U		U		U	60
Chlorobenzene	(µg/kg)		U		U		U		U		U		U		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U		U		U		U		U		U		U	300[a]
Ethylbenzene	(µg/kg)		U		U		U		U	1.8	J		U		U	5,500
Methyl tert-butyl ether	(µg/kg)		U		U		U		U		U		U		U	120
Naphthalene	(µg/kg)		U		U		U		U	35			U		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U		U		U		U		U		U		U	1,400
Toluene	(µg/kg)		U		U		U		U		U		U		U	1,500
Trichloroethylene (TCE)	(µg/kg)		U		U		U		U		U		U		U	700
Vinyl chloride	(µg/kg)		U		U		U		U		U		U		U	200
m,p- Xylene	(µg/kg)		U		U		U		U	20			U		U	1,200[b]
o- Xylene	(µg/kg)		U		U		U		U	2.1	J		U		U	1,200[b]

Parameter List EPA Method 8260B	Sample ID	EX6NSW6		Site Specific Standards, Criteria, and Guidance
	Lab ID	C3265-14		
	Sample Type	Soil		
	Sample Date	8/4/2011		
Benzene	(µg/kg)		U	60
Chlorobenzene	(µg/kg)		U	17,000
cis 1,2- Dichloroethylene	(µg/kg)		U	300[a]
trans 1,2- Dichloroethylene	(µg/kg)		U	300[a]
Ethylbenzene	(µg/kg)		U	5,500
Methyl tert-butyl ether	(µg/kg)		U	120
Naphthalene	(µg/kg)		U	13,000
Tetrachloroethylene (PCE)	(µg/kg)		U	1,400
Toluene	(µg/kg)		U	1,500
Trichloroethylene (TCE)	(µg/kg)		U	700
Vinyl chloride	(µg/kg)		U	200
m,p- Xylene	(µg/kg)		U	1,200[b]
o- Xylene	(µg/kg)		U	1,200[b]

TABLE 7B SUMMARY OF REMAINING SOIL CONTAMINATION ABOVE SITE-SPECIFIC SOIL CLEANUP OBJECTIVES FOR METALS

Parameter List EPA Method 6010/7470	Sample ID	EX1SW1	EX1SW2	T3B1	T4B1	EX2B1	EX2B2	EX2B3	Site Specific Standards, Criteria, and Guidance
	Lab ID	C3524-03	C3524-04	C3524-01	C3524-02	C3109-07	C3109-08	C3109-09	
	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
	Sample Date	8/25/2011	8/25/2011	8/25/2011	8/25/2011	7/21/2011	7/21/2011	7/21/2011	
Chromium (total)	(mg/kg)	**71.6**	15.8	29.8	12.0	32.4	**91.5**	21.2	50
Copper	(mg/kg)	**107**	**34.3**	**105**	3.700	**482**	**631**	**77.1**	25
Nickel	(mg/kg)	**32.7**	12.3	**28.6**	8.520	**21.2**	**52.4**	12.4	13
Zinc	(mg/kg)	**45.2**	**135**	**103**	**158**	**365**	**442**	**96.5**	20

Parameter List EPA Method 6010/7470	Sample ID	EX2B4	EX3B1	EX3B2	EX3B3	EX3SW1	EX3SW2	EX3SW3	Site Specific Standards, Criteria, and Guidance
	Lab ID	C3109-10	C3068-06	C3068-07	C3109-02	C3068-01	C3068-02	C3068-03	
	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
	Sample Date	7/21/2011	7/19/2011	7/19/2011	7/21/2011	7/19/2011	7/19/2011	7/19/2011	
Chromium (total)	(mg/kg)	**60.1**	4.170	5.110	5.850	5.330	4.630	6.970	50
Copper	(mg/kg)	**288**	4.100	2.960	3.810	2.850	5.460	11.4	25
Nickel	(mg/kg)	**244**	3.690	3.510	3.740	3.120	3.230	4.670	13
Zinc	(mg/kg)	**256**	**22.0**	11.8	14.8	**33.0**	16.5	**35.2**	20

Parameter List EPA Method 6010/7470	Sample ID	EX3SW4	EX3SW5	EX3SW6	EX3SW7	T1B1	T1B2	T1SW1	Site Specific Standards, Criteria, and Guidance
	Lab ID	C3068-04	C3068-05	C3109-01	C3153-06	C3153-01	C3153-02	C3153-05	
	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
	Sample Date	7/19/2011	7/19/2011	7/21/2011	7/27/2011	7/27/2011	7/27/2011	7/27/2011	
Chromium (total)	(mg/kg)	5.240	3.980	2.500	3.340	6.75	5.35	11.4	50
Copper	(mg/kg)	3.900	6.600	6.870	2.880	10.1	13.6	4.77	25
Nickel	(mg/kg)	3.490	3.430	3.850	3.730	**47.2**	**33**	6.42	13
Zinc	(mg/kg)	**22.8**	**59.6**	11.7	U	**62.1**	**38.6**	17.2	20

Parameter List EPA Method 6010/7470	Sample ID	T2B1	T2B2	EX4B1	EX4SW1	EX4SW2	EX4SW3	EX5B1	Site Specific Standards, Criteria, and Guidance
	Lab ID	C3153-03	C3153-04	C3473-06	C3473-01	C3473-02	C3473-03	C3265-04	
	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
	Sample Date	7/27/2011	7/27/2011	8/22/2011	8/22/2011	8/22/2011	8/22/2011	8/4/2011	
Chromium (total)	(mg/kg)	5.05	4.01	**78.3**	9.120	8.190	3.890	U	50
Copper	(mg/kg)	14.1	5.95	**45.8**	22.5	3.100	3.770	73.8	25
Nickel	(mg/kg)	6.12	5.07	5.700	8.160	U	10.8	8.420	13
Zinc	(mg/kg)	**53.9**	**27.3**	**28.2**	63.8	4.380	14.9	62.5	20

Parameter List EPA Method 6010/7470	Sample ID	EX5B2	Site Specific Standards, Criteria, and Guidance
	Lab ID	C3265-05	
	Sample Type	Soil	
	Sample Date	8/4/2011	
Chromium (total)	(mg/kg)	U	50
Copper	(mg/kg)	**168**	25
Nickel	(mg/kg)	11.0	13
Zinc	(mg/kg)	**166**	20

NOTE: EPA = U.S. Enivronmental Protection Agency.
ID = Identification
mg/kg = Millirgrams per kilogram
U = Non-detect, detection below the method detection limit.
Data provided by Chemtech Consulting Group. Only analytes that were detected in at least one sample are shown.
Concentration values in **BOLD** indicate that analyte was detected above the site specific standards, criteria, and guidance.

Parameter List EPA Method 6010/7470	Sample ID Lab ID Sample Type Sample Date	EX5B3 C3355-04 Soil 8/11/2011	EX5B4 C3355-05 Soil 8/11/2011	EX5B5 C3473-08 Soil 8/22/2011	EX5B6 C3622-04 Soil 9/7/2011	EX5B7 C3622-05 Soil 9/7/2011	EX5SW1 C3265-01 Soil 8/4/2011	EX5SW2 C3265-02 Soil 8/4/2011	Site Specific Standards, Criteria, and Guidance
Chromium (total)	(mg/kg)	10.1	6.300	**61.3**	30.3	34.2	U	U	50
Copper	(mg/kg)	**44.1**	18.4	**953**	**114**	**152**	8.230	**449**	25
Nickel	(mg/kg)	5.180	4.770	**56.4**	**31.8**	**14.4**	3.170	**14.7**	13
Zinc	(mg/kg)	**66.5**	**39.7**	**345**	U	U	**178**	**314**	20

Parameter List EPA Method 6010/7470	Sample ID Lab ID Sample Type Sample Date	EX5SW3 C3265-03 Soil 8/4/2011	EX5SW4 C3355-01 Soil 8/11/2011	EX5SW5 C3355-02 Soil 8/11/2011	EX5SW6 C3355-03 Soil 8/11/2011	EX5SW7 C3473-07 Soil 8/22/2011	EX5SW8 C3355-07 Soil 8/16/2011	EX5SW9 C3355-08 Soil 8/16/2011	Site Specific Standards, Criteria, and Guidance
Chromium (total)	(mg/kg)	U	27.6	12.6	7.300	**218**	7.240	6.750	50
Copper	(mg/kg)	**92.2**	**84.9**	**221**	**120**	**1190**	**266**	**62.4**	25
Nickel	(mg/kg)	10.4	**15.7**	8.480	4.180	**110**	**42.6**	10.7	13
Zinc	(mg/kg)	**183**	**99.0**	**133**	**22.3**	**311**	**193**	**107**	20

Parameter List EPA Method 6010/7470	Sample ID Lab ID Sample Type Sample Date	EX5SW10 C3622-03 Soil 9/7/2011	EX5SW11 C3622-01 Soil 9/7/2011	EX5SW12 C3622-02 Soil 9/7/2011	EX6B1 C3109-03 Soil 7/21/2011	EX6B2 C3109-04 Soil 7/21/2011	EX6B3 C3109-05 Soil 7/21/2011	EX6SW1 C3100-01 Soil 7/20/2011	Site Specific Standards, Criteria, and Guidance
Chromium (total)	(mg/kg)	15.8	10.8	17.2	6.980	12.1	12.4	22.0	50
Copper	(mg/kg)	20.1	**33.9**	**53.7**	**56.7**	**55.8**	**40.9**	**285**	25
Nickel	(mg/kg)	9.550	12.8	11.7	6.450	**16.3**	**45.3**	**39.9**	13
Zinc	(mg/kg)	U	U	U	**280**	**127**	**264**	**215**	20

Parameter List EPA Method 6010/7470	Sample ID Lab ID Sample Type Sample Date	EX6SW2 C3100-02 Soil 7/20/2011	EX6SW3 C3100-03 Soil 7/20/2011	EX6SW4 C3100-04 Soil 7/20/2011	EX6SW5 C3100-05 Soil 7/20/2011	EX6SW6 C3100-06 Soil 7/20/2011	EX6SW7 C3109-06 Soil 7/21/2011	EX6NB1 C3265-15 Soil 8/4/2011	Site Specific Standards, Criteria, and Guidance
Chromium (total)	(mg/kg)	**86.3**	19.8	16.1	9.090	9.430	18.4	U	50
Copper	(mg/kg)	**2430**	**49.5**	**283**	**220**	**76.1**	**1670**	**102**	25
Nickel	(mg/kg)	**71.1**	**122**	**596**	11.2	**23.2**	**41.3**	11.3	13
Zinc	(mg/kg)	**558**	**281**	**358**	**84.3**	**159**	**473**	**114**	20

Parameter List EPA Method 6010/7470	Sample ID Lab ID Sample Type Sample Date	EX6NB2 C3265-16 Soil 8/4/2011	EX6NSW1 C3265-06 Soil 8/4/2011	EX6NSW2 C3265-07 Soil 8/4/2011	EX6NSW3 C3265-08 Soil 8/4/2011	EX6NSW4 C3265-09 Soil 8/4/2011	EX6NSW5 C3265-13 Soil 8/4/2011	EX6NSW6 C3265-14 Soil 8/4/2011	Site Specific Standards, Criteria, and Guidance
Chromium (total)	(mg/kg)	U	U	U	U	U	U	U	50
Copper	(mg/kg)	**54.9**	**314**	**162**	23.6	13.8	**149**	**61.5**	25
Nickel	(mg/kg)	**14.6**	10.8	11.5	5.420	7.790	**19.3**	8.060	13
Zinc	(mg/kg)	**146**	**399**	**371**	**69.0**	**132**	**168**	**75.7**	20

TABLE 8 SUMMARY OF REMAINING SEDIMENT CONTAMINATION ABOVE SITE-SPECIFIC CLEANUP OBJECTIVES FOR METALS

Parameter List EPA Method 6010/7470	Sample ID	EX7P1		EX7P2		EX7P3		EX7P4		EX7P5		Effects Range-Low (mg/kg)	Effects Range-Median (mg/kg)
	Lab ID	D1315-01		D1315-02		D1315-03		D1315-04		D1315-05			
	Sample Type	Sediment		Sediment		Sediment		Sediment		Sediment			
	Sample Date	1/27/2012		1/27/2012		1/27/2012		1/27/2012		1/27/2012			
Arsenic	(mg/kg)	**13.3**		**17.2**		**10.9**		3.81		**8.48**		8.2	70
Cadmium	(mg/kg)	0.512		0.981		**4.04**		0.123	J	0.309	J	1.2	9.6
Chromium	(mg/kg)	40.7		55.2		**97.4**		17.4		42.6		81	370
Copper	(mg/kg)	**177**		***299***		**134**		**42.2**		**91.5**		34	270
Iron[(a)]	(mg/kg)	14000		21100		21900		5630		11900		2%	4%
Lead	(mg/kg)	**46.8**		**76.1**		***228***		24.5		40.9		46.7	218
Mercury	(mg/kg)	**0.373**		**0.492**		***1.86***	D	**0.152**		**0.202**		0.15	0.71
Nickel	(mg/kg)	15.8		16.7		**23.3**		5.28		15.3		20.9	51.6
Silver	(mg/kg)		U		U	***4.05***			U		U	1	3.7
Zinc	(mg/kg)	141		**318**		**206**		44.8		100		150	410

NOTE: EPA = U.S. Enivronmental Protection Agency.
mg/kg = Millirgrams per kilogram
J = Indicates the reported value was less than the Contract Required Detection Limit , but greater than or equal to the Method Detection Limit.
D = Indicates the reported value is from a dilution.
U = Non-detect, detection below the method detection limit.
Data provided by Chemtech Consulting Group. Only analytes that were detected in at least one sample are shown.
Concentration values in **BOLD** indicate that analyte was detected above the Effects Range-Low. Concentration values in *ITALICS* indicate that analyte was detected above the Effects Range-Median.

TABLE 9A SUMMARY OF GROUNDWATER CONTAMINATION ABOVE SITE-SPECIFIC CLEANUP OBJECTIVES FOR VOCs

Parameter List EPA Method 8260B	Sample ID / Lab ID / Sample Type / Sample Date		MW-08S C5040-01 Groundwater 12/14/2011		MW-08D C5040-02 Groundwater 12/14/2011		MW-09S C5040-03 Groundwater 12/14/2011		MW-09D C5040-04 Groundwater 12/14/2011		MW-10S C5040-05 Groundwater 12/14/2011		MW-10D C5040-06 Groundwater 12/14/2011		Duplicate C5040-07 Groundwater 12/14/2011		Trip Blank C5040-21 QA/QC NA		NYSDEC Ambient Water Quality Standard Class GA (µg/L)
Acetone	(µg/L)		(<25)	U	(<25)	U	44		(<25)	U	4	J	(<25)	U	47		(<25)	U	50 (g)
cis-1,2-Dichloroethene	(µg/L)		**8.4**		**50**		**82**		**51**		**6.9**		(<5.0)	U	**67**		(<5)	U	5 (s)
Methyl tert-butyl ether	(µg/L)		3	J	(<5.0)	U	2	J	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5)	U	10 (g)
Tetrachloroethene (PCE)	(µg/L)		**390**	**D**	**3,000**	**D**	**7**		**1,200**	**D**	**5.6**		**6.7**		**7**		(<5)	U	5 (s)
trans-1,2-Dichloroethene	(µg/L)		(<5.0)	U	1	J	(<5.0)	U	1.9	J	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5)	U	5 (s)
Trichloroethene (TCE)	(µg/L)		**9.4**		**140**	**JD**	**14**		**180**	**JD**	(<5.0)	U	(<5.0)	U	**7**		(<5)	U	5 (s)
Vinyl chloride	(µg/L)		(<5.0)	U	(<5.0)	U	**88**		**10**		(<5.0)	U	(<5.0)	U	**75**		(<5)	U	2 (s)

NOTE: EPA = U.S. Enivronmental Protection Agency.
ID = Identification
QA/QC = Quality assurance/quality control
NA = Not applicable
NYSDEC = New York State Department of Environmental Conservation.
µg/L = micrograms per Liter = parts per billion (ppb).
U = Non-detect, detection below the method detection limit.
J = Indicates the reported value was less than the Contract Required Detection Limit, but greater than or equal to the Instrument Detection Limit.
D = Indicates the reported value was obtained by analysis at a secondary dilution factor.
Duplicate sample was collected at MW-09S.
Data provided by Chemtech Consulting Group. Only analytes that were detected in at least one sample are shown.
Concentration values in **BOLD** indicate that analyte was detected above the NYSDEC Ambient Water Quality Standard (g) guidance value, (s) standard value.

TABLE 9B SUMMARY OF GROUNDWATER CONTAMINATION ABOVE SITE-SPECIFIC CLEANUP OBJECTIVES FOR METALS

Parameter List EPA Method 6010/7470	Sample ID	MW-08S		MW-08D		MW-09S		MW-09D		MW-10S		MW-10D		Duplicate		NYSDEC Ambient Water Quality Standard Class GA (µg/L)
	Lab ID	C5040-01		C5040-02		C5040-03		C5040-04		C5040-05		C5040-06		C5040-07		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	12/14/2011		12/14/2011		12/14/2011		12/14/2011		12/14/2011		12/14/2011		12/14/2011		
Aluminum	(µg/L)	485		65.5		1,010		1,570		903		550		995		---
Arsenic	(µg/L)	(<10)	U	(<10)	U	(<10)	U	(<10)	U	5.76	J	(<10)	U	(<10)	U	25 (s)
Barium	(µg/L)	81.6		35.5	J	119		46.2	J	71.1		13.2	J	116		1,000 (s)
Boron	(µg/L)	188		169		554		73.6		779		74.4		573		1,000 (s)
Cadmium	(µg/L)	0.709	J	1.41	J	1.37	J	0.853	J	(<3)	U	(<3)	U	1.46	J	5 (s)
Calcium	(µg/L)	32,700		100,000		60,300		36,000		33,200		13,500		58,300		---
Chromium (total)	(µg/L)	**58.5**		5.69		11.9		12.5		12.5		6.57		**68.8**		50 (s)
Copper	(µg/L)	15.5		7.91	J	6.8	J	4.64	J	12.3		(<10)	U	(<10)	U	200 (s)
Iron	(µg/L)	**11,800**		**21,500**		**21,900**		**14,500**		**3,950**		**2,080**		**22,000**		300 (s)
Lead	(µg/L)	3	J	(<6)	U	(<6)	U	3.68	J	4.13	J	(<6)	U	3.01	J	25 (s)
Magnesium	(µg/L)	3,480		10,200		19,600		7,740		3,430		6,010		19,200		35,000 (g)
Manganese	(µg/L)	239		**1,050**		**807**		**1,980**		106		227		**778**		300 (s)
Nickel	(µg/L)	20.4		10.4	J	(<20)	U	7.17	J	6.11	J	(<20)	U	30.9		100 (s)
Potassium	(µg/L)	4,150.0		7,370		14,000		3,880		6,950		3,340		14,200		---
Silver	(µg/L)	(<5)	U	(<5)	U	(<5)	U	(<5)	U	(<5)	U	1.61	J	1.51	J	50 (s)
Sodium	(µg/L)	**105,000**		**106,000**		**227,000**		**63,600**		**144,000**		**66,400**		**225,000**		20,000 (s)
Thallium	(µg/L)	**2.55**	**J**	**2.43**	**J**	(<20)	U	(<20)	U	(<20)	U	(<20)	U	**2.73**	**J**	0.5 (g)
Vanadium	(µg/L)	(<20)	U	(<20)	U	(<20)	U	(<20)	U	8.46	J	(<20)	U	(<20)	U	---
Zinc	(µg/L)	22.8		21		24.1		13.9	J	15.7	J	18.3	J	17.3	J	2,000 (g)

NOTE: EPA = U.S. Enivronmental Protection Agency.
ID = Identification
NYSDEC = New York State Department of Environmental Conservation.
µg/L = micrograms per Liter = parts per billion (ppb).
--- = No applicable standard
U = Non-detect, detection below the method detection limit.
J = Indicates the reported value was less than the Contract Required Detection Limit, but greater than or equal to the Instrument Detection Limit.
Duplicate was collected at MW-09S.
Data provided by Chemtech Consulting Group. Only analytes that were detected in at least one sample are shown.
Concentration values in **BOLD** indicate that analyte was detected above the NYSDEC Ambient Water Quality Standard (g) guidance value, (s) standard value.

APPENDIX A

ALTA SURVEY

APPENDIX B

EXCAVATION WORK PLAN

APPENDIX B – EXCAVATION WORK PLAN

B-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the Department. Currently, this notification will be made to:

David Chiusano, Project Manager
Site Remediation Engineer
New York State Department of Conservation
625 Broadway 12th Floor
Albany, New York 12233-7017

Email: djchiusa@gw.dec.state.ny.us

This notification will include:

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

- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in Appendix B-1 of this document,
- Identification of disposal facilities for potential waste streams,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

B-2 SOIL SCREENING METHODS

Prior to intrusive soil screening, on-site utilities shall be field located. Soil screening is to take place prior to any excavation or disposal of soil from within the site boundaries. Soil boring methods are recommended for soil screening at the site, due to asphalt/porous pavement cover; however, depending on the extent of the planned excavation, test pit methods may be used, following saw-cutting of asphalt. Soil samples shall be collected at a minimum of one per 500 cubic yards of planned soil excavation, and analyzed for VOCs by EPA Method 8260B, SVOCs by EPA Method 8270C, and TAL Metals and mercury by EPA Method 6010/7470, or per the disposal facility's requirements, if applicable.

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

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

B-3 STOCKPILE METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

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

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

B-4 MATERIALS EXCAVATION AND LOAD OUT

Asphalt, porous pavement, or concrete shall be saw-cut, removed and stockpiled prior to excavation of underlying soil. Excavated soil shall be stockpiled separate from asphalt or concrete debris prior to load out. Excavations left open overnight or longer shall be surrounded by temporary construction fencing. A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material. The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

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

If site conditions during excavation activities require that trucks drive over bare soil, a truck wash will be operated on-site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete. Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

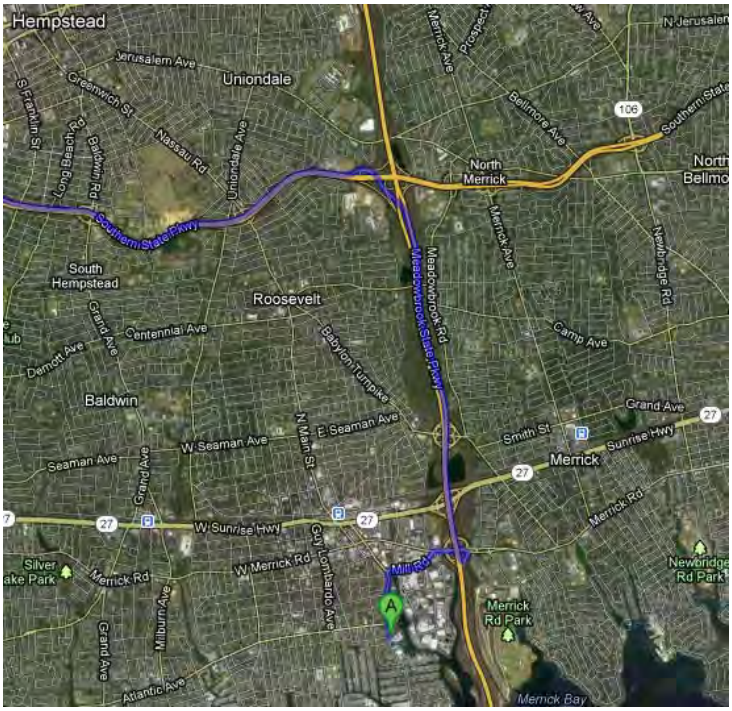
B-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the site if necessary. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Trucks leaving the site shall go north on S Main Street and turn right on Mill Road. Continue right onto East Avenue, and then straight onto Guy Lombardo Avenue. Turn onto Sunrise Highway in either direction, depending on destination.



Map courtesy of maps.google.com

All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development. Trucks will be prohibited from stopping and idling in the neighborhood outside the project site. Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

B-6 MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of

soil/fill from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

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

B-7 MATERIALS REUSE ON-SITE

Analytical results from soil screening activities which are completed in accordance with section B-2 of this EWP will be used to determine if reuse is appropriate. Chemical criteria for on-site reuse of material have been approved by NYSDEC and are listed in Table 4 of the SMP. The qualified environmental professional will ensure that procedures defined for materials reuse in the SMP are followed and that unacceptable material does not remain on-site. Soil slated for reuse is to be stockpiled distinctly separate from soil to be disposed off-site.

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

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

B-8 FLUIDS MANAGEMENT

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

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

B-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Contract Documents. The demarcation layer, consisting of non-woven geotextile or equivalent material will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the 'Remaining Contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

B-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior

to receipt at the site. The source of backfill supply shall be approved by the NYSDEC. The facility shall be operating under a valid NYSDEC Mining Permit or other applicable regulatory authority for the duration of the site work.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site. Material shall not contain man-made fills, trash, refuse, backfills from previous construction, root or other organic matter, frozen material, or any other deleterious materials. Material shall not contain free liquids when delivered, or placed and compacted.

All materials shall be sampled for Target Compound List (TCL) VOCs by USEPA Method 8260, TCL SVOCs by USEPA Method 8270, polychlorinated biphenyls (PCBs) by USEPA Method 8082, and TAL Metals by USEPA Method 6010/7000 series. All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.8(d) included as Table B-1. Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 1 of the SMP. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

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

B-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

B-12 CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

All UST removal work shall be performed in accordance with Section 5.5 of the NYSDEC DER-10: Technical Guidance for Site Investigation and Remediation (May 2010). All UST removal work shall also comply with applicable local, county, state, and federal regulations. Ten days' notice must be provided to the NYSDEC DER prior to the closure of a regulated UST.

The contractor shall monitor the site with an explosimeter and an organic vapor detector to indicate the presence and concentration of flammable vapors and gas. The atmosphere in the bottom, middle, and top of the excavation shall be monitored with the explosimeter regularly until the tank is removed from the site. If unsafe working conditions exist at any point during removal, work shall be suspended immediately until it is determined that conditions are acceptable for resuming work.

During excavation, extreme caution shall be exercised in order to maintain the integrity of the UST. The contractor shall provide shoring and bracing where necessary to support existing structures. Excavated material shall be placed in a separate stockpile, sampled, and submitted for acceptance by an approved disposal facility.

Removal of each tank shall consist of opening the tank, cleaning the interior, removal of tank from the site, and disposal. This includes removal and disposal of all

service lines associated with each UST back to their source. Disposal shall be in strict accordance with NYSDEC and applicable local, county, state, and federal regulations. The contractor shall remove all liquid and sludge from the tank using explosion proof pumps. All equipment must be bonded to the tank and the tank must be grounded to a separate ground when purging the tank with compressed air or inert gas under pressure. The contractor shall avoid leakage from the tanks onto the surrounding soil by properly pumping the contents of the tanks into permitted transport vehicles. Transport vehicles for tank contents shall not remain on-site for more than 24 hours. The removed contents shall be disposed of according to appropriate federal, state, and local laws. If leakage or spillage occurs, the contractor shall immediately notify the NYSDEC Spill Case Hotline, and the Nassau County health department within 15 minutes.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

B-13 COMMUNITY AIR MONITORING PLAN

Community air monitoring will be implemented to monitor for VOC and particulate levels at the perimeter of the work area. Total VOCs will be monitored continuously at the downwind perimeter of the work area daily using approved instrumentation. If total VOC levels exceed 5 parts per million (ppm) above background at the work area perimeter, work activities will be halted and monitoring continued. All

readings will be recorded and available to the NYSDEC and New York State Department of Health (NYSDOH) personnel to review.

Because the site is in a densely populated area, with active commercial buildings adjacent to the site, a fixed monitoring station shall be located at the site perimeter, regardless of wind direction.

Exceedances of action levels listed in the Community Air Monitoring Plan will be reported to NYSDEC and NYSDOH Project Managers.

B-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used as necessary will include odor masking agents. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

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

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by

sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

B-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

B-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work. A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

TABLE B-1 CRITERIA FOR IMPORTED SOILS

Constituent		NYCRR Part 375-6.8 (d) Unrestricted Use	Units
VOLATILE ORGANIC COMPOUNDS - SOIL			
1,1,1-Trichlorethane		680	µg/kg
1,1-Dichloroethane		270	µg/kg
1,1-Dichloroethene		330	µg/kg
1,2,4-Trimethylbenzene		3,600	µg/kg
1,2-Dichlorobenzene		1,100	µg/kg
1,2-Dichloroethane		20	µg/kg
1,3,5-Trimethylbenzene		8,400	µg/kg
1,3-Dichlorobenzene		2,400	µg/kg
1,4-Dichlorobenzene		1,800	µg/kg
Acetone		50	µg/kg
Benzene		60	µg/kg
Carbon tetrachloride		760	µg/kg
Chlorobenzene		1,100	µg/kg
Chloroform		370	µg/kg
cis-1,2-Dichloroethylene		250	µg/kg
Ethylbenzene		1,000	µg/kg
m,p-Xylene		260(a)	µg/kg
Methyl ethyl ketone		120	µg/kg
Methylene chloride		50	µg/kg
n-Butylbenzene		12,000	µg/kg
n-Propylbenzene		3,900	µg/kg
o-Xylene		260(a)	µg/kg
sec-Butylbenzene		11,000	µg/kg
trans-Butylbenzene		5,900	µg/kg
Tert-Butyl Methyl Ether		930	µg/kg
Tetrachloroethylene		1,300	µg/kg
Toluene		700	µg/kg
trans-1,2-Dichloroethene		190	µg/kg
Trichloroethylene		470	µg/kg
Vinyl chloride		20	µg/kg

INORGANICS (METALS) - SOIL		
Arsenic	13	mg/Kg
Barium	350	mg/Kg
Beryllium	7.2	mg/Kg
Cadmium	2.5	mg/Kg
Chromium (Total)	1[(a)], 30[(b)]	mg/Kg
Copper	50	mg/Kg
Lead	63	mg/Kg
Manganese	1,600	mg/Kg
Mercury	0.18	mg/Kg
Nickel	30	mg/Kg
Selenium	3.9	mg/Kg
Silver	2	mg/Kg
Zinc	109	mg/Kg

(a) Value is for hexavalent Chromium but is considered to be met if the analysis for total Chromium is below the specific SCO.

(b) Value is for trivalent Chromium but is considered to be met if the analysis for total Chromium is below the specific SCO.

PCBs/PESTICIDES		
2,4,5-tp Acid (Silvex)	3.80	mg/Kg
4,4'-DDE	0.0033	mg/Kg
4,4'-DDT	0.0033	mg/Kg
4,4'-DDD	0.0033	mg/Kg
Aldrin	0.005	mg/Kg
alpha-BHC	0.02	mg/Kg
beta-BHC	0.036	mg/Kg
Chlordane (alpha)	0.094	mg/Kg
delta-BHC	0.04	mg/Kg
Dibenzofuran	7	mg/Kg
Dieldrin	0.005	mg/Kg
Endosulfan I	2.4	mg/Kg
Endosulfan II	2.4	mg/Kg
Endosulfan sulfate	2.4	mg/Kg
Endrin	0.014	mg/Kg
Heptachlor	0.042	mg/Kg
Lindane	0.1	mg/Kg
Polychlorinated biphenyls	0.1	mg/Kg

SEMI-VOLATILE ORGANIC COMPOUNDS - SOIL		
Acenaphthene	20	mg/Kg
Acenaphthylene	100	mg/Kg
Anthracene	100	mg/Kg
Benz(a)anthracene	1	mg/Kg
Benzo(a)pyrene	1	mg/Kg
Benzo(b)fluoranthene	1	mg/Kg
Benzo(g,h,i)perylene	100	mg/Kg
Benzo(k)fluoranthene	0.8	mg/Kg
Chrysene	1	mg/Kg
Dibenz(a,h)anthracene	0.33	mg/Kg
Fluoranthene	100	mg/Kg
Fluorene	30	mg/Kg
Indeno(1,2,3-cd)pyrene	0.5	mg/Kg
m-Cresol	0.33	mg/Kg
Naphthalene	12	mg/Kg
o-Cresol	0.33	mg/Kg
p-Cresol	0.33	mg/Kg
Pentachlorophenol	0.8	mg/Kg
Phenanthrene	100	mg/Kg
Phenol	0.33	mg/Kg
Pyrene	100	mg/Kg

Appendix B-1

Health and Safety Plan

HEALTH & SAFETY PLAN

Metal Etching Co. Inc.

435 South Main Street, Freeport, NY

Site No. 1-30-110

Contract No. D007938

Prepared for:

New York State Department of Environmental Conservation

Remedial Section A, Remedial Bureau E

Division of Environmental Remediation

625 Broadway, 12th Floor

Albany, New York 12233-7017

Prepared by:

EnviroTrac Ltd.

5 Old Dock Road

Yaphank, NY 11980

APPROVED
APPROVED AS NOTED
REVISE AND RESUBMIT
NOT APPROVED

ENGINEER'S review and approval of this submittal are expressly
as provided in the Contract Documents and are only to deter
compliance with information given in the Contract Documents
conformance with the design concept of the completed Project
as a functioning whole. CONTRACTOR is, and ENGINEER is no
responsible for all matters relating to fabrication shipping, handlin
storage, assembly, installation, and construction, for all safety aspe
of performing the Work, and for coordinating the Work.

Date 10/20/10 Engineer

October 2010

A Full Service Environmental Consulting and Contracting Firm

EnviroTrac

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8. First-Aid Equipment List
9. Accident Report Form
10. Hospital Direction and Location Map

Attachments:

Community Health and Safety Plan

Confined Space Entry Plan

1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared to identify the health and safety precautions, methods, and construction activities to take place at the Metal Etching Co. Inc. site located on the at 435 South Main Street, Freeport, NY, and ensure the protection of site workers, neighboring tenants businesses and the environment. This plan applies to the activities set forth in the Work Plan to be submitted under a separate cover. This plan addresses specific health and safety issues related to the presence of Semi-Volatile Organic Compounds (SVOCs), metals, and other hazards that may be encountered during intrusive field activities. The procedures were developed in accordance with Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard 29 CFR 1910.120.

2.0 SITE BACKGROUND

The Site currently is used as a boat dealership, marina, and boat storage. Currently there are two buildings on the site; a 1,200-square foot building utilized as dealership office space, and 2,400 square foot building used to perform various boat restoration activities.

Prior to 1966 the Site was operated as Flores Manufacturing, which processed handbags. This operation utilized various decorative plating procedures including nickel, chromium, and cadmium plating. From 1966 to 1999, Metal Etching Corporation manufactured various metal products that were etched or printed. The process' included anodizing, chromate conversion, and chrome/nickel plating.

3.0 OBJECTIVES

The prime objective of this HASP is to protect on-site worker health and safety during field activities at the Site. General guidelines in the HASP are provided to assure that safe working conditions exist at the Site. The health and safety procedures set forth in this plan have been established based on analysis of potential hazards and protection measures have been selected in response to these potential risks. The HASP will be modified if unforeseen changes occur while work is in progress.

This plan includes health and safety procedures required for field activities performed at the site. It has been designed to meet the following objectives:

- Evaluate the risk associated with each operation;
- Provide for identification, recognition, evaluation, and control of health, safety, and environmental hazards;
- Provide the requirements for an optimum, safe, and healthful work environment, in which personnel are not exposed to avoidable risks, accidents, or injuries in the performance of their duties;
- Identify the roles and responsibilities of on-site personnel; and
- Establish personnel protection standards and mandatory safety practices and procedures for all on-site personnel.
- This document will be periodically reviewed to ensure that it is current and technically correct.

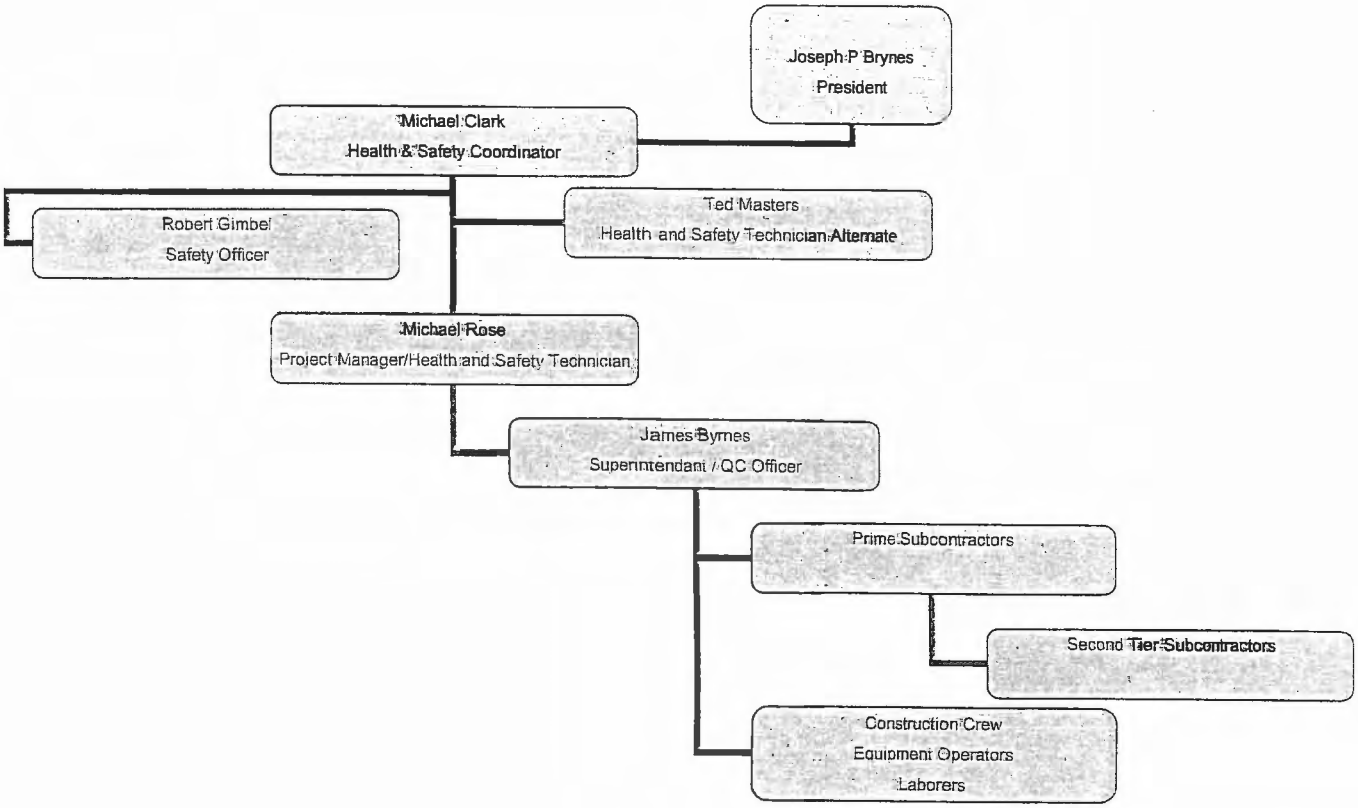
4.0 HEALTH AND SAFETY ORGANIZATION

The Health and Safety Coordinator (HSC), Michael Clark is responsible for the development and implementation of the HASP. The Safety Officer (SO), Robert Gimbel will be responsible for the day to day implementation of the HASP as specified in Site Work Plan. In addition, the SO is responsible for the distribution of this HASP to all field personnel and discussion of the plan prior to the start of field activities. The Health and Safety Technician (HST) will work directly under the SO. The HST will be responsible for the calibration and operation of all field equipment. The field personnel will sign **Appendix 1** of this HASP certifying that they have read, are familiar with, and understand the contents of this HASP. The SO will also have the following authority and responsibilities:

- Responsibility for the field implementation of this HASP;
- Responsibility for the indoctrination and periodic training of all site personnel
- Authority to make necessary field modifications to this HASP with approval of authorized State representatives;
- Responsibility to ensure that at a minimum the following safety equipment is available at the Site prior to start of the work: fire extinguisher, eye wash station, and personal protective equipment and first aid supplies.

- Authority to suspend field operations due to potential health and safety concerns;
- Responsibility to supervise emergency response activities;
- Implementation and documentation of daily pre-task field briefings (tailgate safety meetings).

A Project Organization Chart is provided below:



SO alternates will be designated to act accordingly when the primary SO is not present at the Site. All site personnel and contract workers working within the exclusion zone will have received the appropriate level of training necessary to perform applicable duties and comply with 29 CFR 1910.120.

Robert Gimbel – Sr. Environmental Technician of EnviroTrac is designated as the site SO;Ted Masters, of EnviroTrac, is designated as the SO alternate. Other site personnel may be called upon to perform SO duties. SO and Alternate summaries of experience is included in **Appendix 2**. The SO or alternate will be on site at all times during intrusive work activities. Certificates of OSHA 1910.120 40 hour Hazardous Materials Training are included in **Appendix 3**.

All EnviroTrac personnel who will be working at the Site will be provided with a copy of this HASP. All subcontractors and site visitors shall read and comply with EnviroTrac's HASP, and be required to sign the Affidavit (**Appendix 1**). Personnel responsible for HASP monitoring during on-site activities will be responsible for informing the field workers and subcontractors of any changes in conditions and/or levels of protection required in the affected work area. This HASP must be modified or amended when circumstances or conditions develop that are beyond the scope of the operations described in this HASP. Any changes in project work scope and/or site conditions as described must be amended in writing using the Amendment Sheet included in **Appendix 4**.

All personnel working on-site will supply documentation of compliance with 29 CFR 1910.120 in advance of undertaking any physical activities at the site.

5.0 SITE DESCRIPTION AND HAZARD ASSESSMENT

The primary scopes of work developed as part of the contract includes the excavation of contaminated soils, removal of sediments from a storm drain, Freeport Creek sediment removal, transportation and disposal of contaminated materials, Underground Storage Tank (UST) removal, decommissioning and installation of monitoring wells, and perimeter air monitoring.

The following section identifies the hazards associated with site tasks, and provides suggestions for hazard prevention on-site.

PERIMETER MONITORING:

The Site boundaries clearly mark off the "clean" off-site areas, from the "contaminated" on-site areas, and so chemical contamination from the site should not be a hazard associated with perimeter and off-site monitoring.

Perimeter monitoring and off-site monitoring will be performed once the site boundaries have been established. Hazards specific to perimeter and off-site monitoring include encounters with non-project personnel. This is a unique hazard, in that untrained personnel prove to be a risk when performing any type of site work. Inquisitive and/or hostile persons may interfere with the monitoring/sampling effort, jeopardizing their safety as well as the safety of the field team.

HAZARD PREVENTION DURING PERIMETER MONITORING:

To minimize public involvement in perimeter monitoring/off-site monitoring, the most effective preventative measure is to inform all interested parties. Notifying state and local police, the fire department, and any local/state governmental officials of the project's purpose and scope will allows those authorities to answer questions posed to them by local residents and the media by preparing statements on the projects purpose or by informing the public where to call for further information. This alleviates the problem of work stoppage due to field personnel answering questions.

AIR MONITORING:

General hazards frequently encountered during air monitoring include:

- Electrical hazards as a result of power sources to charge/run air monitoring equipment.
- Placing air monitoring equipment in elevated areas as close to the breathing zone as possible, or areas where slip/trip and fall hazards exist.
- Hazards associated with ambient environment being sampled.
- Readings indicating non-explosive atmospheres, low concentrations of toxic substances, or other conditions may increase or decrease suddenly, changing the associated risks.
- Air sampling matrix solutions may be acidic or basic, causing a corrosive hazard, and broken glass collection tubes can cut hands if mishandled.

HAZARD PREVENTION DURING AIR MONITORING:

Grounded plugs should be used when a power source is needed to reduce the hazard of electric shock.

- Generators or air monitoring equipment should be used in dry areas, away from possible ignition sources. Do not stand in water or other liquids when handling equipment. Electrical equipment shall conform to OSHA 1910.303(a), 1910.305(a),(f),(f)(3).
- Ground fault interrupters are used in the absence of properly grounded circuitry or when portable tools must be used in wet areas.
- Extension cords should be protected from damage and maintained in good condition.
- Air monitoring equipment should be placed within easy reach.
- Personnel should be thoroughly familiar with the use, limitations and operating characteristics of the monitoring instruments.

- Perform continuous monitoring in variable atmospheres.
- Use intrinsically safe instruments until the absence of combustible gases or vapors is anticipated.

WELL INSTALLATION:

Hazards generally associated with drilling operations include the following:

- Noise levels exceeding the OSHA PEL of 90 dBA are both a hazard and a hindrance to communication. Hearing conservation measures shall be implemented if noise levels exceed 85 dBA.
- Fumes (carbon monoxide) from the drill rig.
- Overhead utility wires, i.e., electrical and telephone, can be hazardous when the drill rig boom is in the upright position.
- Underground pipelines and utility lines can be ruptured or damaged during active drilling operations. Dig safe laws shall be complied with prior to beginning site activity.
- Moving parts, i.e. augers, on the drill rig may catch clothing. Free or falling parts from the cat head may cause head injury.
- Moving the drill rig over uneven terrain may cause the vehicle to roll over or get stuck in a rut or mud. Be aware of hazards associated with moving heavy machinery and other associated injury.
- High pressure hydraulic lines and air lines used on drill rigs are hazardous when they are in ill repair or incorrectly assembled.

HAZARD PREVENTION DURING WELL INSTALLATION:

- Review the contaminants suspected to be on-site and perform air monitoring as required.
- Continuously monitor carbon monoxide levels during machinery operation and shut down drill rig and/or divert engine exhaust.
- All chains, lines, cables should be inspected daily for weak spots, frays, etc. Daily inspection will be recorded.
- Emergency shutdown procedures of the drill rig should be reviewed each day and tested.
- Ear muffs and ear plugs effectively reduce noise levels and must be worn during drilling operation. A sound meter will be on-site to monitor levels.
- Hard hats should be worn at all times when working around a drill rig. Secure loose clothing. Check boom prior to approaching drill rig.

- To avoid contact with any overhead lines, the drill rig boom shall be lowered prior to moving the rig. Overhead utilities should be considered "live" until determined otherwise.
- The rig mast shall not be erected within 10 feet of an overhead electrical line until the line is de-energized, grounded, or shielded and an electrician has certified that arcing cannot occur.
- Maintaining working distances of at least 10 feet around "live" overhead power lines in accord with 29 CFR 1926.550(a)(15)(i):
- A thorough underground utilities search shall be conducted in accordance with applicable local, state and federal laws before the commencement of a drilling project.
- All high pressure lines shall be checked prior to and during use.

SITE ACTIVIES – EXCAVATION/SEDIMENT REMOVAL, AND UST REMOVAL:

Excavation activities utilizing heavy machinery and removal of USTs will include trenching for underground system lines, over-excavation for structures and soils and removal of solids and liquids. Hazards may include:

- Contact with or inhalation of contaminants, potentially in high concentrations in sampling media.
- Noise levels exceeding the OSHA PEL of 90 dBA are both a hazard and a hindrance to communication. Hearing conservation measures shall be implemented if noise levels exceed 85 dBA.
- Engine exhaust (carbon monoxide, diesel particulates) from machinery.
- Underground pipelines and utility lines can be ruptured or damaged during trenching operations. A thorough underground utilities search shall be conducted in accordance with applicable local, state and federal laws before the commencement of a excavation project
- Moving parts on the equipment may catch clothing.
- Moving the equipment over uneven terrain may cause the vehicle to roll over or get stuck in a rut or mud. Be aware of hazards associated with moving heavy machinery such as collision with personnel and structures.
- High pressure hydraulic lines and air lines used on the equipment are hazardous when they are in ill repair or incorrectly assembled.
- Back strain and muscle fatigue due to improper lifting and shoveling techniques.
- Working with power tools.

- Electrical hazards when energizing equipment.
- Slipping or tripping in the vicinity of open excavations.
- Heaving in open excavations.

HAZARD PREVENTION DURING EXCAVATION ACTIVITIES:

- Review the contaminants suspected to be on-site and perform air monitoring as required.
- Continuously monitor carbon monoxide levels during machinery operation. Shut down backhoe and/or divert engine exhaust.
- All chains, lines, cables should be inspected daily for weak spots, frays, etc.
- Daily backhoe/personnel lift safety inspections (e.g. backup alarm) will be documented.
- A spotter on the ground will direct backhoe during operation.
- Safety vests will be worn to increase visibility of personnel.
- Ear muffs and ear plugs effectively reduce noise levels and will be worn during installation activities that have noise levels above 90 dBA. Hearing conservation measures shall be implemented if noise levels exceed 85 dBA.
- Hard hats shall be worn at all times when working around heavy equipment. Secure loose clothing.
- Proper lifting (pre-lift weight assessment, use of legs, multiple personnel) techniques will prevent back strain. Use slow easy motions when shoveling and digging to decrease muscle strain.
- A thorough underground utilities search shall be conducted before the commencement of a trenching project.
- All high pressure lines should be checked prior to and during use.
- Electric tools shall be inspected daily for damage to safety guards and wires.
- All electric tools shall be properly grounded in accordance with manufacturers specifications. Tools in disrepair shall be immediately tagged and removed from service.
- To minimize exposure to chemical contaminants, a thorough review of suspected contaminants shall be completed and implementation of an adequate protection program.
- Follow lockout/tag out procedures when working with electrical components of the system during testing.
- No excavations shall be left open unnecessarily, to reduce the risk of falling into open excavation and reduce the number of tripping hazards.

- All open excavations shall be fenced off to prevent unnecessary entrance into the work areas. Temporary fencing will be placed around all open excavations.
- Open excavations shall be shored or sloped in response to site conditions to prevent heaving or collapse as per OSHA 1926.650.

General Hazard Evaluation

In addition, there are several site activities which do not involve the potential contact with hazardous constituents and therefore have low associated hazard for exposure. While these activities do not involve significant exposure risks, various physical hazards do exist. General hazards associated with these activities include the following:

- Personnel slipping, tripping, and falling as a result of improperly stored equipment and materials;
- Puncture wounds and lacerations from sharp edges of hand tools;
- Personnel being struck by equipment, tools, and vehicles; injuries to feet from falling objects, or sharp objects;
- And back or other muscle injuries or strains from improper or excessive lifting.

To protect against accidental mechanical hazards, safe work practices shall be followed and personal protective equipment such as hard hat, gloves, appropriate eye/face protection, and durable work boots that conform to OSHA regulations and ANSI Z41 American National Standard for Personal Protection shall be worn when working around heavy equipment, as detailed in Section 9.

Adverse weather conditions are also important considerations in planning and conducting site operations. Cold or hot weather can cause physical discomfort, loss of efficiency, and personnel injury. To protect against injury due to cold or hot weather, appropriate control measures will be taken.

All the active site personnel will be protected against potential exposure to the constituents of concern using suitable personal protection as discussed below. Potential routes by which workers could be exposed to these or other hazardous constituents include:

- Inhalation
- Ingestion
- Dermal Contact

1. Inhalation

Environmental air monitoring for organic vapors and particulates will be conducted through the use of photoionization detectors and particulate monitors (PIDs) within and at the perimeter of the exclusion zone and work areas during all on-site construction and sampling activities. At a minimum, Level D personal protective equipment (PPE) will be required, as detailed in Section 11.

ORGANIC VAPORS

Environmental air monitoring for organic vapors and particulates will be conducted using real-time monitoring and documentation sampling to determine if off-site emission, as a result of site work, poses a threat to the surrounding community and on-site personnel.

If PID monitoring readings exceed 5 ppm above background, work activities shall be halted and engineering controls will be initiated as detailed in Section 13.

PARTICULATES

Particulates shall be continuously monitored at four (4) documentation sampling stations. If the downwind particulate level is 150 ug/m^3 greater than the upwind particulate level, dust suppression techniques shall be employed.

2. Ingestion

There is also a possibility of ingestion of soil materials during field activities. Safe work practices and good personal hygiene shall be followed to avoid potential ingestion of soil materials. No food, drink or smoking will be allowed in the exclusion zone.

3. Dermal Contact

Due to the potential for dermal contact with soils containing VOCs, SVOCs, pesticides, polychlorinated biphenyls, metals, asbestos or other hazardous constituents, all active site personnel performing construction and sampling activities will be required to wear at a minimum, the appropriate Level D personal protective clothing, as detailed in Section 11, including work boots, hard hats, eye protection and appropriate work gloves. Work boots should conform to OSHA 1910.136 and meet ANSI Z41 American National Standard for Personal Protection – Protective Footwear. As a precautionary measure, extra skin protective gear will be available on site in the field office, to include tyvek suits, to be worn if necessary. In addition, safety regulations will be posted throughout the site and are included as **Appendices 5 and 6**.

Toxicological and physical characteristics information is provided below for the contaminants of concern.

GENERAL DESCRIPTION

VOCs

Volatile organic compounds (VOCs) are compounds that have a high vapor pressure and may have low water solubility. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, pharmaceuticals, and refrigerants. VOCs are often industrial solvents, such as trichloroethylene (TCE); fuel oxygenates, such as methyl tert-butyl ether (MTBE); or by-products produced by chlorination in water treatment, such as chloroform. VOCs are often components of petroleum fuels, hydraulic fluids, paint thinners, and dry cleaning agents. VOCs are common ground-water contaminants.

SVOCs

Semi volatile organic compounds (SVOCs) are a group of compounds that include polycyclic aromatic hydrocarbons. PAHs are may formed through the incomplete burning of fossil fuels, and present in soot, cigarette smoke, and other charred materials. In industry PAHs have been used in the manufacture of plastics, dyes, consumer products, and pesticides.

Metals

Metals are widely used in many industries. The chemical industry is based on catalysts and these are often metals or metal compounds. New applications in the electronic industry and in

nanotechnology are expanding. Human exposure as a result of industrial uses occur in the working environment and general environment in the vicinity of industries and sometimes due to the use of metal containing industrial products.

HEALTH HAZARDS:

SVOC/VOCs

Short Term: Exposure can cause eye, ear and nose irritation,drowsiness, dizziness, unconsciousness and death.

Long Term: Exposure may affect bone marrow, liver, kidney, central nervous system, and blood production resulting in leukemia or other types of cancer.

METALS

Short Term: Exposure can cause dizziness, drowsiness, fatigue, and emotional disturbances,

Long Term: Exposure to metals often has a bioaccumulative effect which can impair mental, neurological, and kidney function and alter numerous metabolic body processes, and could possibly result in mental retardation.

FIRE/EXPLOSION HAZARDS:

VOCs

Various compounds where many are flammable and combustible. Often poisonous gases are produced when heated. Toxic, irritating gases may be generated in fires.

Metals

Many metals are flammable and combustible.

The evaluation of hazards is based upon the knowledge of site background presented in the Work Plan, and anticipated risks posed by the specific operation.

The following subsections describe each task/operation in terms of the specific hazards associated with it. In addition, the protective measures to be implemented during completion of those operations are also identified. Tables 5-1 and 5-2, provide a summary of task analysis and chemical hazards for each task at the Site. The Permissible Exposure Limit (PEL), Threshold

Limit Value (TLV) and Immediately Dangerous to Life and Health (IDLH) levels are listed on Table 5-1 & 5-2 for the contaminant of concern. In general OSHA PELs are regulatory requirements that must be met and are legally enforceable. TLVs are guidance values recommended by the Amercian Conference of Governmental Industrial Hygienists (ACGIH). The PEL represents the maximum exposure concentration an individual can be exposed to as a time weighted average of 8 hours. TLVs represent the exposure concentration which an individual can be exposed to eight hours a day, five days a week (40 hours). The IDLH represents the maximum concentration of a contaminant for which an individual can be exposed to for thirty minutes without any "escape impairing" symptoms or irreversible health effects.

TABLE 5-1 Task Analysis - Perimeter and Air Monitoring Chemical Hazards of Concern

CONTAMINANT	PEL/TLV/IDLH	ROUTES OF EXPOSURE	EXPOSURE
VOLATILE ORGANIC COMPOUNDS	PEL:100 ppm TLV: 25 ppm IDLH: Not Applicable, Potential Human Carcinogen (NIOSH, 1987)	AIR SUBSURFACE SOIL	INHALATION INGESTION CONTACT

Notes: (PEL=Permissible Exposure Limit, TLV=Threshold Limit Value, IDLH=Immediately Dangerous to Life and Health)

TABLE 5-2 Task Analysis - Well Installation, Demolition, Excavation and Drainage Structure Cleanout Chemical Hazards of Concern

CONTAMINANT	TLV/IDLH	ROUTES OF EXPOSURE	EXPOSURE
VOLATILE ORGANIC COMPOUNDS	PEL:100 ppm TLV: 25 ppm IDLH:Not Applicable, Potential Human Carcinogen (NIOSH, 1987)	AIR SUBSURFACE SOIL	INHALATION INGESTION CONTACT
SVOC	0.2 mg/m^3	SUBSURFACE SOIL AIR	INHALATION INGESTION

			CONTACT
METALS	VARIOUS: Dependent on Compounds.	AIR	I NHALATION
		SUBSURFACE SOIL	INGESTION CONTACT
PCBs	5 mg/m^3	SUBSURFACE SOiL	INHALATION INGESTION CONTACT
PESTICIDES	500 mg/m^3	SUBSURFACE SOIL	INHALATION INGESTION CONTACT

Notes: (PEL=Permissible Exposure Limit, TLV=Threshold Limit Value, IDLH=Immediately Dangerous to Life and Health)

6.0 TRAINING / MEDICAL SURVEILLANCE

Personnel Training

Field team personnel associated with those activities in which the potential for exposure to hazardous substances exists are required to participate in a health and safety training program that complies with the OSHA standard 29 CFR 1910.120. This program instructs employees on general health and safety principles and procedures, proper operation of monitoring instruments, and use of personnel protective equipment. All personnel shall have completed an OSHA 10 hour Construction Health and Safety Training class and received certification.

In addition, field team personnel must undergo site-specific training as part of a daily tailgate meeting led by the SO prior to the start-up of any given project or task. As activities change at a particular work site, related training must be provided as necessary. The site-specific training will address potential hazards and associated risks, site operating procedures, emergency response and site control methods to be employed. All employees will be informed of the potential carcinogenic, teratogenic, and mutagenic hazards of toxic chemicals associated with the site and other health hazards. Personnel failing to complete the required training will not be permitted on site. All work site personnel will document their review of the HASP with their

signature on the Affidavit (**Appendix 1**).

Medical Surveillance

The contractor shall utilize the services of a physician to perform physical examination of all personnel anticipated to work within the hazardous or transition zones for more than 16 hours during the length of the contract. Personnel will be examined again immediately at the conclusion of field work, or at any time in which excessive exposure is suspected.

7.0 SITE CONTROL

Security

The contractor will be responsible for maintaining site security. Periodic security patrols will be conducted to ensure that adequate security is being maintained. All workers required to be on-site will sign the "Sign in Sheet" and will present proper identification upon entry. Most of the work performed at Site will be within the fenced portion of the site. The entry gate will be secured by chains and padlocks. Warning signs will be attached to the fence to discourage entry by unauthorized personnel. While work activities are being implemented within fenced areas, existing security will be maintained. The SO or alternative SO will brief all visitors of all security and safety plans. A log will be maintained detailing visitors granted access as well as any security breaches encountered.

Work Areas

Construction activities will be performed at several locations throughout the site. The work area is the location in which the actual activity will occur. Only authorized personnel, including personnel conducting the work activities involved, and specialized personnel such as subcontractors, heavy equipment operators, laborers and technicians will be allowed in the work area. Within the work area, the levels of protection will be determined based on the degree of hazard present, as detected by the measurements obtained with the photoionization detector (PID), and/or other activity-specific monitoring equipment.

Work Zones

Work zones will be defined with the Engineer's approval prior to the commencement of work activities and be clearly marked off with traffic cones and/or caution tape. These work zones will limit equipment, operations and personnel in the areas as defined below:

Exclusion Zone - This shall include all areas where potential environmental monitoring has shown or is suspected that a potential chemical hazard may exist to workers. The level of PPE required in these areas shall be determined by the site SO after air monitoring and on-site inspection has been conducted. The area shall be clearly delineated from the decontamination area. As work proceeds, the delineation boundary shall be relocated as necessary to prevent the accidental contamination of nearby people and equipment.

Contamination Reduction Zone - This zone will occur at the interface between the Exclusion Zone "Hot Zone" and Support Zone "Clean Zone" and shall provide a transfer of personnel and equipment to and from the Support Zone to the Exclusion Zone, the decontamination of personnel and equipment prior to entering the Support Zone, and for the physical segregation of the Support Zone and Exclusion Zone.

Support Zone - This area is the remainder of the work site and project site. The function of the Support Zone includes:

- An entry area for personnel, material and equipment to the Exclusion Zone of site operations through the Contamination Reduction Zone;
- An Exit for decontamination personnel, materials and equipment from the "Decon" area of site operations;
- The Housing of site special services;
- A storage area for clean safety and work equipment.

Small decontamination areas may be set up adjacent to the work area to facilitate decontamination of equipment that is reused throughout the field activity.

8.0 STANDARD OPERATING PROCEDURES (SOSP), ENGINEERING CONTROLS

General Work Rules

To protect against the occurrence of accidents and dangerous situations, as well as to minimize

the potential for emergency events, all on-site personnel shall:

- Attend a daily tailgate safety meeting, read this HASP and sign the Affidavit (**Appendix 1**) attesting to this, prior to beginning of site activities. The HASP will be reviewed periodically by all on-site personnel conducting field activities. Daily Tailgate Safety Logs are included in **Appendix 7**.
- Field work will only be conducted during daylight hours unless adequate artificial lighting is provided and community/residential zoning laws permit operation after certain hours.
- No eating, drinking or smoking will be permitted within the exclusion or contamination reduction zone.
- All personnel shall be knowledgeable in the use of the first-aid equipment outlined in **Appendix 8**. Personnel will be advised of the precautions to be taken against sunburn, heat stroke, frostbite, and hypothermia.
- Only authorized personnel will be allowed on site.
- Fire extinguishers shall be available at the work site for immediate availability in an emergency.

To minimize the possibility of injuries, the following general precautions will be taken:

- All hand and power tools will be maintained in a safe condition.
- Safety guards will be kept in place during use.
- Power tools will be double-insulated and/or properly grounded.
- Walkways will be kept clear of equipment, vegetation, excavated material, or other obstructions.
- Proper work gloves will be provided and used when the possibility of burns, lacerations, or other injury exists.
- Hard hats and work boots shall be worn.
- Employees exposed to vehicular traffic on public roads and working around heavy machinery shall don reflective vests.
- Employees will observe proper lifting techniques and obey sensible lifting limits.
- Heavy equipment will be used in accordance with the manufacturer's specifications and guidelines.

General SOSP

- Hazardous work areas shall be delineated with signage and caution tape
- All equipment and PPE shall be kept clean and in good repair
- All prescription eyeglasses shall be safety glasses
- HST shall approve all gloves
- Respirators will be changed prior to breakthrough based on observed concentration levels and implemented changeout schedule
- Overboots shall be worn in affected work areas
- All PPE shall be decontaminated accordingly
- Respirators will be individually assigned
- All personnel requiring respirators shall be medically cleared for respirator use and be fit tested prior to commencement of work activities
- 20/40 vision must be achieved in at least one eye
- HST can bar an personnel out of compliance of this HASP
- Disposable or torn outerwear shall not be re-used
- Proper hygiene will be conducted prior to eating, drinking, etc.
- No alcohol or firearms will be permitted on site
- HST shall determine if personnel on medication is fit for work as directed by personnel's personal physician
- All equipment and personnel required to monitor and control air emissions will be provided.

Health and Safety Responsibilities

All Project Personnel are responsible for the following:

- Taking all reasonable precautions to prevent injury to themselves and to their fellow employees.
- Implementing the requirements of this HASP and reporting any deviations from the anticipated conditions described herein.
- Performing only those tasks that they believe they can do safely, and immediately reporting any accidents and/or unsafe conditions to the work supervisor.
- Filling out an accident report form included in **Appendix 8** and for all injuries, regardless

of severity. The form will be submitted to the work supervisor. Subcontractor is required to notify contractor within 24 hours of any work related injury.

Engineering Controls

Equipment and personnel require to monitor and control air emissions will be the provided by the Contractor.

9.0 PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment Selection:

Based on available data, it is anticipated that all field activities will be performed at Level D protection. All personnel will be properly trained and qualified to use the respective level of PPE.

Level D

The following Personal Protective Equipment (PPE) for Level D will be necessary for all field personnel on site:

- boots (should be safety toe when working near heavy machinery) in conformance to OSHA 1910.136
- hard hat, in conformance with OSHA 1910.135
- Safety glasses, in conformance to OSHA 1910.133. Prescription eyeglasses used on-site must be ANSI approved safety glasses with sided shields. In the absence of meeting this requirement, prescription eyewear must have protective goggles over them.
- Hearing protection, as needed.
- Reflective vest
- work gloves; and
- dust mask (if required by the activity)
- splash goggles
- two (2) sets of work clothing
- coveralls and/or chemical-resistant outer for those in affected areas, as necessary
- rubber overshoes
- full face mask with appropriate canisters for those in affected areas

If contaminated soil is exposed by any intrusive activity, safety glasses, and overboots will be

used.

Additionally, if and when free phase liquids are encountered, the following equipment will be necessary for all field personnel in the affected work area or dealing with the affected soil material:

- Tyvek (e.g., Saranex) disposable coveralls;
- safety glasses/goggles/face shield;
- chemically resistant overboots; and
- protective gloves.

Level C

An upgrade of PPE to Level C may be necessary for all personnel in the work area when engineering controls do not lower the exposure levels to within acceptable limits. Fit test documentation is required if Level C respiratory protection is to be worn.

The upgrade will consist of donning:

- laminated-type Tyvek (e.g., Saranex) disposable coveralls (if not already donned);
- nitrile or PVC gloves;
- full-face respirator equipped with approved cartridges suitable for expected hazards;
- and, chemically resistant overboots.

Level B

An upgrade of PPE to Level B will be necessary for all personnel in the work area if Level C protection does not adequately protect worker exposure.

The upgrade will consist of donning:

- pressure demand, full-facepiece SCBA or pressure-demand supplied-air respirator with escape SCBA
- inner gloves

10.0 PERSONAL HYGIENE AND DECONTAMINATION

A portable boot and eye wash station will be provided at each hazardous work zone. These stations will be moved as the hazardous locations change. All disposable clothing and cartridges shall be properly disposed of.

In the case of ingesting particulates, it is recommended that the site workers have, at a minimum a separate facility away from site work/excavations equipped with a full wash station, restroom facility, and lunch area. It is generally accepted that ingestion may occur when particulates on the hands are transferred to a food item and then ingested, and that thorough washing prior to meal can remove or eliminate this particular threat of exposure. Furthermore, in much the same way particles may be transferred from hands to food items, particles may be transferred from one body part or area to another. Therefore, thorough washing prior to using restroom facilities is encouraged.

Contaminated Clothing and spent respirator cartridges and other disposable items will be put into drums for proper disposal in accordance with TSCA and RCRA requirements

11.0 EQUIPMENT DECONTAMINATION

11.1 General

An equipment and worker decontamination area will be set up in a designated area adjacent to the work area. The equipment decontamination procedures described herein include in-the-field and post-field decontamination. Rinse water from equipment that comes in contact with contaminated soil will be contained on site for later disposal.

11.2 Safety Procedures During Equipment Decontamination

1. Personnel will wear the following safety equipment when decontaminating smaller equipment (i.e., shovels):
    - Safety glasses, goggles, and/or a splash shield; and
    - Nitrile or PVC gloves.

2. Personnel will wear the following additional safety equipment when decontamination larger equipment with a high-pressure water/steam decontamination unit (i.e., drill rigs):
    - Tyvek (e.g., Saranex) disposable coveralls;

- Safety glasses, goggles, and/or a splash shield
- Chemically resistant overboots.
- Hard hat

11.3 Decontamination Procedures

Excavation Equipment (Backhoes, shovels, etc.) - All excavation equipment that has had direct contact with contaminated soil will be decontaminated utilizing high pressure, hot water, and proper detergents before leaving the site. Rinse water from equipment that comes in contact with contaminated soil will be contained on site for later disposal.

1) Potable water scrub to remove excess soil;
2) Potable water rinse; and
3) Air dry

Meters and Probes - All meters and probes that are used in the field (other than those used solely for air monitoring purposes, e.g., PID) will be decontaminated between use as follows:

1) Non-phosphate detergent and water scrub to remove visual contamination;
2) Potable water rinse; and
3) Air dry

Disposal Method

PPE solids (e.g., disposable gloves, disposable clothing, and other disposable equipment) and all polyethylene sheeting used for decontamination purposes will be containerized and disposed of at permitted facilities accepting such waste. Rinse water generated during decontamination of equipment or PPE that comes in contact with contaminated soil or water will be contained in properly labeled drums, on site, for later disposal as necessary and as directed by the Department.

12.0AIR MONITORING PROGRAM, COMMUNITY PROTECTION PLAN

Real-time air monitoring for VOCs and particulates in the work zone and at the perimeter of the work area will performed during work activities. The following describes the air monitoring plan for the work zone and perimeter areas during intrusive and non-intrusive activities.

Air Monitoring Program - Work Zone (All Intrusive Activities)

- VOCs will be monitored in the breathing zone of the work area with real-time instrumentation

prior to personnel entering the area. Sampling at the hazardous work site will be conducted on a continuous basis. Any departures from background will be reported to the SO prior to entering the area. The SO will determine when and if operations will be shut down.

- Real-time air monitoring shall be conducted by a minimum of one dedicated person with communication to the foreman when intrusive activities (such as excavation, tank removal, soil treatment, demolition) are performed in an exclusion zone.
- Air monitoring equipment will be operated by personnel trained in the use of specific equipment provided and will be under the control of the SO. A log of the location, time, type and value of each reading will be maintained. Copies of log sheets will be provided on a daily basis to the Engineer's representative.

Perimeter Air Monitoring / Community Protection Plan

Four (4) perimeter air monitoring stations shall be utilized to collect data to document the amount if any, of particulate matter less than 10 microns in diameter (PM10) or VOC concentrations greater than 25 ppm along the perimeter of the work area. For security, access, and air flow reasons, the perimeter air monitoring station shall be 15 feet within the Site temporary fencing but no closer than 10 feet from the fencing. Every effort will be made such that each of the perimeter air monitoring stations shall be located so that it is not shielded or otherwise obstructed from collecting samples representative of the air leaving the Site. The perimeter air monitoring station shall be established upwind and downwind of the active work area. At least one air monitoring station shall be established upwind of the active work area.

Duration

Air monitoring shall be continuous during activities in the active work area. Air monitoring shall begin at least 30 minutes before work begins in the active work area and continue for at least 60 minutes after work ceases.

Equipment

Air monitoring at each station shall be conducted with the direct reading instrument for VOC concentration, MiniRAE 2000. Particulate matter will be documented using DataRAM 4 – Model DR-4000 real-time airborne particulate concentration and size measurement monitors.

A weather station or wind direction indicator will be erected in the work area.

RECORDS

The readings of the air monitoring instruments shall be recorded at least every 30 minutes during instrument operation. These records as well as the records of calibration, according to the instrument manufacturer's instructions, shall be available for inspection.

ACTION LEVELS

Vapor Emission Response Plan:

If PID monitoring readings exceed 5 ppm above background, work activities shall be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities may resume. If the organic vapor levels are greater than 5 ppm over background but less than 225 ppm over background at the perimeter of the work area, activities may resume provided the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities shall be shutdown and engineering controls will be initiated as detailed in Section 13.

Major Vapor Emission:

If any organic vapor greater than 5ppm above background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, all work will be halted. Should organic vapors not subside to 5 ppm above background after halting work or abating the emissions source, the Major Vapor Emission Response Plan will be immediately set in Place.

The Major Vapor Emission Response Plan includes the following:

- Notification of all Emergency Contacts included in Section 14
- The SO will notify the local police
- Frequent air monitoring conducted at 30 minute intervals within the 20 Foot zone until two consecutive readings below action levels are recorded. At this point the SO will be notified and air monitoring my halted or modified.

Particulates

Particulates shall be continuously monitored at four (4) documentation sampling stations. If the downwind PM10 level exceeds the particulate level of 150 ug/m^3 for more than 15 minutes, dust suppression techniques shall be employed to reduce the level at the perimeter to below 100 ug/m^3 within 15 minutes.

DUST SUPPRESSION METHODS

Every effort will be made to minimize the generation of dust. Appropriate methods consist of:

- Use of tarps or polyethylene sheeting to cover disturbed areas and stockpiled materials.
- Limiting the amount of exposed areas.
- Water spray.
- Manufactured dust suppressing foams or agents.

Table 12-1 Action Levels for Work Zone Perimeter Monitoring

HAZARD	Monitoring Method	Action Level	Protective Measures
Particulates	Particulate Monitor	150 ug/m^3 greater than upwind particulate level	Stop work, initiate engineering controls.
		2.5 times background and/or 150 ug/m^3	Stop Work, evacuate work area, and initiate integrated work zone and perimeter air sampling and engineering controls.
Volatiles	Photo Ionization Detector	>5 ppm	Initiate engineering controls, continue operations, workers use respirators
		>25 ppm	Stop Work, evacuate work area, and initiate integrated work zone and perimeter air sampling and engineering controls.

The SO or alternate will be designated to perform air monitoring. All readings will be recorded by hand in the field notebook and transcribed and be available for State (NYSDEC) personnel

review. All meters used for air monitoring will be checked against standard gas concentrations daily and calibrated, if necessary by the designated SO. A calibration log will be kept with each instrument used for air monitoring.

The work area shall be foamed should odor complaints be received. Other masking agents or control methods may be used upon Engineers review. Odor suppression will be utilized each day a complaint is received.

In accordance with the current OSHA noise regulation, 29 CFR 1910.95, the 8-hour occupational noise PEL for most occupational settings is 90 dBA, and the action level is 85 dBA.

A good hearing protection device (HPD) is an excellent means of attenuating noise exposure to workers even before engineering or administrative controls are implemented, or in the event that engineering and administrative controls are not feasible, or unable to adequately reduce noise exposure. Important considerations in choosing the appropriate HPD are the level and dominant frequencies of noise present before intervention, the noise reduction rating (NRR), compatibility with other safety equipment, ease of use, cost, and comfort. In order to be effective, the HPD must be used.

Due to the nature of the proposed excavation and drilling work at the subject site, this HASP requires the use of an appropriate HPD (e.g., foam earplugs or earmuffs, or a combination of the two) during on-site operations.

13.0 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

Site Communications

Communications on-site will be conducted through verbal communications. When out of audible range, verbal communications may be assisted using portable telephones and personal pagers.

First-Aid supplies will be located within the contamination reduction zone. The first-aid equipment list is included in **Appendix 8**. An emergency contact telephone list has been included in Section 14.0.

Safety equipment in addition to the PPE may be required depending upon the specific site

activity. A list of safety equipment that may be required is included in **Appendix 8**.

14.0EMERGENCY RESPONSES/CONTIGENCY PLAN AND PROCEDURES

14.1 General

During work the contractor will monitor the quality of the air in and around each active hazardous operation. Immediate access to emergency vehicles shall be granted should an emergency arise. The SO will be made aware of any injured person. The SO will assess the situation. If necessary they will consult with a physician and arrange for an ambulance.

An Emergency Contact List is provided below:

Fire Department (City of Glen Cove)	911
Police Department	911
Ambulance	911
South Nassau Community Hospital	(516) 632-3000
New York Poison Control	(516) 542-2323
Chemical Emergency Advice (CHEMTREC)	(800) 424-9300
Nassau County Department of Health	(516) 227-9697
NYSDEC Region 1 Office	(631) 444-0350
New York State Department of Health	(866) 881-2809
Utility one call center	(800) 272-4480
Federal	
National Response Center	(800) 424-8802
National Poison Control	(800) 926-1253

14.2 Fire Prevention

To protect and prevent against accidental fire hazards, safe work practices will be followed and:

1. Fire extinguishers shall be available in each vehicle and system shed and should only be used in accordance with the manufacturer's specifications and guidelines.
2. The Health and Safety Officer shall notify the Fire department, Engineer and NYSDEC in the

event that a fire cannot be controlled by the available on-site equipment.

3. System electric shall satisfy all National Electric Code (NEC) criteria.
4. Smoking is prohibited in the exclusion and contamination reduction zone.

Should a fire arise, the SO shall be made immediately aware and notify the local fire authority. The air downwind will be monitored immediately in order to protect workers and the nearby community.

14.3 Major Vapor Emission Response Plan

Local authorities and emergency agencies will be informed, if necessary, of the purpose, schedule and scope of the construction activities 5 days prior to the initiation of construction. The exclusion zone will be delineated and air monitoring activities started prior to invasive work. Results of air monitoring at the perimeter of the exclusion zone will be monitored by the Health and Safety Officer and recorded in the on-site logbook. All work activities shall be halted and the Engineer notified if any of the following levels of organic vapors are exceeded at the exclusion zone perimeter:

- Organic vapor levels greater than 25 ppm
- Explosive atmosphere 10% of the lower explosive limit

If any of the above conditions persists after cessation of work activities, and cannot be alleviated by the implementation of engineering controls, then the following contingency plan shall be placed into effect:

- All Emergency Contacts listed in Section 14.1 will be notified.
- The local police authorities shall be immediately contacted by the SO and advised of the situation. Coordinate with local officials to arrange for notification and evacuation of the surrounding community.
- Frequent air monitoring shall be conducted at 30 minute intervals with the 20 foot zone (within 20 feet of the nearest residential or commercial structure). If 2 successive readings below action levels are measured, air monitoring may be halted or modified by the SO.

14.4 Personal Injury Plan

In the event of a medical emergency in which Hospital / Emergency care is necessary, personnel will be a taken to the nearest Hospital. A hospital direction map is included below and has also been provided as **Appendix 11**.

Driving directions to South Nassau Community Hospital

Suggested routes

1. 8 mins
   NY-27 W/Sunrise Hwy
   3.8 mi
2. 9 mins
   W Merrick Rd
   3.5 mi
3. 9 mins
   NY-27 W/Sunrise Hwy and Merrick Rd
   3.8 mi

A 435 S Main St
Freeport, NY 11520

1. Head **north** on **S Main St** toward **Ray St** 0.5 mi
2. Continue onto **Henry St** 0.3 mi
3. Turn **left** at **NY-27 W/Sunrise Hwy** 3.6 mi
4. Turn **left** at **N Oceanside Rd** 0.2 mi
5. Take the 2nd **left** onto **Merrick Rd** 269 ft
6. Take the 1st **right** onto **Mt Ave** 0 ft

B South Nassau Community Hospital
1 Healthy Way
Oceanside, New York 11572

15.0HEAT / COLD STRESS

Heat Stress

One of the most frequently encountered problems associated with operations conducted under PPE Safety Level C is heat stress. Heat stress manifests itself in two forms: heat stroke and heat exhaustion. Depending on ambient conditions, the worker and the work being performed, heat stress can adversely affect a worker in as little as 15 minutes. This is especially important as ambient temperatures exceed approximately 69 1F at high humidity.

Heat stroke is a much more dangerous form of heat stress. Symptoms of heat stroke include high body temperatures and red or flushed hot, dry skin. There may be dizziness, nausea, headache, rapid pulse, and unconsciousness. First-aid for all forms of heat stress includes cooling the body by removing PPE, moving to a safe area, and allowing the worker to rest in a cooler environment. **Heat stroke is a critical medical emergency. If this condition is suspected, dial 911 immediately and move the affected worker to a cool area in preparation for transport to the nearest emergency medical facility.**

To guard against injury by heat stress, the following control measures will be employed in hot weather:
Provision for adequate liquids to replace lost body fluids. Employees must replace water and salt lost through perspiration.

Employees will be encouraged to drink more than the amount required to satisfy thirst, since thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement. Replacement fluids can be a 0.1 percent salt solution, although salt solutions are not necessary for acclimatized personnel as most balanced diets contain sufficient salt. Commercial mixes such as Gatorade or Quick Kick, or a combination of these with fresh water are readily available sources for replacement fluid.

- Establishment of a work regimen that will provide adequate rest periods for cooling down. Rest breaks are to be taken in a cool, shaded area during hot weather.
- Employees shall not be assigned other tasks during rest periods.
- All employees shall be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

Frostbite

Frostbite may be categorized into three types:

1. Frostbite or incipient frostbite characterized by sudden blanching or whitening of the skin.
2. Superficial frostbite - skin has a waxy or white appearance, is firm to the touch but tissue beneath is resilient.
3. Deep frostbite - tissues are cold and hard indicating an extremely serious injury.

Sign and symptoms of frostbite include:

- The skin changes to white or grayish-yellow in appearance.
- Pain is sometimes felt early but subsides later (often there is no pain).
- Blisters may appear later.
- The affected part feels intensely cold and numb.
- The person frequently is not aware of frostbite until someone tells him or her that they observe the pale, glossy skin.

As time passes, the affected worker may become confused, stagger, experience eyesight impairment, become unconscious, and breathing may stop.

First-aid frostbite will include protecting the frozen area from further injury, bringing the victim indoors, and maintaining respiration according to the first-aid procedures. Warming the affected area with warm water should only be conducted under the direction of a physician. Medical assistance should be obtained immediately.

Frostbite may be prevented by the use of insulated gloves, socks and other protective clothing capable of keeping moisture away from the skin. All protective clothing should be chosen so that it is compatible with any chemical-resistant clothing required for the site activities involved.

16.0LOGS, REPORTS, AND RECORD KEEPING

The SO will brief all potential visitors prior to granting access to the site. All visitors will be required to sign a visitors log.

All workers will be required to sign a tailgate safety log at the end of each morning tailgate safety meeting.

Should an emergency or accident arise, the SO will notify the Engineer immediately and submit within 24 hours a written report detailing the occurrence.

Daily Work Reports will be compiles detailing work performed, level of PPE, air monitoring results, safety related problems, and corrective actions.

17.0CONFINED SPACE PROCEDURES

By OSHA definition, 29 CRF 1910.146(b), a confined space is "a space that is (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and (3) Is not designed for continuous employee occupancy." If encountered, any confined space entry will be performed by only individuals that have been trained and successfully completed OSHA course 1910.146. Any confined space entry shall be in strict accordance to this protocol and no deviation shall be made.

Appendix 1

Affidavit

I,_____(name), of_____
(company name) have read the Health and Safety Plan (HASP).

I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from this site.

Signed:

_____Date:_____

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Appendix 2

Site Safety Officer

Robert Gimbel

Senior Environmental Technician

Mr Gimbel has been employed with EnviroTrac for thirteen (13) years and is a Senior Environmental Technician. Specific experience includes: environmental compliance audits of petroleum systems and maintenance facilities, groundwater and soil sample collection, environmental data collection, Operation & Maintenance (O&M) of soil and ground-water remediation systems, UST and AST removals and closures, installation of remediation systems, waste sampling and management, pilot testing, and operation of mobile remediation equipment.

Robert currently is responsible for the construction and O&M of complex remediation equipment including soil vapor extraction, air sparging, high vacuum extraction, oxygen diffusion, LNAPL recovery, groundwater extraction and treatment. Robert coordinates all field activities, performs routine preventative maintenance, performs facility audits, and troubleshoots equipment failures.

As Site Safety Supervisor, Mr. Gimbel has been responsible for the overall safety at multiple construction and demolition projects. His duties have included the oversight of subcontractors and his crew. He has been the lead for on site safety meetings, and insured that all personnel are in compliance with the safe work practices outlined in the site specific health and safety plan.

Professional Certifications / Training

OSHA Certification, 40 hr Health & Safety HAZWOPER Training

OSHA Certification, 8 hr Refresher HAZWOPER

OSHA Certification – Confined Space Entry and Supervision

OSHA 29 CFR 126 Certification, 30 hr Construction H&S

Railway Protection Training, 49 CFR Part 214 Subpart C; 4-9-07

RAD Worker I Radioactive Waste Handling Training (BNL)

Red Cross CPR & First Aid Certification

Smith System Drivers Safety Training

Professional Highlights and Selected Projects

Environmental Compliance Audits: Mr. Gimbel is experienced in conducting Environmental Compliance Audits at retail petroleum sites in New York. The audits included a check on procedures, monitoring equipment, UST's, and dispensers at each site to determine compliance with applicable state and federal guidelines. Responsibilities included the identification of compliance issues, photo-documentation, data entry and reporting of results.

Groundwater and Soil Sampling: Mr. Gimbel has experience collected soil samples using various techniques including hand augering, backhoes, and direct push drilling technologies. He also has sampled hundreds of ground-water monitoring wells for Major Petroleum and Industrial clients throughout the Northeast. Well purging and sampling procedures were in accordance with both state and federal ground-water sampling guidelines. He is familiar with a variety of sampling pump equipment operation, maintenance, troubleshooting and repairs.

NYSDEC Project (Division of Environmental Remediation, Region 3): Mr. Gimbel was part of a team that installed multiple soil and ground-water remediation systems at various active petroleum spill sites. These systems were installed to remediate groundwater impacted with MTBE. Robert was responsible for the excavation, trenching, and subsurface piping along roadways and crossing multiple utilities. Responsibilities included the traffic control and setting up signage and barriers as per the approved traffic control plan.

New York City Department of Design and Construction (DDC) Remediation Projects: Mr. Gimbel

has worked at more than 20 NYC owned properties including police precincts, firehouses, sanitation yards and parks installing soil and groundwater remediation systems. Remediation systems include Pump & Treat, Soil-Vapor Extraction, Bioremediation, and High Vacuum Extraction (Bioslurping). These projects have a high safety requirement due to the on-going activities and pedestrian traffic associated with the sites. Among Robert's responsibilities are to insure that access to sensitive areas is restricted to authorized personnel, and that the work does not interfere with emergency workers.

Robert has participated in approximately 25 remediation system demolition and site closure projects for the NYCDDC which have included contaminated soil excavation, operation of fork lifts, supervision of boom trucks, removal of piping, electrical conduit, small buildings, and equipment. The work also included the restoration of the sites which consisted of concrete and asphalt work, brick work, and landscaped areas.

Radioactive Facility Demolition: Mr. Gimbel was an Equipment Operator, and Laborer for this project. The team at EnviroTrac successfully completed the demolition and removal of a spent fuel canal as part of the Graphite Research Reactor Decommissioning Project at Brookhaven National Laboratory in Upton, NY. The project consisted of carefully cutting away and excavating an approximate 30-foot section of the reinforced concrete canal structure that was attached to the reactor building and removal of associated radioactively contaminated soils to 25-feet deep. Robert completed a 24-hour RAD Worker and Construction Safety course prior to the initiation of work and participated in daily safety meetings at the facility. This project was completed in October 2005.

Health and Safety Alternate

Theodore F. Masters

Mr. Masters has over 12 years experience as a Hydrogeologist and Health and Safety manager in the environmental consulting field and has been involved in managing health and safety operations at hazardous waste and petroleum release sites at varying levels of assessment, containment and remediation. He has extensive experience in health and safety operations for: hydrogeologic investigations and site characterization; phase I and II property assessments; remedial investigation/feasibility studies; soil and ground-water remediation systems at active and closed underground storage tank facilities; risk assessment site evaluation; and, Federally mandated agricultural chemical soil and ground-water monitoring studies design and implementation.

As the Senior Project Manager for EnviroTrac Ltd., Mr. Masters is responsible for the overall management and health and safety of personnel conducting soil and ground-water investigations, selecting remedial technologies and installing and operating remediation systems for over 50 active retail service stations in New York City. Some of the systems include soil-vapor extraction (SVE), SVE / air sparging, and pump and treat.

Education:

Candidate MS Hydrogeology, State University of New York at Stony Brook, 2000.
BA Geology, State University of New York at Binghamton, 1986.
AS Conservation, Herkimer County Community College, 1982.

Professional Certifications:

American Red Cross Community First Aid and Safety Certification
American Red Cross Adult, Infant, and Child CPR Certification
Professional Geologist, PG-002657-G, Commonwealth of Pennsylvania
Licensed Environmental Professional, State of Connecticut Dept. of Environmental Protection

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Licensed Subsurface Evaluator, Lic.#0015659, State of New Jersey Dept. Environmental Protection

OSHA Certification, 40 hr Health & Safety Training at Hazardous Waste Sites

Project Experience:

- Managed health and safety operations at over 35 soil and ground-water investigations at various utility companies in New York. Responsibilities included coordinating with the NYSDEC, the Fire Marshal, the building and health department.

- Site Health and Safety Officer at a PCB contaminated facility in West Virginia. Responsibilities included preparation of health and safety plan, managing maintenance of respiratory protection equipment and confined space entry permitting.

- Prepared health and safety plans at various soil and ground-water remediation systems in NY. Remediation systems include: product recovery; soil-vapor extraction with and without vapor treatment using catalytic oxidation or carbon adsorption; air sparging; pumping and treatment using oil/water separation, air stripping and carbon adsorption; bioremediation; and, dual phase extraction using high vacuum technology.

- Performed health and safety oversight at over 40 UST and UST system closures in NY, NJ and CT. Responsibilities included coordinating with the State, local health departments, local Fire Marshals and contractors to remove petroleum USTs.

Appendix 3

Current OSHA 1910.120 Training Certificates for Site Personnel

(To be provided)

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Appendix 4

Amendment Sheet

Site Name: _____

Site Location: _____

Project Manager: _____

HSO: _____

Description of changes of field activities and hazards.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Requested By:_____ HSO Approval:_____

Date: _____ Date:_____

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Appendix 5

SAFETY REGULATIONS

The main safety emphasis in on preventing personal contact with gasses, soils, sludge and water. Towards that end, the following rules have been established

Regulations

A. Eating on the site is PROHIBITED except in specifically designated areas.
B. All project personnel on the site must wear clean or new gloves daily.
C. If you get wet to the skin, you must wash the affected area with soap and water immediately. If cloths in touch with the skin are wet, these must be changed.
D. You must wash your hands and face before eating, drinking or smoking.

Recommendations

A. Do not smoke with dirty hands; better yet, do not smoke.
B. Check personal habit which could get soil or water into your body. Examples: food off your fingers, wiping your face or nose with a dirty hand or running a dirty hand through your hair.
C. Check that any regularly worn clothing is clean. Examples: dirty watchbands, neck chains and a dirty liner on your safety helmet. Safety practices with toxic chemicals can be summed up with a few words.
    - Don't breathe in chemical odors and don't touch the water, soil, and sludge.
    - If you do get dirty or wet, clean up as soon as possible.

Appendix 6

SAFETY REMINDER FOR TOXIC CHEMICALS

- Chemicals can't cause problems unless you breathe, eat or put them on your skin.

Chemicals in Gases, Soils, Sludge and Water

- Don't let them go into your mouth, nose, or stay on your skin.
- Use common sense personal hygiene
    A. Don't eat or drink on the site.
    B. No smoking in the work area.
    C. wear protective clothing.
    D. Keep your hands clean whenever practical. Wash before eating, drinking, or smoking.
    E. Don't carry chemicals home to your family. (For example, on clothing, mud in the car, dirty hands.)
    F. Follow strictly to the HASP.

Appendix 7

Daily Tailgate Safety Meeting Log

(to be completed on site)

Site Name _____

Location _____

Weather _____

Topics _____

_____

_____

_____

_____

_____

Employee Names:	Signatures
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
Signature of SS (or designee)	Date

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Appendix 8

FIRST-AID EQUIPMENT LIST

- First-Aid Handbook
- A Standard First-Aid Kit, containing:
- Compresses
- Gauze and gauze roller bandage
- Triangular bandages
- Eye dressing packet
- Ammonia inhalant
- Salt or other emetic
- Band aids
- Tape
- Scissors
- Tweezers
- First-aid cream
- Antiseptic wipes
- Instant cold packs
- Eye irrigation solution
- Burn cream
- Sterile gloves
- Rescue blanket
- Non-aspirin pain reliever

EMERGENCY EQUIPMENT LIST

- Electrolyte replacement drink, stored in a clean area and used to prevent heat stress
- Type ABC multipurpose fire extinguisher
- Portable emergency shower / eyewash station
- Washable coveralls
- Glove (outer and inner)
- SCBA
- Face shields
- Safety glasses
- Respirators and appropriate cartridges
- Disposable coveralls
- Chemical-resistant boots and boot covers
- Hard hats

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Appendix 9

ACCIDENT REPORT FORM

Name of Reporter: _____ Date: _____

Name(s) of Victim(s): _____ Date of Accident: _____

Witnesses: _____ Time of Accident: _____

Location on Accident: _____

Description of Accident: _____

_____

_____

_____

_____

Cause of Accident: _____

_____

_____

_____

_____

Persons/Agencies Notified	Time	Time of Arrival (if Applicable)
_____	____	_____
_____	____	_____
_____	____	_____
_____	____	_____

Corrective Actions: _____

_____

_____

_____

Duration of Accident: _____

Comments: _____

_____

EnviroTrac

Appendix 10

METAL ETCHING SITE

HOSPITAL DIRECTIONS & LOCATION MAP

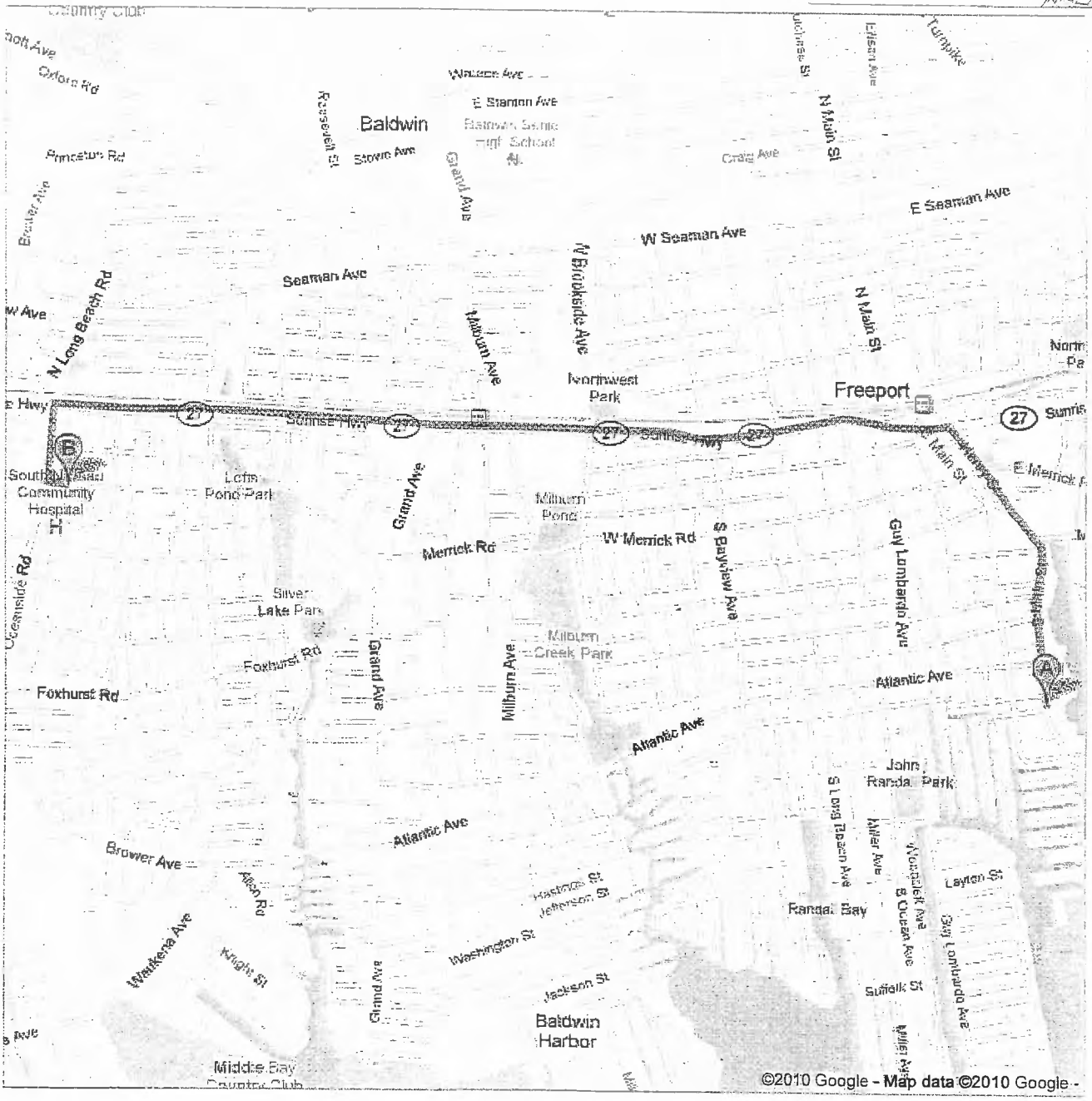
Hospital Address and Emergency Phone #'s

South Nassau Community Hospital (516)632-3000

EnviroTrac

Google maps

Directions to South Nassau Community Hospital
1 Healthy Way, Oceanside, New York 11572 - (516) 632-3000
3.8 mi – about **8 mins**



A 435 S Main St, Freeport, NY 11520

1.	Head **north** on **S Main St** toward **Ray St** About 2 mins	go 0.6 mi total 0.6 mi
2.	Continue onto **Henry St** About 1 min	go 0.3 mi total 0.9 mi
27 3.	Turn **left** at **NY-27 W/Sunrise Hwy** About 4 mins	go 2.6 mi total 3.5 mi
4.	Turn **left** at **N Oceanside Rd** About 1 min	go 0.2 mi total 3.8 mi
5.	Take the 2nd **left** onto **Merrick Rd**	go 269 ft total 3.8 mi
6.	Take the 1st **right** onto **Mt Ave**	go 23 ft total 3.8 mi

B South Nassau Community Hospital
1 Healthy Way, Oceanside, New York 11572 - (516) 632-3000

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

APPENDIX C

MONITORING WELL CONSTRUCTION DETAILS

ERM-Northeast

WELL : MW-01

520 Broadhallow Road, Melville, NY 11747

MONITORING WELL CONSTRUCTION LOG

Project Name & Location	Project No.	Water Level(s) (ft below top of PVC casing)			Site Elevation Datum (feet)
Metal Etching	**0011475.2**				5
Drilling Company	*Foreman*	Date	Time	Level (feet)	*Ground Elevation (feet)*
Delta Well And Pump					5
Surveyor					*Top of Protective Steel Cap Elevation (feet)*
Donald G. Dekenipp					
Date and Time of Completion	*Geologist*				*Top of Riser Pipe Elevation (feet)*
7/14/2004	**Mike Mattern**	7/16/2004	7:00	3.95	**4.96**

Generalized Soil Description	*Elevation	**Depth	CONSTRUCTION DETAILS
			PROTECTIVE STEEL CAP FLUSH WITH GROUND
			GROUND SURFACE
	4.96	0.00	<--- WATER TIGHT CAP WITH LOCK
	3.96	1.00	<--- PROTECTIVE STEEL CASING CEMENTED IN PLACE
			<-- BENTONITE SEAL
			<-- #1 MORRIE SAND
	-8.04	13.00	
	-10.04	15.00	
			<-- BENTONITE SEAL
	-14.04	19.00	
	-16.04	21.00	<---- RISER
			DIAMETER: 1"
			MATERIAL: PVC
			<---- WELL SCREEN
			SLOT SIZE:. 010
			DIAMETER: 1
			MATERIAL: PVC
			<---- SAND PACK
			TYPE: #1 Morrie Sand
	-26.04	31.00	<---- BOTTOM CAP
			BOTTOM OF BOREHOLE

REMARKS This well is one in a cluster of two installed in the same bore hole.

* Elevation (feet) above mean sea level unless noted

** Depth in feet below ground surface

ERM-Northeast

WELL : MW-04

520 Broadhallow Road, Melville, NY 11747

MONITORING WELL CONSTRUCTION LOG

Project Name & Location **Metal Etching**	*Project No.* **0011475.2**	*Water Level(s)* *(ft below top of PVC casing)*			*Site Elevation Datum (feet)*
Drilling Company **Delta Well And Pump**	*Foreman*	Date	Time	Level (feet)	*Ground Elevation (feet)*
Surveyor **Donald G. Dekenipp**					*Top of Protective Steel Cap Elevation (feet)* **7.41**
Date and Time of Completion **9/13/04 \ 13:54**	*Geologist* **Mike Mendes**	10/7/2004	7:53	5.49	*Top of Riser Pipe Elevation (feet)* **7.07**

Generalized Soil Description	*Elevation	**Depth	CONSTRUCTION DETAILS
			PROTECTIVE STEEL CAP FLUSH WITH GROUND
			GROUND SURFACE
	7.07	0.00	<---- WATER TIGHT CAP WITH LOCK
			<---- PROTECTIVE STEEL CASING CEMENTED IN PLACE
			<-- BENTONITE-CEMENT GROUT
	6.07	1.00	
			<-- BENTONITE SEAL
	5.07	2.00	
	4.07	3.00	<---- RISER
			DIAMETER: 2"
			MATERIAL: PVC
			<---- WELL SCREEN
			SLOT SIZE:. 010
			DIAMETER: 2
			MATERIAL: PVC
			<---- SAND PACK
			TYPE: #1 Morrie Sand
	-5.93	13.00	<---- BOTTOM CAP
			BOTTOM OF BOREHOLE

REMARKS _____

* Elevation (feet) above mean sea level unless noted ** Depth in feet below ground surface

ERM-Northeast

WELL : MW-05

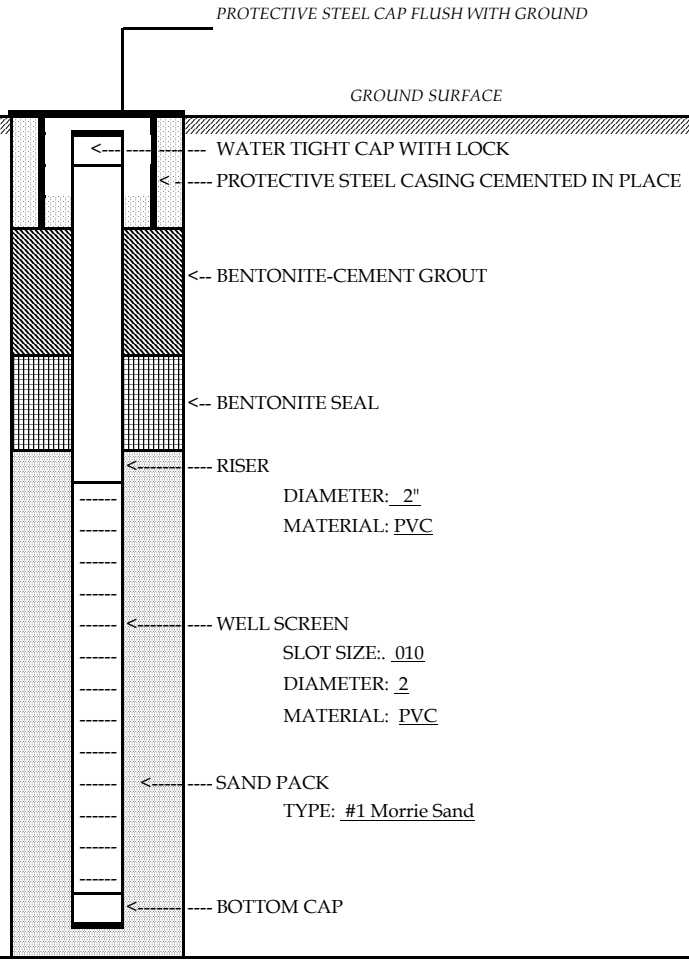
520 Broadhallow Road, Melville, NY 11747

MONITORING WELL CONSTRUCTION LOG

Project Name & Location **Metal Etching**	*Project No.* **0011475.2**	*Water Level(s)* *(ft below top of PVC casing)*			*Site Elevation Datum (feet)*
Drilling Company **Delta Well And Pump**	*Foreman*	Date	Time	Level (feet)	*Ground Elevation (feet)*
Surveyor **Donald G. Dekenipp**					*Top of Protective Steel Cap Elevation (feet)* **5.48**
Date and Time of Completion **9/13/04 \ 14:59**	*Geologist* **Mike Mendes**	10/7/2004	7:44	3.92	*Top of Riser Pipe Elevation (feet)* **5.16**

Generalized Soil Description	*Elevation	**Depth
	5.16	0.00
	4.16	1.00
	3.16	2.00
	2.16	3.00
	-13.00	13.00

CONSTRUCTION DETAILS



REMARKS _____

* Elevation (feet) above mean sea level unless noted ** Depth in feet below ground surface

ERM-Northeast

WELL : MW-06

520 Broadhallow Road, Melville, NY 11747

MONITORING WELL CONSTRUCTION LOG

Project Name & Location **Metal Etching**	*Project No.* **0011475.2**	*Water Level(s)* *(ft below top of PVC casing)*			*Site Elevation Datum (feet)*
Drilling Company **Delta Well And Pump**	*Foreman*	Date	Time	Level (feet)	*Ground Elevation (feet)*
Surveyor **Donald G. Dekenipp**					*Top of Protective Steel Cap Elevation (feet)* **5.65**
Date and Time of Completion **9/14/04 \ 11:40**	*Geologist* **Mike Mendes**	10/7/2004	7:49	3.87	*Top of Riser Pipe Elevation (feet)* **5.37**

Generalized Soil Description	*Elevation	**Depth	CONSTRUCTION DETAILS
			PROTECTIVE STEEL CAP FLUSH WITH GROUND
			GROUND SURFACE
	5.37	0.00	<--- WATER TIGHT CAP WITH LOCK
			< ---- PROTECTIVE STEEL CASING CEMENTED IN PLACE
			<-- BENTONITE-CEMENT GROUT
	4.37	1.00	
			<-- BENTONITE SEAL
	3.37	2.00	
	2.37	3.00	<------ RISER DIAMETER: 2" MATERIAL: PVC
			<------ WELL SCREEN SLOT SIZE:. 010 DIAMETER: 2 MATERIAL: PVC
			<------ SAND PACK TYPE: #1 Morrie Sand
	-7.63	13.00	<------ BOTTOM CAP
			BOTTOM OF BOREHOLE

REMARKS _____

* Elevation (feet) above mean sea level unless noted ** Depth in feet below ground surface

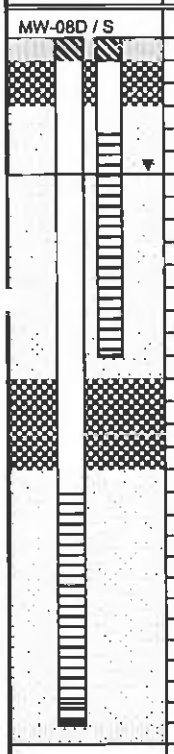
Geologic Log and Well Construction Details

MW-08 D/S

EnviroTrac Ltd.

5 Old Dock Road, Yaphank, New York 11980

Client:		Depth to Water (ft. from measuring pt.)		Site Elevation
NYSDEC Haz Waste		Date	DTW	
Site Name:	Address:			
Freeport Metal Etching	435 South Main Street, Freeport, NY			
Drilling Company:	Method:			Measuring Point Elevation
AARCO	Geoprobe equiped w/ rotary auger			
Date Started:	Date Completed:			
11/10/2011	11/10/11			
Completion Depth:	ENVIROTRAC Geologist:			
31	Michael Rose			



DEPTH (feet below grade)	SAMPLES Recovery (inches)	SAMPLES Blows per 6 inches	SAMPLES PID (ppm)	SOIL DESCRIPTION
0	NA	NA	NA	0'-5' (Pre-cleared) Fill material, concrete and brick intermixed with brown to black coarse to medium grained sand. Dry to moist, petroleum odor
	NA	NA	313.2	6'-30' Fill material, brown to black medium to fine grained sand with some gravel. Wet at 6'
10	NA	NA	NM	
20				
30				

Well Construction Details:

Bottom of Well:	31', 14'
Screen material:	2", 10-slot schedule 40 PVC
Casing material:	2" schedule 40 PVC
Sand Pack:	Mone #1
Bentonite Seal:	1'-4'
Surface Seal:	10" bolt-down manhole

NTS - Not to Scale NA - Not Applicable NM - Not Measured DTW - Depth to Water DTP - Depth to Product

EnviroTrac Environmental Services

Geologic Log and Well Construction Details

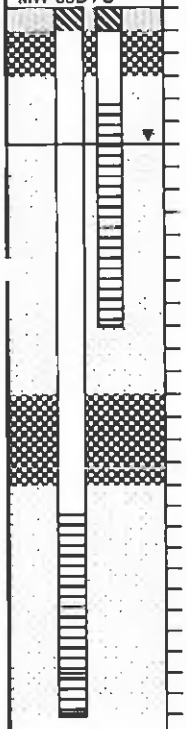
MW-09 S/D

EnviroTrac Ltd.

5 Old Dock Road, Yaphank, New York 11980

Client:		Depth to Water (ft. from measuring pt.)		Site Elevation
NYSDEC Haz Waste		Date	DTW	
Site Name:	Address:			
Freeport Metal Etching	435 South Main Street, Freeport, NY			
Drilling Company:	Method:			Measuring Point Elevation
AARCO	Geoprobe equiped w/ rotary auger			
Date Started:	Date Completed:			
11/11/2011	11/11/11			
Completion Depth:	ENVIROTRAC Geologist:			
31	Michael Rose			

WELL CONSTRUCTION (NTS)	DEPTH (feet below grade)	SAMPLES Recovery (inches)	SAMPLES Blows per 6 inches	SAMPLES PID (ppm)	SOIL DESCRIPTION
MW-09D / S	0	NA	NA	NA	0'-5' (Pre-cleared) Fill material, concrete and brick intermixed with brown to black coarse to medium grained sand Dry to moist, petroleum odor
		NA	NA	313.2	6'-30' Fill material, brown to black medium to fine grained sand with some gravel Wet at 6'
	10	NA	NA	NM	
	20				
	30				



LEGEND:

- Concrete
- Bentonite Seal
- Gravel Pack
- Screen
- End Cap

Well Construction Details:

Bottom of Well:	32', 14'
Screen material:	2", 10-slot schedule 40 PVC
Casing material:	2" schedule 40 PVC
Sand Pack:	Morie #1
Bentonite Seal:	1'-4'
Surface Seal:	10" bolt-down manhole

NTS - Not to Scale NA - Not Applicable NM - Not Measured DTW - Depth to Water DTP - Depth to Product

EnviroTrac Environmental Services

Geologic Log and Well Construction Details

MW-10S

EnviroTrac Ltd.

5 Old Dock Road, Yaphank, New York 11980

Client:		Depth to Water (ft. from measuring pt.)		Site Elevation
NYSDEC Haz Waste		Date	DTW	
Site Name:	Address			
Freeport Metal Etching	435 South Main Street, Freeport, NY			
Drilling Company	Method:			Measuring Point Elevation
AARCO	Geoprobe equiped w/ rotary auger			
Date Started:	Date Completed:			
11/10/2011	11/10/11			
Completion Depth	ENVIROTRAC Geologist:			
15'	Michael Rose			

WELL CONSTRUCTION (NTS)	DEPTH (feet below grade)	SAMPLES Recovery (inches)	SAMPLES Blows per 6 inches	SAMPLES PID (ppm)	SOIL DESCRIPTION
MW-10S	0	NA	NA	NA	0'-5' (Pre-cleared) Fill material, concrete and brick intermixed with brown to black coarse to medium grained sand. Dry to moist, petroleum odor
		NA	NA	313.2	5'-30' Fill material, brown to black medium to fine grained sand with some gravel. Wet at 6'
	10	NA	NA	NM	
	20				
	30				

LEGEND

- Concrete
- Bentonite Seal
- Gravel Pack
- Screen
- End Cap

Well Construction Details:

Bottom of Well:	14'
Screen material:	2", 10-slot schedule 40 PVC
Casing material:	2" schedule 40 PVC
Sand Pack:	Morie #1
Bentonite Seal	1'-4'
Surface Seal:	10" bolt-down manhole
Special Note*:	Deep Well Not Utilized

NTS - Not to Scale NA - Not Applicable NM - Not Measured DTW - Depth to Water DTP - Depth to Product

EnviroTrac Environmental Services

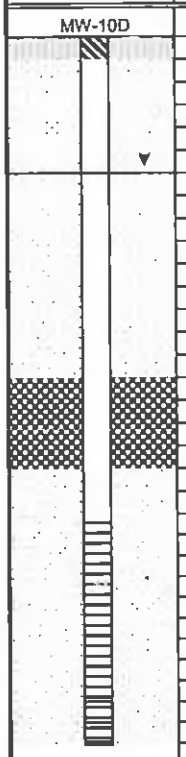
Geologic Log and Well Construction Details

MW-10D

EnviroTrac Ltd.

5 Old Dock Road, Yaphank, New York 11980

Client:		Depth to Water (ft. from measuring pt.)		Site Elevation
NYSDEC Haz Waste		Date	DTW	
Site Name:	Address:			
Freeport Metal Etching	435 South Main Street, Freeport, NY			
Drilling Company:	Method			Measuring Point Elevation
AARCO	Geoprobe equiped w/ rotary auger			
Date Started:	Date Completed:			
11/11/2011	11/11/11			
Completion Depth	ENVIROTRAC Geologist			
32	Michael Rose			



DEPTH (feet below grade)	SAMPLES: Recovery (inches)	SAMPLES: Blows per 6 inches	SAMPLES: PID (ppm)	SOIL DESCRIPTION
0	NA	NA	NM	0'-5' (Pre-cleared) Fill material, concrete and brick intermixed with brown to black coarse to medium grained sand. Dry to moist, petroleum odor.
	NA	NA	NM	6'-30' Fill material, brown to black medium to fine grained sand with some gravel. Wet at 6'
10	NA	NA	NM	
20				
30				

Well Construction Details:

Bottom of Well:	32'
Screen material:	2", 10-slot schedule 40 PVC
Casing material:	2" schedule 40 PVC
Sand Pack:	Morie #1
Bentonite Seal:	1'-4'
Surface Seal:	10" bolt-down manhole

NTS - Not to Scale NA - Not Applicable NM - Not Measured DTW - Depth to Water DTP - Depth to Product

EnviroTrac Environmental Services

APPENDIX D

FIELD FORMS

SITE-WIDE INSPECTION **Day: _____ Date: _____**

NYSDEC		Temperature: (F)		(am)		(pm)
		Wind Direction:		(am)		(pm)
METAL ETCHING SITE **NYSDEC Site # 130110**		Weather:	(am) (pm)			
Contract #		Arrive at site		(am)		
Freeport, New York		Leave site:		(pm)		

Site Security

Evidence of vandalism (wells, protective cover damage):

Evidence of cover system intrusion (ruts, burrows, excavations):

Evidence of penetrations (poles, posts, stakes):

General site condition (gates, access, storm drains):

Additional Comments:

SITE-WIDE INSPECTION **Day: _____Date: _____**

Asphalt Cover

Evidence of settlement, rutting, potholes:

Evidence of cracking, distortion, or disintegration:

Additional Comments:

Drainage System

Evidence of damage to storm drains:

Evidence of stockpiles on porous pavement areas:

Evidence of ponding on porous pavement areas:

Evidence of spilled liquids (well tampering/vent blowout):

Additional Comments:

Sub-Slab Depressurization Systems

Are there any new cracks in the slab that have not been sealed? If so, describe:

Are there any new cracks in structure walls? If so, describe:

SITE-WIDE INSPECTION **Day: _____Date: _____**

Does system PVC pipe appear to be compromised in any way? If so, describe:
Does manometer read within range marked?
Is fan making any abnormal noises?
Is contact information on SSDS up to date?
Has the building use changed since the last inspection?
Has building heating, ventilation and air conditioning changed since the last inspection?

Inspection Photolog

Metal Etching Co., Inc. Site No. 130110
GROUNDWATER SAMPLING
PURGE FORM

Well I.D.:	**Personnel:**	**Client:** NYSDEC
Location: Metal Etching Co., Inc. Site	**Well Condition:**	**Weather:**
Sounding Method:	**Gauge Date:**	**Measurement Ref:**
Stick Up/Down (ft):	**Gauge Time:**	**Well Diameter (in):**

Purge Date:	**Purge Time:**
Purge Method:	**Field Technician:**

Well Volume		
A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft):	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B):	**F. Three Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (Gal)	Rate (Lpm)	pH (pH units)	ORP (mV)	Temp. (^{o}C)	Cond. (mS/cm)	DO mg/L)	Turbidity (ntu)

Total Quantity of Water Removed (gal): _____ **Sampling Time:** _____
Samplers: _____ **Split Sample With:** _____
Sampling Date: _____ **Sample Type:** _____

COMMENTS AND OBSERVATIONS: _____

NEW YORK STATE DEPARTMENT OF HEALTH INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation ___._____

1. OCCUPANT: Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS Type of

Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many?
_____ If the property is
commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors
Airflow near source
Outdoor air infiltration
Infiltration into air ducts

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: _____(feet)
Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

6. HEATING, VENTING and AIR CONDITIONING

Type of heating system(s) used in this building: (circle all that apply –note primary)

Hot air circulation - Heat pump - Hot water baseboard - Space Heaters - Stream radiation - Radiant floor - Electric baseboard - Wood stove - Outdoor wood boiler - Other _____

The primary type of fuel used is:
Natural Gas - Fuel Oil - Kerosene - Electric - Propane - Solar - Wood - Coal

Domestic hot water tank fueled by: _____
Boiler/furnace located in: Basement - Outdoors - Main Floor - Other_____
Air conditioning: Central Air - Window units - Open Windows - None
Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

7. OCCUPANCY

Is basement/lowest level occupied? Full-time - Occasionally - Seldom - Almost Never

Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)

Basement _____
1st Floor _____
2nd Floor _____
3rd Floor _____
4th Floor _____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage?	Y / N	
b. Does the garage have a separate heating unit?	Y / N / NA	
c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car)	Y / N / NA	Please specify_____
d. Has the building ever had a fire?	Y / N	When?_____
e. Is a kerosene or unvented gas space heater present?	Y / N	Where? _____
f. Is there a workshop or hobby/craft area?	Y / N	Where & Type? _____
g. Is there smoking in the building?	Y / N	How frequently? _____
h. Have cleaning products been used recently?	Y / N	When & Type? _____
i. Have cosmetic products been used recently?	Y / N	When & Type? _____
j. Has painting/staining been done in the last 6 months?	Y / N	When & Type? _____
k. Is there new carpet, drapes or other textiles?	Y / N	Where & When? _____
l. Have air fresheners been used recently?	Y / N	When & Type? _____
m. Is there a kitchen exhaust fan?	Y / N	If yes, where vented? _____
n. Is there a bathroom exhaust fan?	Y / N	If yes, where vented? _____
o. Is there a clothes dryer?	Y / N	If yes, is it vented outside? Y / N
p. Has there been a pesticide application?	Y / N	When &Type? _____

Are there odors in the building? Y / N
If yes, please describe:
_____

Do any of the building occupants use solvents at work? Y / N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? _____
If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation:
Is the system active or passive? Active/Passive

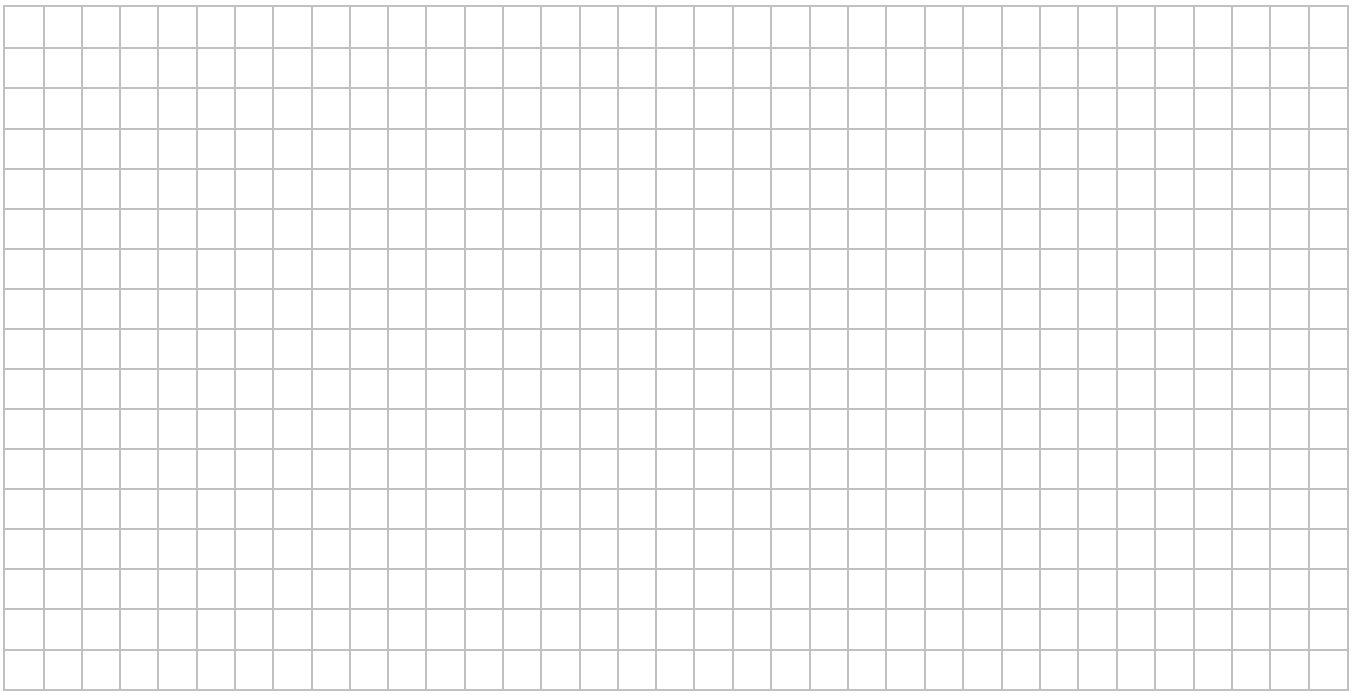
9. WATER AND SEWAGE
Water Supply: Public Water Drilled Well Driven Well Dug Well Other: _____
Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)
a. Provide reasons why relocation is recommended: _____
b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel
c. Responsibility for costs associated with reimbursement explained? Y / N
d. Relocation package provided and explained to residents? Y / N

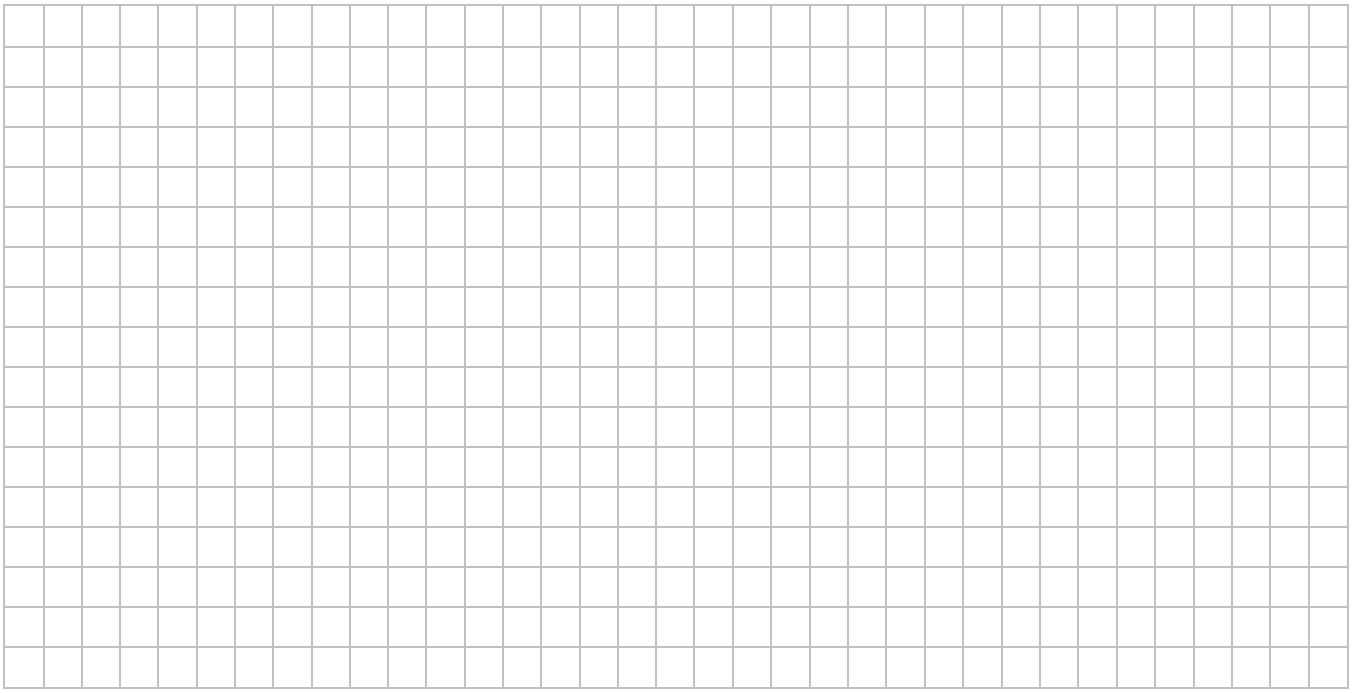
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

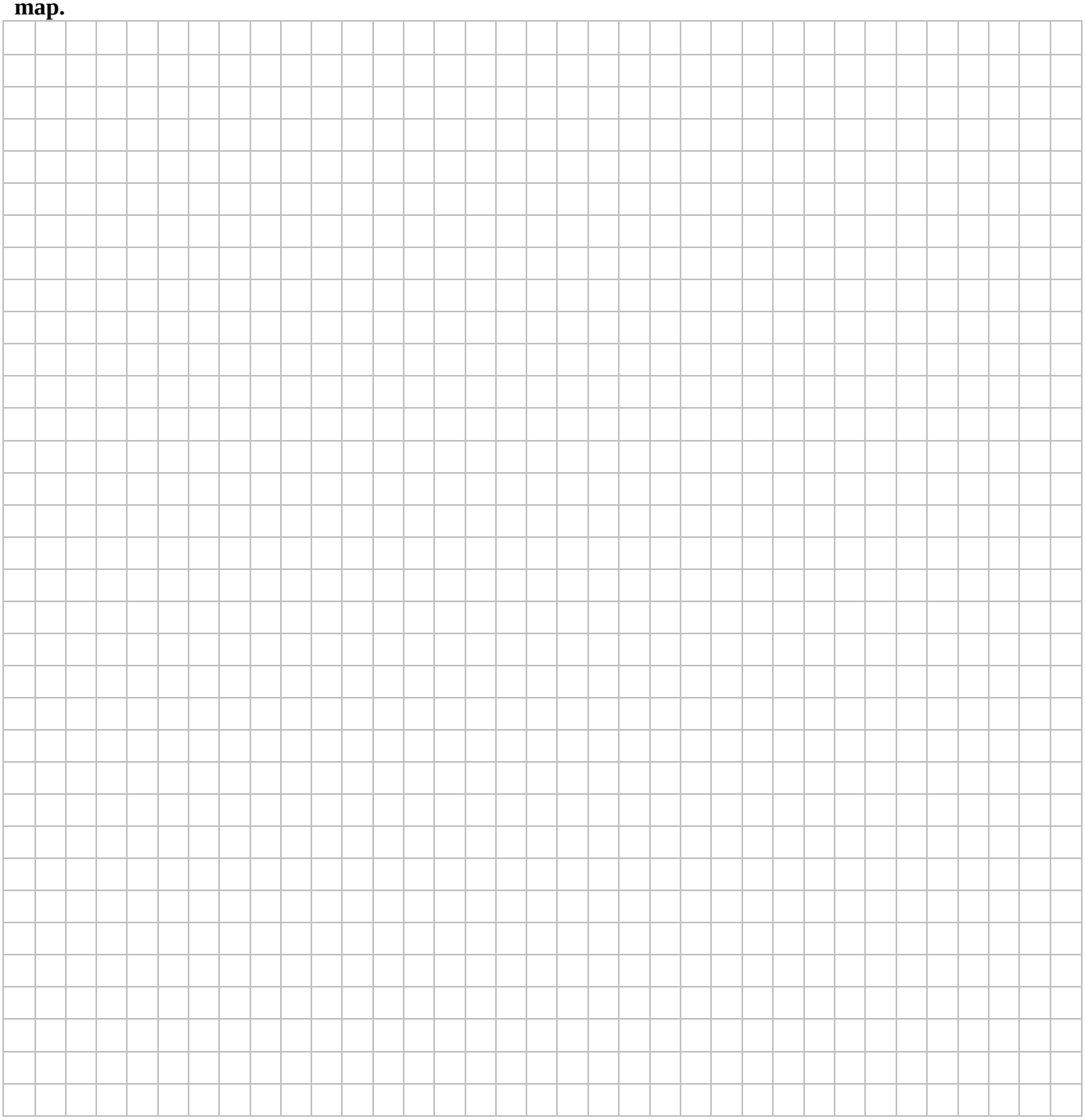


First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.
Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residences that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

FIELD AIR SAMPLING FORM

Consultant	Project #:
	Project Name:
Address	Location:
Location	Project Manager:

Sample Location Information:

Site ID Number:				Sampler(s):	
PID Meter Used: (Model, Serial #)				Building I.D. No.:	

SUMMA Canister Record:

INDOOR AIR - FIRST FLOOR		INDOOR AIR - BASEMENT		SUBSLAB SOIL GAS		OUTDOOR AIR	
Flow Regulator No.:		Flow Regulator No.:		Flow Regulator No.:		Flow Regulator No.:	
Canister Serial No.:		Canister Serial No.:		Canister Serial No.:		Canister Serial No.:	
Start Date/Time:		Start Date/Time:		Start Date/Time:		Start Date/Time:	
Start Pressure: (inches Hg)		Start Pressure: (inches Hg)		Start Pressure: (inches Hg)		Start Pressure: (inches Hg)	
Stop Date/Time:		Stop Date/Time:		Stop Date/Time:		Stop Date/Time:	
Stop Pressure: (inches Hg)		Stop Pressure: (inches Hg)		Stop Pressure: (inches Hg)		Stop Pressure: (inches Hg)	
Sample ID:		Sample ID:		Sample ID:		Sample ID:	

Other Sampling Information:

Story/Level		Story/Level		Basement or Crawl Space?		Direction from Building	
Room		Room		Floor Slab Thickness (inches) *[if present]*		Distance from Building	
Indoor Air Temp (^{o}F)		Indoor Air Temp		Potential Vapor Entry Points Observed?		Intake Height Above Ground Level (ft.)	
Barometric Pressure?		Barometric Pressure?		Ground Surface Condition (Crawl Space Only)		Intake Tubing Used?	
Intake Height Above Floor Level (ft.)		Intake Height Above Floor Level (ft.)		If slab, intake Depth If Crawl Space, intake height		Distance to nearest Roadway	
Noticeable Odor?		Noticeable Odor?		Noticeable Odor?		Noticeable Odor?	
PID Reading (ppb)		PID Reading (ppb)		PID Reading (ppb)		PID Reading (ppb)	
Duplicate Sample?		Duplicate Sample?		Duplicate Sample?		Duplicate Sample?	

Comments:

Sampler Signature:

APPENDIX E

QUALITY ASSURANCE PROJECT PLAN

1. PURPOSE AND OBJECTIVES

1.1 PURPOSE

This Quality Assurance Project Plan (QAPP) is for the site management work done for the Metal Etching site in the city of Freeport, Nassau County, New York (New York State Department of Environmental Conservation [NYSDEC] Site No. 130110). This QAPP contains site-specific procedures for the collection, analysis, and evaluation of data that will be legally and scientifically defensible.

1.2 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

This QAPP provides site-specific information and standard operating procedures applicable to all work performed at the site that. The information includes definitions and goals for data quality and required types and quantities of quality assurance (QA)/quality control (QC) samples. The procedures address sampling protocols; field documentation; sample handling, custody, and shipping; instrument calibration and maintenance; auditing; data reduction, validation, and reporting; corrective action requirements; and QA reporting. The Site Management Plan contains a site description and information on site field activities; such as, sample locations, sampling procedures, analytical methods, and reporting limits.

2. PROJECT ORGANIZATION AND RESPONSIBILITIES

While all personnel involved in an investigation and the generation of data are implicitly a part of the overall project management and QA/QC program, certain members of the Project Team have specifically designated responsibilities. Project responsibilities are summarized below.

2.1 CONSULTANT

The consultant responsible for site management will provide field support during groundwater sampling activities and evaluation of analytical data. The roles required in this project include:

- ***Project QA/QC Officer***—The QA/QC Officer provides guidance on technical matters and reviews technical documents relating to the project. They assess the effectiveness of the QA/QC program and recommend modifications when applicable. Additionally, the QA/QC Officer may delegate technical guidance to specially trained individuals under his direction.

- ***Project Manager***—The Project Manager provides overall coordination and preparation of the project activities. This includes coordination with NYSDEC, budget control, subcontractor performance, implementation of the QAPP, and allocation of resources and staffing to implement both the QA/QC program and the site Health and Safety Plan.

- ***Site Manager***—The Site Manager will serve as the on-site contact person for field activities and tests. They will be responsible for coordinating the field activities, including inspecting and replacing equipment, preparing daily and interim reports, scheduling sampling and inspections, and coordinating shipment and receipt of samples and containers.

2.2 LABORATORY

Laboratory analyses for this project will be performed by an Environmental Laboratory Analytical Program (ELAP) certified laboratory. The laboratory will have its own provisions for conducting an internal QA/QC review of the data before they are released. The laboratories' contract supervisors will contact the consultant's Project Manager with any sample discrepancies or data concerns.

Electronic data deliverable formatted QA/QC reports will be filed by the analytical laboratories when data are submitted to the consultant. Corrective actions will be reported to the consultant's Project Manager along with the QA/QC report. The laboratories may be contacted directly by the consultant or NYSDEC personnel to discuss QA concerns. The consultant will act as laboratory coordinator on this project and all correspondence from the laboratories will be coordinated with the consultant's Project Manager.

3. SAMPLING RATIONALE, DESIGNATION, AND CONTAINERS

3.1 SAMPLING RATIONALE

The sampling rationale is presented for groundwater monitoring in the Site Management Plan. Laboratory quality control samples including field duplicates, matrix spike, and matrix spike duplicates are to be collected at a frequency of 1 per 20 samples. Field duplicates are two samples of the same matrix, which are collected, to the extent possible, from the same location at the same time using the same techniques. Field duplicates provide information on the precision of the sampling and analysis process. Matrix spike and matrix spike duplicates are two additional samples of the same matrix fortified with the analyte(s) of interest and analyzed to monitor measurement bias associated with the sample matrix.

The remedial investigation laboratory program includes the number of samples for each sample location, as well as QA/QC samples (Table 1).

3.2 SAMPLE DESIGNATION

Field samples collected from the site will be assigned a unique sample tracking number. Sample/designation will be an alpha-numeric code, which will identify each sample by the site identification, matrix sampled, location number, and date of collection.

The following terminology will be used for the sample identification:

- **Groundwater Samples**

  — NYSDEC SITE ID-MW-XX

3.3 SAMPLE CONTAINERS

Types of sample containers and preservatives required for sample collection will be determined by the analyzing laboratory. Sample containers will be properly washed, decontaminated, and the appropriate preservative will be added by the analytical laboratory. Containers with preservative will be labeled accordingly.

3.4 SAMPLE HOLDING TIMES

Sample holding times will be in accordance with the NYSDEC Analytical Services Protocol (ASP) requirements. All samples shall be transferred to the analytical laboratory with enough time for the lab to process the samples before the holding time is expired.

3.5 SAMPLE TRACKING AND CUSTODY

The laboratory must satisfy the sample chain-of-custody requirements by implementing the following Standard Operating Procedures for laboratory/sample security:

- Samples are stored in a secure area
- Access to the laboratory is through a monitored area
- Visitors sign a visitor's log and are escorted while in the laboratory
- Only the designated sample custodians have keys to sample storage area(s)
- Transfers of samples in and out of storage are documented.

4. ANALYTICAL LABORATORY

The data collected during this investigation will be used to determine the presence and concentration of volatile organic compounds (VOCs) and metals in groundwater.

Groundwater samples collected during execution of the QAPP will be submitted to the approved analytical laboratory. The laboratory must be a New York State Department of Health ELAP-certified laboratory, meeting specifications for documentation, data reduction, and reporting. Preliminary analytical results will be provide within 14 days of sample receipt and full NYSDEC Analytical Services Protocol Category B deliverables and associated electronic data deliverables (EDDs) in Equis format will be provided to the consultant within 30 days of sample receipt.

4.1 CALIBRATION PROCEDURES AND FREQUENCY

Instruments and equipment used in this investigation are controlled by a formal calibration program, which verifies that equipment is of the proper type, range, accuracy, and precision to provide data compatible with specified requirements. Instruments and equipment that measure a quantity, or whose performance is expected at a stated level, are subject to calibration. Calibration is performed using reference standards or externally by calibration agencies or equipment manufacturers.

4.1.1 Calibration System

The following sections contain a discussion of the elements comprising the calibration system.

4.1.1.1 Calibration Procedures

Written procedures are used for all instruments and equipment subject to calibration. Whenever possible, recognized procedures, such as those published by the American Society of Testing and Materials or United States Environmental Protection Agency (USEPA), or procedures provided by manufacturers, are adopted. If established procedures are not available, a procedure is developed considering the type of equipment, stability characteristics of the equipment, required accuracy, and the effect of operational error on the quantities measured.

4.1.1.2 Calibration Frequency

Calibration frequency is based on the type of equipment, inherent stability, manufacturer's recommendations, values provided in recognized standards, intended data use, specified analytical methods, effect of error upon the measurement process, and prior experience.

4.1.1.3 Calibration Reference Standards

Two types of reference standards will be used by the standby laboratories for calibration:

- ***Physical standards***, such as weights for calibrating balances and certified thermometers for calibrating working thermometers, refrigerators and ovens, are generally used for periodic calibration.

- ***Chemical standards***, such as Standard Reference Materials provided by the National Institute of Standards and Technology or USEPA. These may include vendor-certified materials traceable to National Institute of Standards and Technology or USEPA Standard Reference Materials. These are primarily used for operational calibration.

4.1.1.4 Calibration Failure

Equipment that cannot be calibrated or becomes inoperable is removed from service. Such equipment must be repaired and satisfactorily recalibrated before re-use. For laboratory equipment that fails calibration, analysis cannot proceed until appropriate corrective action is taken and the analyst achieves an acceptable calibration.

Laboratory managers are responsible for development and implementation of a contingency plan for major equipment failure. The plan includes guidelines on waiting for repairs, use of other instrumentation, subcontracting analyses, and evaluating scheduled priorities.

4.1.1.5 Calibration Records

Records are prepared and maintained for each piece of equipment subject to calibration. Records demonstrating accuracy of preparation, stability, and proof of continuity of reference standards are also maintained. Copies of the raw calibration data are kept with the analytical sample data.

4.1.2 Operational Calibration

Operational calibration is generally performed as part of the analytical procedure and refers to those operations in which instrument response (in its broadest interpretation) is related to analyte concentration. Included is the preparation of a standard response (calibration) curve and often the analysis of blanks.

4.1.2.1 Preparation of Calibration Curve

Preparation of a standard calibration curve is accomplished by the analysis of calibration standards, which are prepared by adding the analyte(s) of interest to the solvent that is introduced into the instrument. The concentrations of the calibration standards are chosen to cover the working range of the instrument or method. Sample measurements are made within this working range. The calibration curve is prepared by plotting or regressing the instrument responses versus the analyte concentrations. Concentrations of the analyzed samples are back-calculated from the calibration curve.

4.1.2.2 Blanks

Reagent and/or solvent blanks are analyzed to assess if the materials used to prepare the standards are free from interfering substances that could affect the analysis. A method blank is prepared whenever samples are processed through steps that are not applied to the calibration standards.

4.1.3 Periodic Calibration

Periodic calibrations are performed for equipment (e.g., balances, thermometers) that is required in the analytical method, but that is not routinely calibrated as part of the analytical procedure.

4.2 FIELD EQUIPMENT CALIBRATION

The procedures and frequencies for the calibration of field equipment are provided below in the table below.

FIELD INSTRUMENTATION CALIBRATION FREQUENCY

Instrument	Frequency of Calibration Check	Calibration Standard
pH Meter	Prior to use – daily	Commercially prepared pH buffer solutions (4.01, 7.00, 10.00)
Conductivity Meter	Prior to use – daily	Commercially prepared saline solution (12.9 mS/cm)
Water Level Meter	Prior to initiating field work	100-ft engineer's tape
Dissolved Oxygen Meter	Per sampling event	Saturation
Photoionization Detector	Prior to use – daily	100 ppm isobutylene
Turbidity	Prior to use – daily	10 NTU, 200 NTU

NOTE: NTU = Nephelometric turbidity units.

5. ANALYTICAL TEST PARAMETERS

This QAPP will require the analysis of aqueous samples using USEPA Method 8260B for VOCs, and USEPA Method 6010/7470 for metals. Compound lists for each analytical method are included in Table 2.

6. ANALYTICAL DATA VALIDATION

The laboratory will review data prior to its release from the laboratory. Objectives for review are in accordance with the QA/QC objectives stated in the NYSDEC Division of Environmental Remediation-10 (DER-10). The laboratories are required to evaluate their ability to meet these objectives. Outlying data will be flagged in accordance with laboratory standard operating procedures and corrective action will be taken to rectify the problem.

In order to ensure the validity of analytical data generated by a project, it will be validated by an entity independent from the analysts and the project. The resumes of the personnel providing the data validation services shall be submitted for approval under a separate cover.

TABLE 1 SITE CHARACTERIZATION ANALYTICAL PROGRAM

	Sample Matrix	VOCs (USEPA 8260B) and Metals (USEPA 6010/7470)
No. of Samples	Aqueous	10
Field Duplicate		1
MS/MSD		2
Total No. of Analyses		13

NOTE: USEPA = U.S. Environmental Protection Agency.
MS/MSD = Matrix spike/matrix spike duplicate.
Laboratory quality control samples will be collected at a rate of 1 per 20 samples, per matrix.

TABLE 2 ANALYTE LIST AND ANALYTICAL REPORTING LIMITS

USEPA METHOD 8260B (VOCs)	
Analyte	Reporting Limit µg/L
1,1,1,2-Tetrachloroethane	0.07
1,1,1-Trichloroethane	0.04
1,1,2,2-Tetrachloroethane	0.20
1,1,2-Trichloroethane	0.08
1,1-Dichloroethane	0.03
1,1-Dichloroethene	0.03
1,1-Dichloropropene	0.12
1,2,3-Trichloropropane	0.09
1,2-Dibromo-3-chloropropane	0.50
1,2-Dibromoethane	0.10
1,2-Dichlorobenzene	0.05
1,2-Dichloroethane	0.02
1,2-Dichloropropane	0.02
1,3-Dichlorobenzene	0.05
1,3-Dichloropropane	0.08
1,4-Dichlorobenzene	0.04
2,2-Dichloropropane	0.08
2-Butanone	0.70
2-Chlorotoulene	0.08
2-Hexanone	0.40
4-Chlorotoulene	0.06
4-Methyl-2-pentanone	1.2
Acetone	10
Benzene	0.03
Bromobenzene	0.11
Bromochloromethene	0.09
Bromodichloromethane	0.03
Bromoform	0.20
Bromomethane	0.03
Carbon disulfide	0.04
Carbon tetrachloride	0.02
Chlorobenzene	0.03
Chloroethane	0.09
Chloroform	0.04
Chloromethane	0.05
cis-1,2-dichloroethene	0.06
cis-1,3-dichloropropene	0.04
Dibromochloromethane	0.07
Dibromomethane	0.01
Dichlorodifluoromethane	0.11
Ethylbenzene	0.03
Isopropylbenzene	0.10
Methlyene chloride	0.08
n-Propylbenzene	0.10
Styrene	0.27
Tetrachloroethene	0.05
Toluene	0.08
trans-1,2-dichloroethene	0.04
trans-1,3-dichloropropene	0.04
Trichloroethene	0.02
Vinyl chloride	0.04
Xylene (Total)	1.0

USEPA METHOD 6010/7470 (METALS)	
Analyte	Reporting Limit µg/L
Aluminum	0.0061
Antimony	0.0021
Arsenic	0.0025
Barium	0.00014
Beryllium	0.000053
Cadmium	0.00017
Calcium	0.017
Chromium	0.00055
Cobalt	0.00069
Copper	0.0013
Iron	0.0028
Lead	0.00088
Magnesium	0.0061
Manganese	0.00021
Mercury (Method 7470)	0.000012
Nickel	0.0012
Potassium	0.055
Selenium	0.0017
Silver	0.0008
Sodium	0.0054
Thallium	0.0026
Vanadium	0.0013
Zinc	0.0021

APPENDIX F

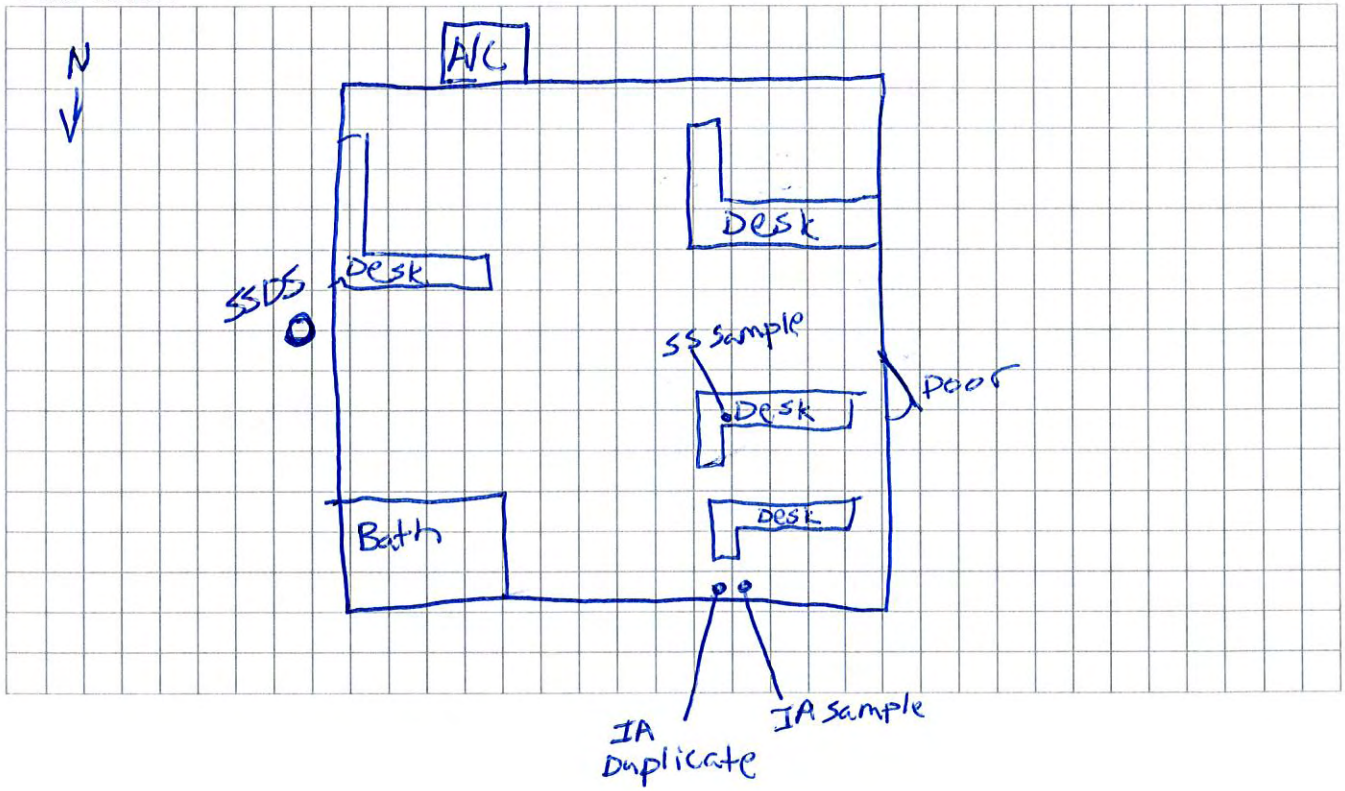
HISTORICAL SOIL VAPOR INTRUSION AIR MONITORING FORMS

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.
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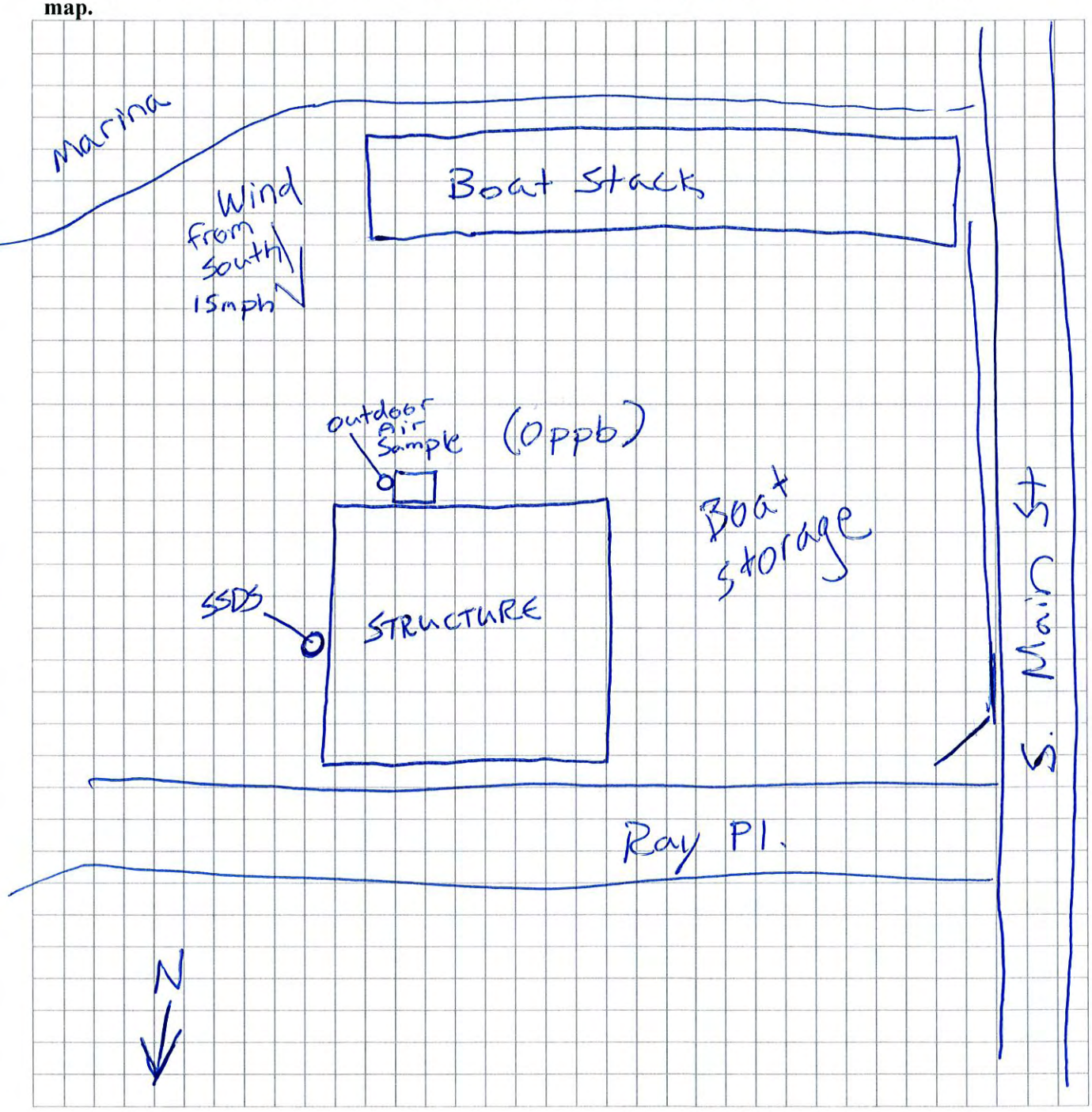

APPENDIX G

ENVIRONMENTAL EASEMENT