



Environment

Prepared for:
NYSDEC
Albany, NY

Prepared By:
AECOM
Chestnut Ridge, NY
60277021
September 2014

Site Management Plan Liberty Industrial Finishing Site Site #1-52-108 Work Assignment No. D007626-17

Final

Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	NYSDEC Approval Date



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A handwritten signature in cursive script, reading "Paul Kareth".

Prepared By: Paul Kareth

A handwritten signature in cursive script, reading "Scott Underhill".

Reviewed By: Scott Underhill

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List of Acronyms

AECOM	AECOM Technical Services Northeast, Inc.
AWQS	Ambient Water Quality Standards
bgs	Below Ground Surface
CAMP	Community Air Monitoring Plan
COC	Contaminant of Concern
DER	Division of Environmental Remediation
EC	Engineering Control
EE	Environmental Easement
EN	Environmental Notice
EWP	Excavation Work Plan
ft bgs	Feet Below Ground Surface
GPM	Gallons per Minute
HASP	Health and Safety Plan
IC	Institutional Control
IIWA	Immediate Investigation Work Assignment
IRA	Interim Remedial Action
LIRR	Long Island Rail Road
MDL	Method Detection Limit
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
ORP	Oxidation-Reduction Potential
OU	Operable Unit
PPE	Personal Protective Equipment
PPM	Parts per Million
PRR	Periodic Review Report
QA/QC	Quality Assurance
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision

AECOM

Final Liberty Industrial Finishing Site Management Plan
Work Assignment D007626-17

SCDHS	Suffolk County Department of Health and Services
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
µg/L	Micrograms per Liter
µg/m ³	Micrograms per Cubic Meter
US EPA	United States Environmental Protection Agency
UST	Underground Storage Tank

Engineering Certification

I certify that I am currently a New York State registered professional engineer and that this Site Management Plan for the Liberty Industrial Finishing Site (Site No. 1-52-108) was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Department of Environmental Remediation (DER) *Technical Guidance for Site Investigation and Remediation (DER-10)*.

Respectfully submitted,
AECOM Technical Services Northeast, Inc.



September 18, 2014
Date

Scott A. Underhill
Registered Professional Engineer
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1.0 Introduction and Description of Remedial Program

1.1 Introduction

This document is required as an element of the remedial program at the Liberty Industrial Finishing Site (hereinafter referred to as the "Site") under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The Site is listed as a Class 2 site and has been issued Site Registry number 1-52-108.

1.1.1 General

This Site Management Plan (SMP) was prepared to manage remaining contamination at the Site until the Environmental Easement (EE) is extinguished in accordance with 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 New York State.

This SMP was prepared by AECOM Technical Services Northeast, Inc. (AECOM), on behalf of NYSDEC, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Remediation (May 2010), and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) required by the EE for the Site.

1.1.2 Purpose

The Site contains soil contamination left in place after completion of the remedial action. Engineering Controls have been incorporated into the remedy to control exposure to the remaining contamination during the use of the Site to ensure protection of public health and the environment. An EE granted to NYSDEC, and recorded with the Suffolk 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 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 EE and the grantor's successors and assigns. This SMP may only be revised with the approval of NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action. These procedures include:

- Implementation and management of all ECs and ICs;
- Groundwater monitoring;
- Performance of periodic inspections of the site;

- Certification of results;
- Submittal of Periodic Review Reports; and
- Defining criteria for termination of monitoring and inspections.

To address these needs, this SMP includes several plans:

- An Engineering and Institutional Control Plan for implementation and management of EC/ICs;
- A Site Specific Health and Safety Plan (included as Appendix F);
- A Site Specific Excavation Work Plan (included as Appendix E);
- A Site specific Community Air Monitoring Plan (included as Appendix G); and,
- A Monitoring Plan for implementation of Site monitoring.

As there are no active treatment systems operating at the Site, an Operation and Maintenance (O&M) Plan is not required.

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

This SMP details the Site-specific implementation procedures required by the Record Of Decision (ROD, [Appendix A]) and EE. Failure to properly implement the SMP is a violation of the ROD and EE; and failure to comply with this SMP is also a violation of *New York State Environmental Conservation Law 6 NYCRR Part 375* (NYSDEC, December 2006) and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to the plan will be proposed in writing to the NYSDEC project manager. In accordance with the EE for the Site, the NYSDEC will provide a notice to any approved changes to the SMP and append these notices to the SMP in its files.

1.2 Site Background

1.2.1 Site Location and Description

The Liberty Industrial Finishing Site is located at 550 Suffolk Avenue, Brentwood (Town of Islip), Suffolk County, New York. A Site location map is included as Figure 1.

The Site is approximately 3.9 acres in total area of which 1.3 acres are historically undeveloped. The remainder of the site consists of previously developed areas with remnants of the former building (concrete floor slab), walkways, parking lots, and driveway areas. The Site is located in an area that is primarily residential and light commercial. Site features are shown on Figure 2. An aerial photograph of the Site (dated 2007) and surrounding area is included as Figure 3.

The Site is bound to the north by Suffolk Avenue, to the east by commercial properties, to the south by the Long Island Rail Road (LIRR), and to the west by a gasoline retailer and a shopping plaza. The parcels immediately north of Suffolk Avenue are undeveloped. Immediately south of the LIRR are the Town of Islip athletic fields and the water supply wells for the Brentwood Water District. The Brentwood municipal water supply wells are less than 500 feet south of the Site.

1.2.2 Site History

Liberty Industrial Finishing Products was a metal finishing facility engaged in finishing and plating of components used primarily in the aircraft industry. Metal finishing activities included passivation, phosphotization, electroplating, conversion coating, anodizing, painting, and non-destructive testing. Industrial operation of the facility spanned the period from 1978 through 1997. When active, the industrial operation at the Site included a 30,000-square foot factory building, six underground storage tanks (USTs) for plating process and wastewater, sanitary leaching pools, and stormwater drywells. The USTs were equipped with “emergency” overflow pipes that discharged to the on-site leaching pools.

A ROD for the Site was published by NYSDEC in March 1999. The ROD specified the site related contaminants of concern to include semivolatile organic compounds [phenol, benzo(k)anthracene, chrysene, and benzo(a)pyrene] in the sediment/sludge from the stormwater dry wells, and metals (cadmium, chromium, copper, nickel, and zinc) in all media. A list of contaminants of concern by media and their cleanup criteria are listed below.

Contaminants Of Concern and Cleanup Criteria By Media

Soil (mg/kg)		Sediment (mg/kg)		Groundwater (µg/L)	
Cadmium	10	Cadmium	10	Cadmium	10 * (5)
Chromium	50	Chromium	50	Chromium	50
Copper	25	Copper	25	Copper	200
Nickel	13	Nickel	13	Nickel	100
Zinc	47	Zinc	47	Zinc	300 * (2,000)
Cyanide	NC	Cyanide	NC	Cyanide	100
		Phenol	30		
		Benzo(a)anthracene	224		
		Chrysene	400		
		Benzo(a)pyrene	61		

Notes:

Contaminants of concern and cleanup criteria taken from the March 1991 ROD, Section 4.4.1

*indicates NYSDEC criteria has changed since 1991 ROD was issued

NC – No criterion

The ROD specified the following remedial goals for the Site:

- Eliminate sources of contamination that exceed cleanup criteria such as, surface soil, subsurface soil, and stormwater drywell or sanitary leaching pool sediments;
- Eliminate, to the extent practicable, ingestion of Groundwater affected by the Site that does not meet the NYSDEC Class GA Ambient Water Quality Criteria;
- Mitigate potential impacts to the environment from contaminated groundwater by natural attenuation; and,
- Eliminate the potential for direct human contact with contaminated soil onsite.

To achieve the goals of the ROD remedial measures were performed. These measures included:

- Clean-out of sediments in the stormwater and sanitary leaching galleries;
- Removal of on-site hazardous wastes;
- Delineation, excavation and disposal of on-site and off-site impacted soils;
- Cleaning and closure in place of USTs and associated piping;
- Placement of impermeable asphalt cap over USTs and associate piping;
- Demolition and removal of the building;
- Installation of perimeter security fence; and,
- Installation and periodic sampling of groundwater monitoring wells to assess groundwater quality.

1.2.3 Geologic Conditions

The Site is located in the Atlantic Coastal Plain Physiographic Province. The geology of Long Island is characterized by a southward-thickening wedge of unconsolidated Cretaceous and Cenozoic sediments unconformably overlying a gently dipping Pre-Cambrian bedrock surface. The site is underlain by the Upper Glacial Aquifer. The Upper Glacial Aquifer is an unconfined aquifer approximately 250 to 260 feet thick with 200 to 210 feet of saturated thickness consisting of mostly Pliocene and Pleistocene glacial deposits. The Upper Glacial Aquifer rests unconformably on the Cretaceous Magothy Formation. The water table beneath the site is approximately 43 feet below ground surface (ft bgs). Groundwater elevations at the Site are shown on Figure 4 and are based on the reported depth to water on August 21, 2012. Based on these contours, the groundwater flow direction in the Upper Glacial Aquifer is to the south-southeast. Groundwater elevations measured at the Site since June 2006 are presented in Table 1. Available boring logs and monitoring well completion records are included in Appendix B (note that not all logs were available at the time of this report).

The Upper Glacial Aquifer is underlain by the Magothy Aquifer. The Magothy Aquifer is the largest of Long Island's aquifers. The aquifer consists of sand deposits alternating with clay and attains a maximum thickness of approximately 1,100 feet. The Magothy Aquifer is the source of water for most of Nassau County and about half of Suffolk County. According to information in the Remedial Investigation Report, a semi-confining clay layer acts as an aquitard between the Upper Glacial

Aquifer and the Magothy Aquifer and controls the downward vertical migration of impacted groundwater from the Site.

The horizontal gradient was calculated between MW-5 and MW-12. This well pair was selected because the well depths are approximately the same and are screened across the water table. The horizontal gradient was calculated by dividing the difference in water table elevation by the distance between the wells.

Well ID	Well Depth (ft)	Screened interval (ft, bgs)	Depth to Water (ft)	Water Table (ft AMSL)	Distance Between Wells (ft)	Horizontal Hydraulic Gradient (ft/ft)
MW-5	50.00	43 – 58	43.37	49.95	612	0.0007
MW-12	49.30	34 – 49	40.07	49.52		

As shown on Figure 4, the gradient at the Site is very shallow with approximately 0.4 ft of elevation change between the Site (MW-2, MW-3, MW-4 and MW-5) and the southernmost shallow well, MW-12. The four shallow wells along the southern fence line have less than 0.03 ft of elevation difference indicating that the groundwater isopleth lines run parallel to the southern property boundary. The horizontal gradients ranged from 0.0003 between MW-3 and MW-10, to 0.0012 between MW-10 and MW-12. As shown on the hydrograph in Figure 4A, there are only three elevation data sets that include shallow wells MW-2, 3, 4 and 6. The most recent synoptic event from November 2013 did not follow the trend noted in earlier events.

Using these calculated gradients and an assumed hydraulic conductivity value of 9×10^{-2} cm/sec, typical for an unconsolidated sandy/gravelly aquifer in Suffolk County. Lateral groundwater flow in the Upper Glacial Aquifer is expected to average approximately 217 feet per year.

Well ID	Water Table (ft AMSL) (H)	ΔH (ft)	Depth of Well (ft)	Screened interval (ft bgs)	Vertical Distance Between Wells	Vertical Hydraulic Gradient (ft/ft)
MW-12	49.52	0.15	49.30	34 – 49	50.0	-0.0030
MW-14	49.37		100.00	89 – 99		
MW-21	49.35	0.06	110.50	100 – 110	37.0	-0.0015
MW-20	49.29		149.50	137 – 147		

The vertical gradient(s) in the Upper Glacial Aquifer was calculated using well pairs MW-12/MW-14 and MW-20/MW-21. The vertical gradient was calculated by dividing the difference in the water table elevation by the vertical distance between the base of the wells.

Based on these calculations, the vertical gradient is downward. At well pair MW-12 and MW-14 the gradient is calculated at -0.0030 ft/ft. At well pair MW-20 and MW-21 the gradient is calculated at -0.0015 ft/ft.

Well ID	Water Table (ft AMSL) (H)	ΔH (ft)	Depth of Well (ft)	Screened interval (ft bgs)	Vertical Distance Between Wells	Vertical Hydraulic Gradient (ft/ft)
MW-5	47.24	0.23	58.0	43 – 58	207.0	-0.0011
MW-6	47.01		265.0	255 – 265		
MW-18	50.79	0.76	148.6	138 – 148	117.0	-0.0065
MW -19	50.03		265.0	255 – 265		

The hydraulic conductivity and the thickness of the semi confining clay layer between the Upper Glacial Aquifer and the Magothy Aquifer is unknown. However, the hydraulic conductivity of this layer is at least 2 to 4 orders of magnitude lower than the Upper Glacial Aquifer (10^{-4} to 10^{-7} cm/sec). Under these circumstances, groundwater from the Upper Glacial Aquifer would move downward very slowly across this confining layer.

1.3 Summary of Remedial Investigation Findings

Shortly after operations began at the Site, concerns for public health and the environment resulting from operational and waste handling practices at the Site were investigated by the Suffolk County Department of Health Services (SCDHS). In 1982, surface and subsurface discharges of waste water were addressed in an Order of Consent between Liberty and the SCDHS. Corrective actions were implemented to eliminate the discharge of industrial waste water to the environment and the order was reportedly satisfied.

An inspection conducted by NYSDEC in 1984 identified deficiencies in Site hygiene and waste handling practices. Samples were collected of the liquids in the sanitary leeching pool, the storm water dry well, and a soil sample was collected near the northeast corner of the building. These samples reportedly contained elevated concentrations of 1,1,1-trichloroethane, cadmium, chromium, and lead. The sanitary system and the storm water dry well were subsequently pumped out and cleaned (July 1985).

A Phase II Site Investigation was performed in 1987. The results of the investigation reported concentrations of chromium in the onsite groundwater at concentrations exceeding the Class GA groundwater criterion (NYSDEC Technical and Operational Guidance Series). The Site was subsequently classified as a Class "2a" site on the Registry of Inactive Hazardous Waste Disposal Sites on December 12, 1987. Class "2a" was a temporary listing pending further investigation into the effects the site has on health and the environment. The Site was reclassified to Class 2 in January 1994.

A Phase II Supplemental Site Investigation was performed in 1991. Chromium was reported in the on-site groundwater at concentrations up to 5,800 µg/L. Additionally, sediment/soil in the leaching pool contained elevated concentrations of cyanide (11,500 µg/L). An emergency remedial measure removed a total of 45 inches of sediment/soil from the bottom of the leaching pool (1992). As a result of the Phase II supplemental site investigation, the Site was reclassified as a Class "2" site on the Registry of Inactive Hazardous Waste Disposal Sites in February of 1994.

A Consent Order (March 1996) required that the facility conduct a Focused Remedial Investigation (FRI) to determine the extent of contamination within the six USTs and the emergency leaching pool. FRI activities were never implemented by Liberty Industrial Finishing due to financial constraints.

In 1997, Liberty Industrial Finishing removed waste materials from the on-site building. Additional details on the types of waste disposed are provided in Section 1.4. Floors were swept and the material was drummed and disposed of as hazardous waste. Wood floors were removed from the factory building and stored onsite. Flooring was later disposed of by the United States Environmental Protection Agency (USEPA) as part of an Interim Remedial Action (IRA).

A Remedial Investigation (RI) was performed in 1997-1998 for NYSDEC by Dvirka and Bartilucci. Based on the RI, the NYSDEC conducted a supplemental Remedial Investigation/Feasibility Study (RI/FS) of the Site in 1997-1998. The results and conclusions of the supplemental RI/FS were documented in a report published in 1999. Elevated concentrations of regulated metals, specifically chromium, were reported in excess of the applicable cleanup criteria in surface and subsurface soils, drainage structures, and on-site and off-site groundwater.

1.4 Summary of Remedial Actions

In 1997, Liberty Industrial Finishing removed waste materials from the on-site building. Wastes removed and disposed of include:

- cyanide plating waste;
- phosphates;
- copper strips;
- copper strip sludge;
- metal hydroxide sludge;
- cyanide salts;
- solutions containing chromium and cadmium;
- chromic acid;
- paint waste containing methyl ethyl ketone; and
- vapor degreaser waste containing trichloroethene.

Floors were swept and the material was drummed and disposed of as hazardous waste. Wood floors were removed from the factory building and stored onsite. Flooring was later disposed of by the USEPA as part of an IRA.

1.4.1 Removal of Contaminated Materials from the Site

The USEPA conducted an emergency removal action including the removal of waste materials stored in the on-site factory building and the in-place closure of six USTs. This removal action occurred from August 1998 to January 1999. Each tank was cleaned and sandblasted, filled to one foot below top with clean soil, and the remaining space (including fill pipes) was plugged with concrete. The tanks were not removed due to the close proximity of the LIRR; however, UST in-place closure was determined to be equally protective of human health and the environment. A non-porous asphalt cap was constructed over the UST area to mitigate infiltration of precipitation into the contaminant source area (Figure 2).

All of the removal and in-place closure measures specified in the ROD were completed in September 2001. The results of these remedial actions were reported in the Final Remediation Report (Dvirka and Bartilucci, July 2002). The remedial actions performed at the site have effectively achieved the goals of the ROD with respect to mitigation of potential impacts to human health and the environment from on-site soils and sediment. These measures excavated and removed impacted soil and sediments to concentrations below applicable cleanup criteria or prevented the infiltration of precipitation through impacted media where excavation was deemed impractical.

In April 2004, NYSDEC issued a declaration that the remedial measures were achieved with respect to soils and sediment. The Site was proposed to be reclassified from Class 2 to Class 4 (Appendix C); however the reclassification was never approved because a Deed Restriction is not in place. Long-term monitoring of the groundwater would be conducted to demonstrate natural attenuation of the residual dissolved phase COCs.

1.4.2 Site Related Treatment Systems

There are no Site-related treatment systems currently in operation at the Site.

1.4.3 Remaining Contamination

Because the former USTs could not be removed due to their proximity to the Long Island Railroad tracks, contaminants remain at the site. These soils have been isolated with the construction of an asphalt cap over the former tanks that prevent the infiltration of water and potential leaching of contaminants into the groundwater. The locations of the abandoned in place USTs and the asphalt cap are shown on Figure 2. Historic data on the locations and concentrations of remaining subsurface soil contamination was not available.

In June 2013, NYSDEC personnel collected 25 soil samples from 14 locations around the Site. The locations are shown on Figure 6. At 11 locations, both surface (0 to 2 inches below ground surface) and subsurface (2 to 6 inches below ground surface) soil samples were collected. At two locations,

only surface soil samples were collected and at one location, only a subsurface soil sample was collected. Samples were analyzed for TAL Metals. The results were compared to the NYSDEC restricted use categories as shown on Table 3.

Three locations were sampled from the wooded area west of the Site (SS-01, SS-02 and SS-03). Metals concentrations indicate that surficial lead exceeded the unrestricted use criterion but were below the restricted residential criterion. Subsurface samples from these three locations were all below the unrestricted use criteria.

Two locations (SS-06 and SS-07) were sampled in the wooded area east of the Site. All metals results for surface and subsurface soil samples were below the unrestricted use criteria.

Two sample locations (SS-04 and SS-05) were along the northern property boundary near Suffolk Avenue. In the two surficial soil samples, concentrations of lead and zinc exceeded the unrestricted residential use criterion but were below the restricted residential criterion. Surficial cadmium concentrations at SS-04 exceeded the residential criterion but were below the restricted residential criterion. The two subsurface samples were below the unrestricted criteria.

Five locations were sampled off the western side of the former concrete building slab (SS-08 through SS-12). At SS-08, the surficial chromium concentration was above unrestricted use criteria but below the residential criteria. The subsurface sample had an arsenic concentration above the unrestricted use criteria but below the residential use criteria. All other concentrations were in the unrestricted use criteria. At SS-09, only a subsurface soil sample was collected and all metals were below the unrestricted use criteria. Samples from SS-10, SS-11 and SS-12 had cadmium concentrations that grouped these samples into the commercial or industrial use criteria. The surficial soil sample at SS-11 exceeded the industrial criterion. Concentrations of chromium at three locations placed the samples in the restricted residential criteria. Concentrations of copper, nickel and zinc were below the residential use criteria.

Three samples were collected off the eastern side of the former building concrete slab (SS-13, SS-14 and SS-15). Metals concentrations for the surface and subsurface sample at SS-13 were all below the unrestricted sue criteria. The surficial soil cadmium concentration at SS-14 placed it in the industrial category and chromium in the residential category. Sampling location SS-15 was proposed but field conditions prevented NYSDEC personnel from collecting a sample.

2.0 Engineering and Institutional Control Plan

2.1 Introduction

2.1.1 General

Since remaining contaminated soil and groundwater exists beneath the site, EC/ICs are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The Engineering and Institutional Control 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 operation and intended role of each implemented EC/IC;
- A description of the features that should be evaluated during each periodic inspection and compliance certification period;
- 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,
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC; and
- A description of the reporting requirements for these controls.

2.2 Engineering Controls

2.2.1 Engineering Control Systems

2.2.1.1 Asphalt Cap

Exposure to remaining soil contamination is prevented by an asphalt cap placed over the USTs that were abandoned in place (shown in Figure 2). This cap, in conjunction with the building slab, inhibits infiltration of rainwater into the shallow soils preventing leaching of contaminants into groundwater which can migrate off-site. Procedures for the inspection and maintenance of this cap are provided in the Monitoring Plan included in Section 4 of this SMP.

2.2.1.2 Security Fence

A five-foot high chain link security fence is in place around the perimeter of the Site to deter unauthorized persons from entering the Site. Signs are posted on the gate and on the fence at regular intervals identifying the Site as an inactive hazardous waste site. The main access to the Site is through a pad-locked gate on Suffolk Avenue.

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 had 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 Asphalt Cap

The asphalt cap is a permanent control and the quality and integrity of the cap will be inspected at defined, regular intervals as stipulated in this SMP. Repairs will be made as necessary to maintain the integrity of the cap. The location of the asphalt cap is shown on Figure 2.

2.2.2.2 Security Fence

The security fence is a permanent control and the quality and integrity of the fence will be inspected at defined, regular intervals as stipulated in this SMP. Repairs to the fence will be made as necessary to maintain the integrity of the fence. Signage will be inspected and replaced as needed. The location of the security fence is shown on Figure 2.

2.2.2.3 Natural Attenuation

As stated in the Record of Decision (NYSDEC, March 1999), groundwater monitoring activities to assess natural attenuation will continue, as determined by NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period of time. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

2.3 Institutional Controls

The ROD included a provision for implementation of institutional controls and recording of deed restrictions in the chain of title of the property to restrict future use of groundwater at the Site. The New York State Office of General Counsel is currently working on a deed restriction for the site; however, it may be issued as an environmental notice (EN) as there is no property owner of record for the Site.

Institutional Controls are required by the ROD to: (1) implement, maintain and monitor ECs; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; (3) limit the use and development of the Site to industrial use; and, (4) to limit use of on-site groundwater for potable or process water prior to treatment. Upon recording, adherence to the ICs will be required by an EN (Appendix D). These ICs are:

- Compliance with the Environmental Notice and this SMP by the Grantor and the Grantor's successors and assigns;

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

In addition, the EN will place the following restrictions on the property:

- Limits the use and development of the property to industrial use;
- Requires compliance with the approved SMP;
- Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH;
- Requires the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls: and
- 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 restricted (commercial) use. Any future intrusive work that will penetrate the asphalt 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 Excavation work plan (EWP) that is attached as Appendix E to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in the Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the Site. The HASP is attached as Appendix F to this SMP and is in compliance with DER-10 and 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 (Appendix G) will be updated and re-submitted with 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 Report Plan (Section 5).

The Site owner and associated parties preparing the remedial documents submitted to the State, and parties performing the 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 railroad tracks). The site owner will ensure that site

development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.3.2 Soil Vapor Intrusion (SVI) Evaluation

A determination was made by NYSDEC and NYSDOH on November 3, 2011 that no soil vapor intrusion issues are present is at the Liberty Site. No further evaluations are necessary.

2.4 Inspections and Notifications

2.4.1 Inspections

Periodic inspections of all remedial components installed at the site will be conducted at the frequency specified in Section 3.6 this SMP. 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; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3), using the Site-Wide Inspection Form included in Appendix H. The reporting requirements are outlined in the PRR 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 five 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 and/or entity responsible for Site maintenance to the NYSDEC as needed for the following reasons:

- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- 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 Engineering Controls and likewise any action to be taken to mitigate the damage or defect.

- 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.
- 30-day advance notice of any proposed ground intrusive activities that may disturb material below the water table, so that an appropriate excavation plan may be developed.
- 60-day advance notice of any proposed changes in Site use that are required under 6 NYCRR Part 375, and the Environmental Conservation Law.

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 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.

Notifications will be made to Payson Long, Remedial Bureau E, Section D, NYSDEC DER, 625 Broadway, Albany, NY 12233. In the event that NYSDEC develops a centralized notification system, that system will be used instead.

2.5 Contingency Plan

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions. A HASP is included at Appendix F.

No development is allowed within the limits of the Site without NYSDEC coordination. No intrusive activities will be allowed that will disturb the remedy. If development is proposed, NYSDEC personnel will require notice at least 60 days in advance of the proposed change in site use and a work plan will be required 30 days in advance for assessing and managing any potentially impacted material.

If previously unidentified contaminant sources are found during post-remedial subsurface excavations or development-related construction, excavation activities will be suspended until the appropriate equipment is mobilized to address the condition, and any new health and safety issues are addressed.

In such event, sampling will be performed on appropriate media as necessary to determine the nature of the material and proper disposal method. A sampling and analysis plan must be provided to NYSDEC for review and approval.

If any area of the Site is to be developed or excavated and dewatered, work will proceed in accordance with the EWP as detailed in Section 2.3.1. The NYSDEC must be informed at least 30 days in advance of any intrusive work.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by telephone to the NYSDEC Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spill hotline. These findings will be included in daily and periodic reports.

2.5.1 Emergency Telephone Numbers

Medical, Fire, and Police	911
DigSafely New York	800-962-7962 or 811
Poison Control Center	800-2221222
Pollution Toxic Chemical Oil Spills	800-424-8802
NYSDEC Spills Hotline	800-457-7362
Payson Long, NYSDEC Project Manager	518-402-9813
Suffolk County Department of Health Services	631-854-0000

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

Non-Emergency Telephone Numbers

Fire Department (Brentwood)	631-273-7080
Police (Suffolk County Police)	631-854-8300
Document Repository	
Joe Pokorny, Suffolk County Water Authority	631-563-0202

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

2.5.2 Map and Directions to Nearest Health Facility

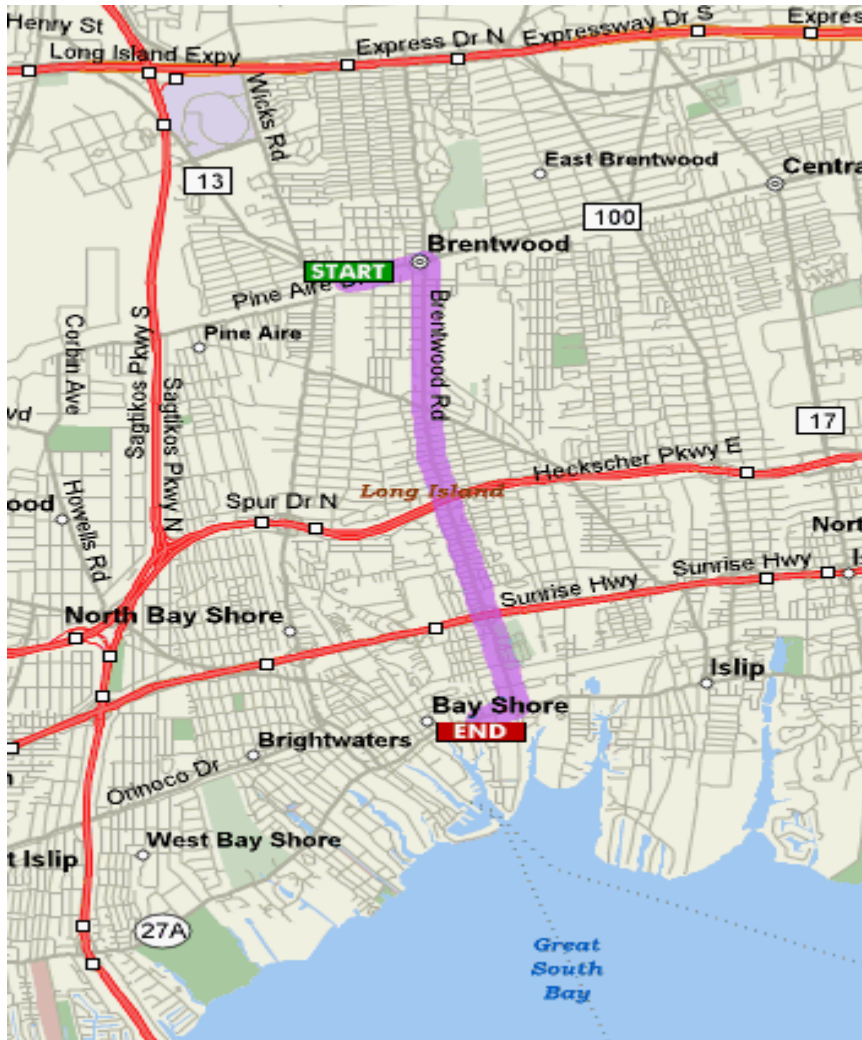
Site Location: 550 Suffolk Avenue, Brentwood, Suffolk County, NY

Nearest Hospital: Southside Hospital
301 East Main Street
Brentwood, NY 111706
(6531) 968-3000

Hospital Directions: Exiting the Site, turn right (east) on Suffolk Avenue (CR-100, towards Adams Ave). Turn right (south) on to Brentwood Road. Turn right (west) on to East Main Street (NY-27/ East Montauk Hwy). End at South Side Hospital.

Total estimated travel time: 12 minutes

Total estimated distance: 4.6 miles



2.5.3 Response Procedures

As appropriate, emergency response groups will be notified immediately by telephone of the emergency. A list of emergency numbers is provided in Section 2.5.2 of this SMP.

An evacuation plan is not necessary for the Site as there is no permanent structure at the Site and onsite activities are limited to periodic sampling and inspection events. Similarly, a spill plan is not necessary as there is no active treatment system and on-site activities are limited to groundwater sampling and inspections.

Amendments to the contingency plan should be made subsequent to any incident investigation and changes should be approved by NYSDEC personnel.

Medical emergencies are addressed in the site HASP. Appropriate first aid will be administered, and if necessary, the injured individual will be sent to the designated medical facility. An ambulance will be summoned, if needed. The cause of the accident will be determined and corrected prior to continuing operations. First aid kits are maintained in all AECOM-owned or leased vehicles at all times.

All individuals performing work on-site will attend an initial 40-hour health and safety training course and annual 8-hour refresher training for conducting work at hazardous waste sites. These courses satisfy the initial and follow-up training requirements of 29 CFR 1910.120 (OSHA regulation of hazardous waste site activities). Other required task-specific training will be provided as appropriate based on task hazard analysis and training needs assessments.

All individuals are required to read, sign and comply with the site HASP at all times when performing work on the Site.

3.0 Site Monitoring Plan

3.1 Introduction

3.1.1 General

Monitoring of the environment at and around the Site will provide a basis for evaluating the remedial systems effectiveness in protecting human health and the environment from further exposure or contamination. Monitoring will be performed on the media that is potentially affected by further releases of contaminants from the facility, as well as those media that may contribute additional contaminants to the environment. Table 1 includes the media to be sampled, schedule for sampling and the analysis that will be conducted.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (groundwater);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly NYS regulation 6 NYCRR Part 703 and Division of Water guidance (TOGS 1.1.1);
- Assessing achievement of remedial performance criteria;
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

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

- Sampling locations, protocols and frequency;
- Well logs;
- Analytical sampling requirements;
- Reporting requirements;
- Quality assurance/quality control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Periodic inspection and certification.

Groundwater will be monitored on a five-quarter basis. Trends in groundwater contaminant levels will be evaluated to determine if the remedy continues to be effective in achieving the remedial goals. Monitoring programs are summarized below and outlined in detail in Sections 3.2 and 3.3 below.

Monitoring /Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Asphalt cap inspection	Five-quarter basis		Visual inspection (with photo documentation)
Monitoring well inspection	Five-quarter basis		Visual inspection (with photo documentation)
Security fence	Five-quarter basis		Visual inspection (with photo documentation)
Groundwater	Five-quarter basis	Groundwater	TAL Metals

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

3.2 Asphalt Cap Monitoring

Monitoring of the asphalt cap will be performed on a five-quarter basis. Areas over the asphalt cap system should be inspected for cracks or breaks. Where cracks or breaks are noted, repairs shall be made to ensure no surface water drainage through the cap. Records shall be kept of all observed damage to the cover system, as well as all subsequent repairs to the cover system.

3.3 Media Monitoring Program**3.3.1 Groundwater Monitoring**

Groundwater monitoring will be performed on a five-quarter basis. Monitoring well locations are shown on Figure 2. Thirteen monitoring wells have been selected for long term monitoring. These wells include: MW-2, MW-3, MW-4, MW-5, MW-6, MW-10, MW-12, MW-14, MW-16, MW-18, MW-19, MW-20 and MW-21. These wells are screened at four different intervals as detailed on Table 2. Wells MW-2, MW-3, MW-4, MW-5, MW-10 and MW-12 are screened across the water table (approximately 50 ft bgs). Wells MW-14, MW-16 and MW-21 are screened approximately 100 ft bgs. Wells MW-18 and MW-20 are screened at approximately 150 ft bgs. Wells MW-6 and MW-19 are screened in the Magothy Aquifer, approximately 250 ft bgs.

Figure 4 shows groundwater elevations for the most recent sampling event conducted on August 21, 2012. Groundwater flow direction is towards the southeast and is similar to the conditions described during the remedial investigations conducted in the late 1990s.

Periodic sampling has been conducted at the Site since 2006. A summary of the metals detections is shown on Figure 5. Each well will be sampled for TAL metals. During recent sampling events (2011 and 2012), both field filtered and total metals samples were collected. Samples were filtered in the field using 0.45 micron filters.

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

3.3.1.1 Sampling Protocol

Prior to sampling, a synoptic round of water levels will be collected. At each well location, a NYSDEC Monitoring Well Field Inspection Log will be completed prior to sampling. Groundwater sampling will be performed in accordance with the Sampling and Analysis Plan (Earth Tech, 2007) included as Appendix I. NYSDEC modified the sampling protocol for the August 2012 sampling event and all subsequent sampling events. Prior to 2012, groundwater samples were collected using the volumetric method; beginning in 2012, groundwater samples will be collected using low flow sampling techniques.

The number and frequency of the samples that will be collected for laboratory analysis from monitoring wells are listed in Section 3.2.1. The required equipment and supplies are as follows:

- Field book
- Project plans
- Personal protective equipment (PPE) in accordance with the HASP
- Electronic oil/water interface probe
- Flow through cell (temperature, pH, conductivity, dissolved oxygen (DO), oxidation reduction potential (ORP), and turbidity)
- Decontamination supplies
- Peristaltic or submersible pump capable of achieving low-flow rates (i.e., 0.5 liters per minute or less)
- Plastic tubing
- Plastic sheeting
- Photoionization detector (PID)
- Clear tape, duct tape
- Coolers and ice
- Laboratory sample bottles
- Federal Express labels
- Digital camera (photo documentation)

Purging

- Prior to sampling, the static water level will be measured to the nearest 0.01 foot from the surveyed well elevation mark on the top of the PVC casing with a decontaminated interface probe. The measurement will be recorded in the field book.
- The probe will be decontaminated between uses.

- Groundwater from the well will be purged until field parameters stabilize over three consecutive readings. Drawdown will be measured and limited to less than 0.3 ft. The stabilization criteria are as follows: less than 50 nephelometric units (NTUs) for turbidity; +/- 3% for specific conductance; +/- 0.1 unit for pH; +/- 10% DO > 0.5 mg/L, +/- 0.1 mg/L < 0.5 mg/L; and +/- 10 mV for ORP. Purging will be conducted using the low-flow sampling technique specified by the USEPA Region 1 in its guidance document entitled "Low-Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells".
- The flow rate measurement will be approximately 0.5 liter per minute or less.
- Purge water will be managed and disposed of properly.

Sampling

- Samples will be collected directly from the pump discharge line.
- Prior to filling the sample bottles, the temperature, pH, conductivity, and oxidation reduction potential (ORP) and turbidity will be measured within a flow-through cell. All measurements will be recorded on the purging and sampling forms.
- If filtered metals samples are included in the sampling effort, the sample will be filtered in the field using dedicated, disposable 0.45 micron filters.
- A 500 milliliter (mL) plastic bottle preserved with nitric acid will be filled for the total metals analysis.
- The sample containers will be labeled, placed in a laboratory-supplied cooler, and packed on ice (to maintain a temperature of 4 degrees C). The cooler will be shipped overnight or delivered to the laboratory via courier for analysis.
- Chain of custody procedures will be followed.
- Well sampling data will be recorded on the Groundwater Sampling Record included in Appendix H.

All sampling and analyses will be performed in accordance with the requirements mentioned in this section:

- 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 ASP requirements.
- Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody will be filled out and copied for record.
- 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 USEPA SW-846 and subsequent updates that apply to the instruments used for the

analytical methods. Samples will be analyzed for TAL Metals (plus mercury) using EPA Methods 6010B/7470A. Data packages will be presented in NYSDEC ASP Category A deliverables. An EQUIS data deliverable will also be included.

3.3.1.2 Monitoring Well Repairs, Replacement and Decommissioning

The information collected on the Monitoring Well Field Inspection forms will be used to determine if the condition of each monitoring well is suitable for sampling. If a well has been damaged, a determination will be made as to whether to repair the well or replace it. Damaged wells that cannot be repaired will be decommissioned in accordance with the NYSDEC Groundwater Monitoring Well Decommissioning Policy (CP-43, dated November 2009 or most current update).

3.4 Site Wide Inspections

Site-wide inspections will be performed on a five-quarter basis concurrently with the groundwater sampling and after all severe weather conditions that may affect ECs or ICs. During these inspections, an inspection form will be completed (Appendix H). The inspection will include notes on whether any new hazards are observed and whether any Site conditions have worsened since the last inspection. The form will be included in the PRR. 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;
- Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirmation that site records are up-to-date.

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 the NYSDEC. Monitoring Quality Assurance/Quality Control

All sampling and analyses will be performed in accordance with the Quality Assurance Project Plan (Section 3.0 of the Sampling and Analysis Plan, Earth Tech, 2007) included as Appendix I of the SMP.

3.5 Monitoring Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections will be kept on file in the consultant's office. A summary report will be prepared after each sampling and inspection event. The report will document the conditions of the Site at the time of sampling and summarize the analytical results for the most recent event. Data will be compared to historic data to evaluate trends. Data will be presented in tables and figures. All inspection forms will be appended to the report. The report will be forwarded to NYSDEC for review and comment. A final electronic copy

of the report will be forwarded to NYSDEC. All laboratory data will be submitted in EQUIS data files to NYSDEC.

Information on the format of data submissions can be found at:

<http://www.dec.ny.gov/chemical/62440.html>

Information on document submissions can be found at:

<http://www.dec.ny.gov/regulations/2586.html>.

Schedule of Monitoring / Inspection Reports	
Task	Reporting Frequency*
Groundwater Sampling Report	Five quarter basis
Site Inspection	Five quarter basis, at the time of groundwater sampling
Asphalt Cap Inspection	Five quarter basis, at the time of groundwater sampling
Periodic Review Report	Every three years or as determined by the NYSDEC Project Manager based on the previous PRR

4.0 Operation and Maintenance Plan

The remedy for the Liberty Industrial Finishing Site does not rely on mechanical systems to protect public health and the environment. Therefore, operation and maintenance is not applicable to this SMP.

5.0 Inspections, Reporting and Certifications

5.1 Site Inspections

5.1.1 Inspection Frequency

All inspections will be conducted on a five quarter basis as specified in the schedules provided in Section 3. Additional inspections will occur whenever severe conditions, such as a hurricane, tropical storm or flooding event, have taken place.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms. Examples of these forms are provided in Appendix H. These forms will be included in each Groundwater Sampling Report prepared for each sampling event and in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

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

- EC/ICs are in place, performing properly, and remain effective;
- The Monitoring Plan is being properly implemented; and
- The Site remedy continues to be protective of human health and the environment.

Groundwater monitoring reports will be prepared and submitted subsequent to each groundwater monitoring event. This report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected and list of wells sampled;
- Copies of all field forms completed (e.g., sampling logs, Monitoring Well Field Inspection Logs (with photo documentation), chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- A groundwater contour map illustrating the most recent data;
- Contaminant isopleth maps illustrating contaminant locations and any plume migration;

- 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; and
- A determination as to whether the groundwater quality and/or conditions have changed since the last reporting event where groundwater monitoring well data was provided.

All documents and data are to be submitted in electronic format to the NYSDEC Division of Environmental Remediation. The Department will not approve a final report unless, and until, all documents and data generated in support of that report have been submitted in accordance with the electronic submission protocols.

5.2 Certification of Engineering and Institutional Controls

A professional engineer as defined in 6 NYCRR 375-1.2 (AK) licensed to practice in New York State will prepare the following certification:

For each institutional and engineering control identified at the Site, I certify all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional and engineering controls employed at the Site are unchanged from the date the control was put in place, or last approved by the NYSDEC;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- The engineering controls are performing as designed and are effective;
- The information presented in this report is accurate and complete.

5.3 Periodic Review Report

PRRs will be submitted to the NYSDEC in accordance with the schedule outlined above. The first PRR was submitted in May 2011 and the second PRR was submitted in April 2014. The next PRR is scheduled to be submitted in March 2017. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site as described in the RODs.

The report will be prepared in accordance with NYSDEC DER-10 and submitted 30 days after the end of the certifying period. Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site;
- Results of the required annual site inspections and severe condition inspections, if applicable;

- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format; and
- A site evaluation, which includes the following:
 - The compliance of the remedy with the requirements of the Site-specific ROD;
 - 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;
 - The overall performance and effectiveness of the remedy; and
 - The required certification form, as supplied by the Department, and signed by the owner and engineer/QEP that certifies the items listed in Section 5.2.

The PRR will be submitted, in electronic format, to the NYSDEC Central Office.

5.4 Corrective Measures Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be prepared and submitted to NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless and emergency condition exists, no work will be performed without approval by NYSDEC.

6.0 References

AECOM Technical Services Northeast, Inc., 2011a. Final Groundwater Sampling Report (March 2010 Sampling Event). Prepared for NYSDEC Superfund Standby Program, January 2011.

AECOM Technical Services Northeast, Inc., 2011b. Final Groundwater Sampling Report (May 2011 Sampling Event). Prepared for NYSDEC Superfund Standby Program, October 2011.

AECOM Technical Services Northeast, Inc., 2013. Final Groundwater Sampling Report (August 2012 Sampling Event). Prepared for NYSDEC Superfund Standby Program, March 2013.

AECOM Technical Services Northeast, Inc., 2014a. Final Periodic Review Report, Review Period: October 30, 2009 through January 30, 2014. Prepared for NYSDEC Superfund Standby Program, April 2014.

AECOM Technical Services Northeast, Inc., 2014b. Final Groundwater Sampling Report (November 2013 Sampling Event). Prepared for NYSDEC Superfund Standby Program, April 2014.

Dvirka and Bartilucci, 1999. Remedial Design and Construction Inspection Work Plan, September 28, 1999.

Dvirka and Bartilucci, 2002. Final Remediation Report. July 2002.

Earth Tech Northeast, Inc., 2005. Multi Site Group G Work Plan for Operation, Maintenance, and Monitoring. Prepared for NYSDEC Superfund Standby Program, October 2005.

Earth Tech Northeast, Inc., 2006. Final Semiannual Sampling Report (June 2006 Sampling Event). Prepared for NYSDEC Superfund Standby Program, October 2006.

Earth Tech Northeast, Inc. Final Sampling and Analysis Plan. Prepared for NYSDEC Superfund Standby Program, June 2007.

Earth Tech Northeast, Inc., 2008. Final Groundwater Sampling Report (August 2007 Sampling Event). Prepared for NYSDEC Superfund Standby Program, June 2008.

Earth Tech Northeast, Inc., 2009. Final Groundwater Sampling Report (November 2008 Sampling Event). Prepared for NYSDEC Superfund Standby Program, August 2009.

NYSDEC, 1999. Record of Decision, Liberty Industrial Finishing Site, Town of Islip, Suffolk County, Site Number 1-52-108. March 1999.

NYSDEC, 2004. Memorandum to initiate the reclassification of the Liberty Industrial Finishing Site (Site No. 1-52-108) from Class 2 to Class 4 (never completed). August 30, 2004.

Tables

TABLE 1
LIBERTY INDUSTRIAL FINISHING SITE (1-25-108)
WELL CONSTRUCTION DATA

Well Number	Northing	Easting	Ground Elevation	Top of Riser Elevation	Top of Casing Elevation	Total Depth of Well
MW-1	202,384.57	2,206,633.80	92.92	91.57	92.92	42.5
MW-2	202,371.27	2,206,596.31	92.87	91.27	92.87	54.2
MW-3	202,360.99	2,206,568.43	93.08	91.25	93.08	53.9
MW-4	202,344.02	2,206,522.24	93.09	91.61	93.09	53.4
MW-5	202,308.86	2,206,350.98	92.19	93.32	93.60	50.0
MW-6	202,306.77	2,206,341.15	92.09	92.71	92.79	265.0
MW-10	202,243.14	2,206,590.12	91.84	90.40	91.84	50.0
MW-12	201,973.43	2,206,863.98	91.08	89.59	89.79	49.3
MW-14	201,966.33	2,206,866.03	91.12	89.55	89.77	100.0
MW-16	202,243.14	2,206,611.76	91.97	90.48	91.97	99.2
MW-18	202,101.70	2,206,373.86	93.14	91.55	92.03	150.0
MW-19	202,102.30	2,206,386.65	93.32	91.98	92.19	248.0
MW-20	201,798.92	2,206,946.09	90.27	88.59	89.08	149.5
MW-21	201,798.35	2,206,950.31	90.33	88.66	89.15	110.5

All elevations and depths in feet

Field survey performed by YEC, Inc., on March 23, 2007

(monitoring wells MW-1, 2, 3, 10 and 16 were not surveyed in 2007 as these wells were not included in the sampling at that time, these coordinates are estimated)

Horizontal datum: NAD 1927 State Plan

Vertical datum: NAVD 88, for NGVD 29, add 1.13 feet

Boring logs and monitoring well completion forms are in Appendix B.

TABLE 2
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
GROUNDWATER ELEVATIONS

Well # (screen interval)	Reference Elevation (ft, NGVD)	Total Depth of Well (ft)	Date	Depth To Water (ft)	Water Table Elevation (ft, NGVD)	Comments
MW-1 (shallow)	91.57		5/24/11 8/21/12 11/5/13	dry dry dry	NA NA NA	No water was observed in the well No water was observed in the well No water was observed in the well
MW-2 (shallow)	91.27	54.2	5/24/11 8/21/12 11/5/13	42.91 44.05 43.21	48.36 47.22 48.06	
MW-3 (shallow)	91.25	53.9	5/24/11 8/21/12 11/5/13	42.90 44.00 45.21	48.35 47.25 46.04	
MW-4 (shallow)	91.61	53.4	5/24/11 8/21/12 11/5/13	43.25 44.36 46.60	48.36 47.25 45.01	
MW-5 (shallow)	93.23	50.0	6/12/06 8/21/07 11/13/08 3/10/10 5/23/11 8/21/12 11/5/13	42.24 43.11 45.40 43.37 44.92 45.99 47.19	50.99 50.12 47.83 49.86 48.31 47.24 46.04	
MW-6 (Magothy)	92.71	265.0	6/12/06 8/21/07 11/13/08 3/10/10 5/23/11 8/21/12 11/5/13	42.19 43.15 45.23 43.12 44.76 45.70 45.95	50.52 49.56 47.48 49.59 47.95 47.01 46.76	
MW-10 (shallow)	90.40	50.0	5/24/11 8/21/12 11/5/13	42.12 43.18 43.10	48.28 47.22 47.30	
MW-12 (shallow)	89.59	49.3	6/14/06 8/24/07 11/13/08 12/23/08 3/10/10 5/24/11 8/21/12 11/5/13	39.09 39.95 42.25 41.81 40.07 41.69 42.75 43.00	50.50 49.64 47.34 47.78 49.52 47.90 46.84 46.59	

TABLE 2
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
GROUNDWATER ELEVATIONS

Well # (screen interval)	Reference Elevation (ft, NGVD)	Total Depth of Well (ft)	Date	Depth To Water (ft)	Water Table Elevation (ft, NGVD)	Comments
MW-14 (deep)	89.55	100.0	6/14/06	39.13	50.42	
			8/24/07	40.00	49.55	
			11/13/08	42.35	47.20	
			12/23/08	41.98	47.57	
			3/10/10	40.18	49.37	
			5/24/11	41.82	47.73	
			8/21/12	42.86	46.69	
			11/5/13	43.02	46.53	
MW-16 (deep)	90.48	99.2	5/24/11	42.03	48.45	
			8/21/12	43.41	47.07	
			11/5/13	44.63	45.85	
MW-18 (very deep)	91.55	150.0	6/22/06	40.76	50.79	
			8/21/07	41.25	50.30	
			11/13/08	43.80	47.75	
			3/10/10	41.82	49.73	
			5/24/11	43.41	48.14	
			8/21/12	44.47	47.08	
			11/5/13	45.69	45.86	
MW-19 (Magothy)	91.98	265.0	6/22/06	41.95	50.03	
			8/21/07	41.60	50.38	
			11/13/08	43.90	48.08	
			3/10/10	42.78	49.20	
			5/24/11	44.39	47.59	
			8/21/12	45.51	46.47	
			11/5/13	44.52	47.46	
MW-20 (very deep)	88.59	149.5	6/14/06	38.29	50.30	
			8/21/07	39.18	49.41	
			11/13/08	41.20	47.39	
			3/10/10	39.30	49.29	
			5/24/11	40.95	47.64	
			8/21/12	41.99	46.60	
			11/5/13	43.24	45.35	

TABLE 2
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
GROUNDWATER ELEVATIONS

Well # (screen interval)	Reference Elevation (ft, NGVD)	Total Depth of Well (ft)	Date	Depth To Water (ft)	Water Table Elevation (ft, NGVD)	Comments
MW-21 (deep)	88.66	110.5	6/14/06	38.30	50.36	
			8/21/07	39.20	49.46	
			11/13/08	41.47	47.19	
			3/10/10	39.31	49.35	
			5/24/11	40.94	47.72	
			8/21/12	41.97	46.69	
			11/5/13	43.20	45.46	

All measurements were taken from the top of PVC casing

Well Screen Interval

Shallow - 50 ft bgs

Deep - 100 ft bgs

Very deep - 150 ft bgs

Magothy - 250 ft bgs

TABLE 3
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS - JUNE 2013

	ROD March 1991	Unrestricted	Restricted Use Category			
			Residential	Restricted Residential	Commercial	Industrial
Arsenic	-	13	16	16	16	16
Cadmium	10	2.5	2.5	4.3	9.3	60
Chromium-6	50	1	22	110	400	800
Chromium-3	-	30	36	180	1500	6800
Copper	25	50	270	270	270	10000
Lead	-	63	400	400	1000	3900
Nickel	13	30	140	310	310	10000
Zinc	47	109	2200	10000	10000	10000
Cyanide	NC	27	27	27	27	10000
Mercury	-	0.18	0.81	0.81	2.8	5.7

Off-Site Locations

	SS-01	HA-01	SS-02	HA-02	SS-03	HA-03	SS-06	HA-06	SS-07	HA-07
Arsenic	3.6	1.3	4.1	3.9	5.9	4.6	5.5	4.1	3.6	4.2
Cadmium	0.36	-	0.19	0.052	0.64	0.098	0.37	0.075	0.53	0.16
Chromium	12.6	3.9	11	12	20.7	19.7	10.7	12.6	8.3	12.9
Copper	18.4	1.3	8.7	2.6	20	8.6	22.1	13.9	14.3	6
Lead	102	2.9	66.2	7.4	81.5	12.6	35.9	9.1	35.5	19.5
Nickel	6.6	1.9	4.9	6.1	8.1	10.9	5.5	5.3	5.5	6.4
Zinc	60.9	6.2	20	18.2	43.1	31.1	47.2	18.4	48.6	24.5
Mercury	0.16	0.0092	0.11	0.013	0.098	0.034	0.057	0.018	0.039	0.026

Suffolk Avenue

	SS-04	HA-04	SS-05	HA-05
Arsenic	8.8	3.3	5.3	2.9
Cadmium	2.9	0.1	1.5	0.23
Chromium	26.1	11.9	23.8	9.5
Copper	45.1	4	24.4	7.6
Lead	290	14.7	126	36.1
Nickel	18.9	5.2	7.8	3.9
Zinc	228	18.2	143	31.5
Mercury	0.15	0.015	0.11	0.027

SS - Surface soil
HA - Hand auger (0 - 0.5 ft bgs)

TABLE 3
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS - JUNE 2013

	ROD March 1991	Unrestricted	Restricted Use Category			
			Residential	Restricted Residential	Commercial	Industrial
Arsenic	-	13	16	16	16	16
Cadmium	10	2.5	2.5	4.3	9.3	60
Chromium-6	50	1	22	110	400	800
Chromium-3	-	30	36	180	1500	6800
Copper	25	50	270	270	270	10000
Lead	-	63	400	400	1000	3900
Nickel	13	30	140	310	310	10000
Zinc	47	109	2200	10000	10000	10000
Cyanide	NC	27	27	27	27	10000
Mercury	-	0.18	0.81	0.81	2.8	5.7

Western Side of the Former Building Slab

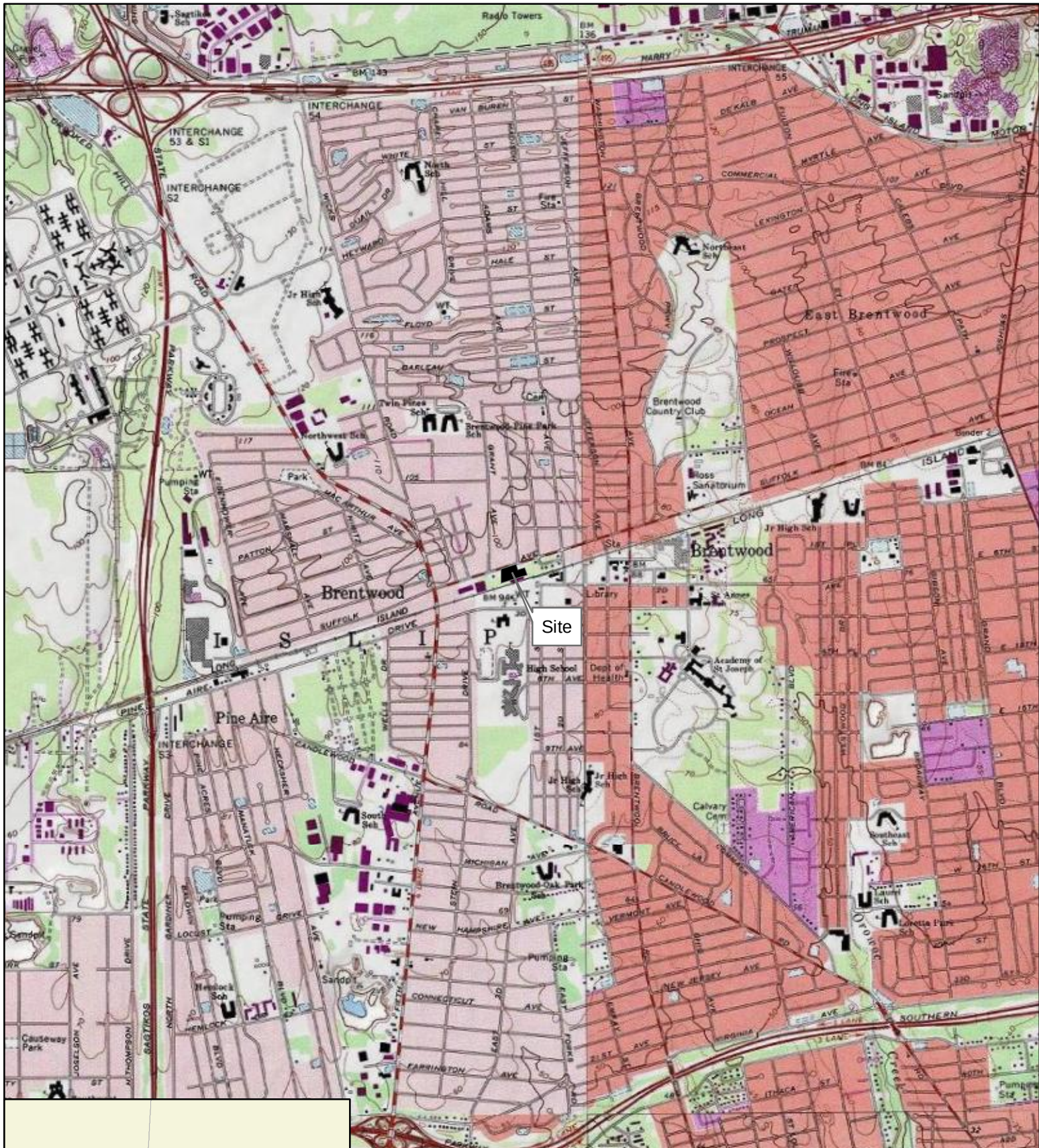
	SS-08	HA-08	SS-09	HA-09	SS-10	HA-10	SS-11	HA-11	SS-12	HA-12
Arsenic	5.1	14.2		1.3	2.9		3.4	2.8	-	3.5
Cadmium	2.5	0.4		0.5	32.8		125	1.7	28.4	5
Chromium	31.8	19.2		5.7	67.9		83.9	11	164	45.5
Copper	26.7	15.6		3.7	30.2		65.6	5.5	32.7	9.2
Lead	62.2	15.4		7.8	52.8		47.7	10.5	38	18.9
Nickel	10.8	16.3		2.3	24		31.9	5.9	23.9	9.1
Zinc	81.6	36.8		18	157		619	25.6	232	118
Mercury	0.062	0.11		0.017	0.065		0.037	0.018	0.025	0.026

Eastern Side of the Former Building Slab

	SS-13	HA-13	SS-14	HA-14	SS-15	HA-15
Arsenic	1.9	1.3	3			
Cadmium	1.3	0.063	20.2			
Chromium	7.9	5.9	31.1			
Copper	3.9	2	37.1			
Lead	9.3	2.8	27			
Nickel	3.2	2.5	15.7			
Zinc	24.1	7.8	95.1			
Mercury	0.012	-	0.033			

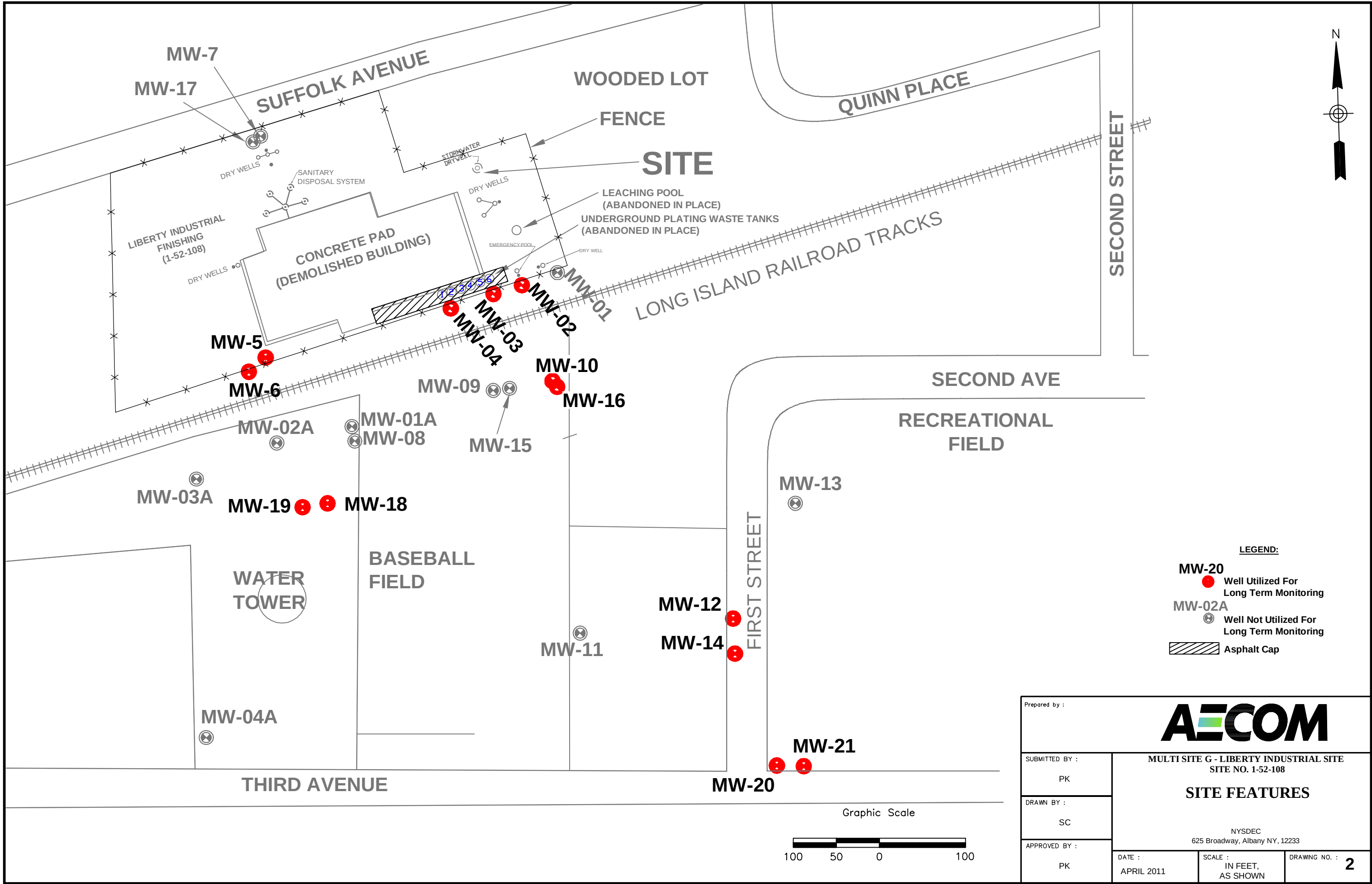
SS - Surface soil
HA - Hand auger (0 - 0.5 ft bgs)

Figures



Prepared by: AECOM	Prepared for: 	
Multi Site G Operation, Maintenance & Monitoring		
Site Location Liberty Industrial Finishing Site		
Date: January 2013	Scale: 1 inch = 2,500 feet	Figure No. : 1

Piscataway on uspsw2vfp001\Data_uspsw2vfp001\Environment(J)
File: C:\Users\yanowitzj\Documents\liberty prr Figures_2012-12-27.dwg Layout: Site Features Fig 2 User: yanowitzj Plotted: Jun 11, 2013 - 9:02am



Prepared by :		AECOM		
SUBMITTED BY :		MULTI SITE G - LIBERTY INDUSTRIAL SITE SITE NO. 1-52-108		
DRAWN BY :		SITE FEATURES		
APPROVED BY :		NYSDEC 625 Broadway, Albany NY, 12233		
PK		DATE :	SCALE :	DRAWING NO. :
SC		APRIL 2011	IN FEET, AS SHOWN	2
PK				



Legend:

 Wells Sampled for Long Term Monitoring

 Site-Boundary



Reference:
2010 Half Foot 4 Band Long Island Zone
New York Statewide Digital Orthoimagery Program

Prepared by:

AECOM

Prepared for:



Multi Site G
Operation, Maintenance & Monitoring

Liberty Industrial Finishing Site

Date:
June 2013

Scale:
1 inch = 167 feet

Figure No. :
3

Piscataway on uspsw2\fp001\Data_uspsw2\fp001\Environment\J
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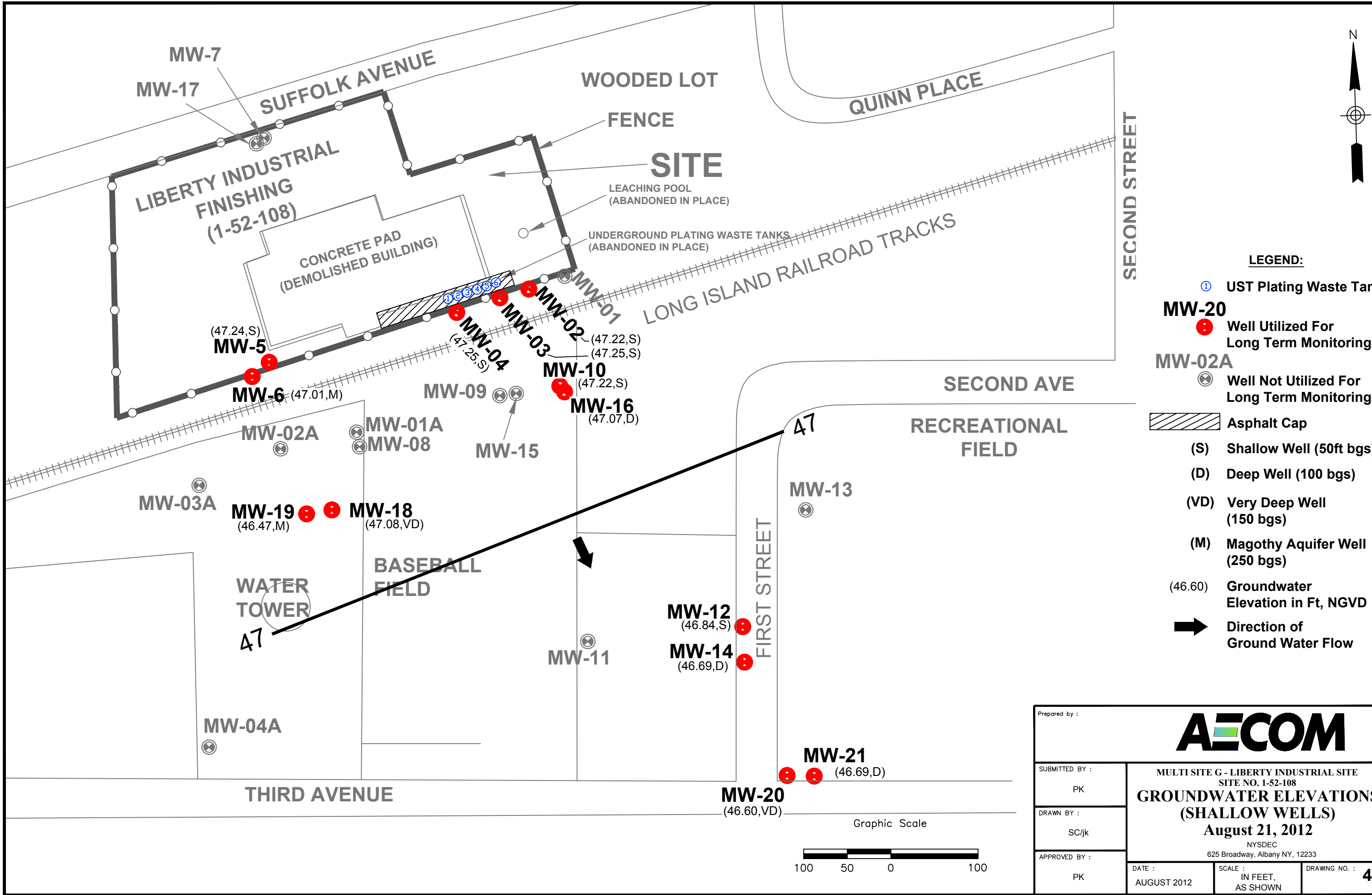
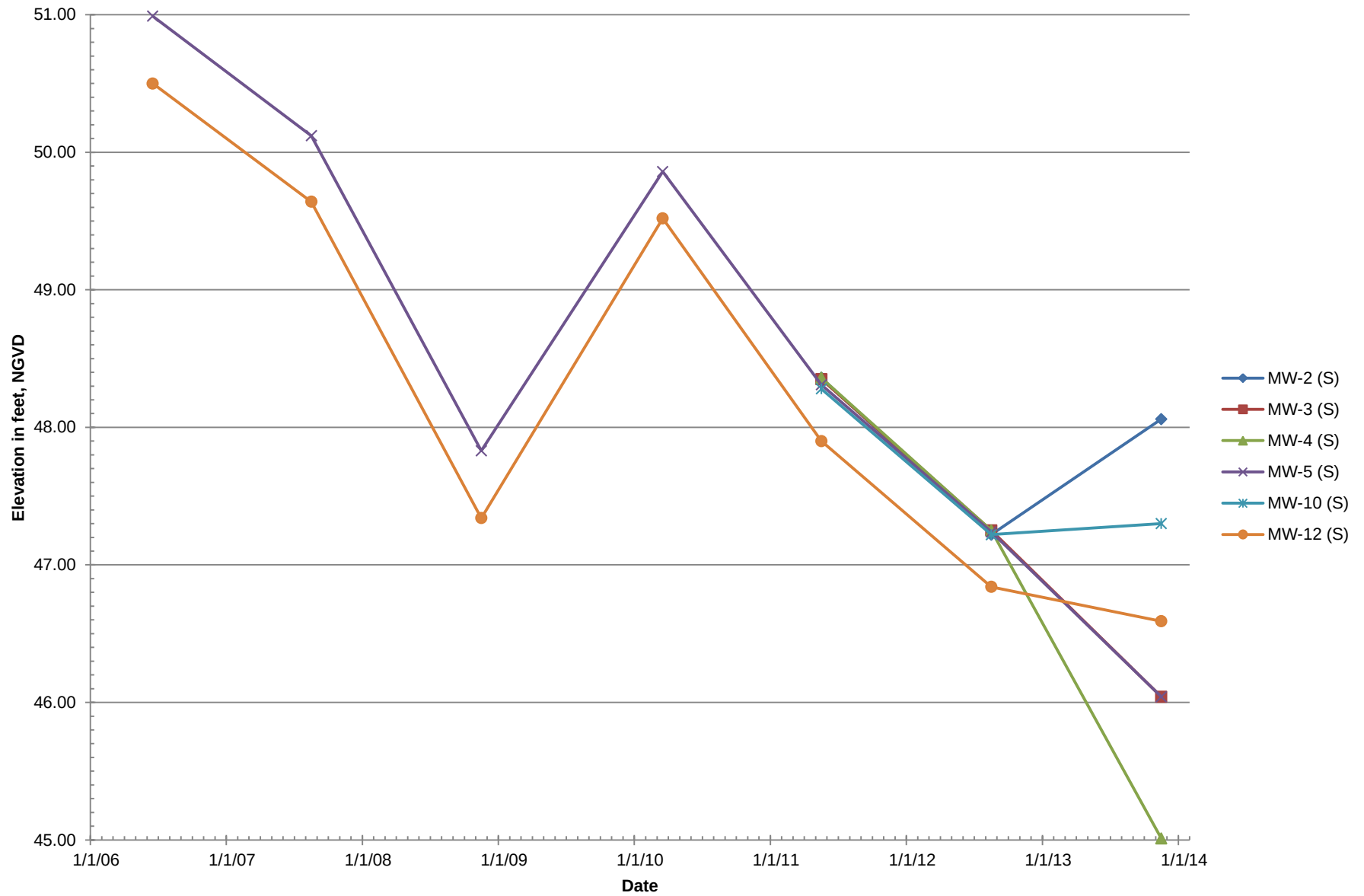
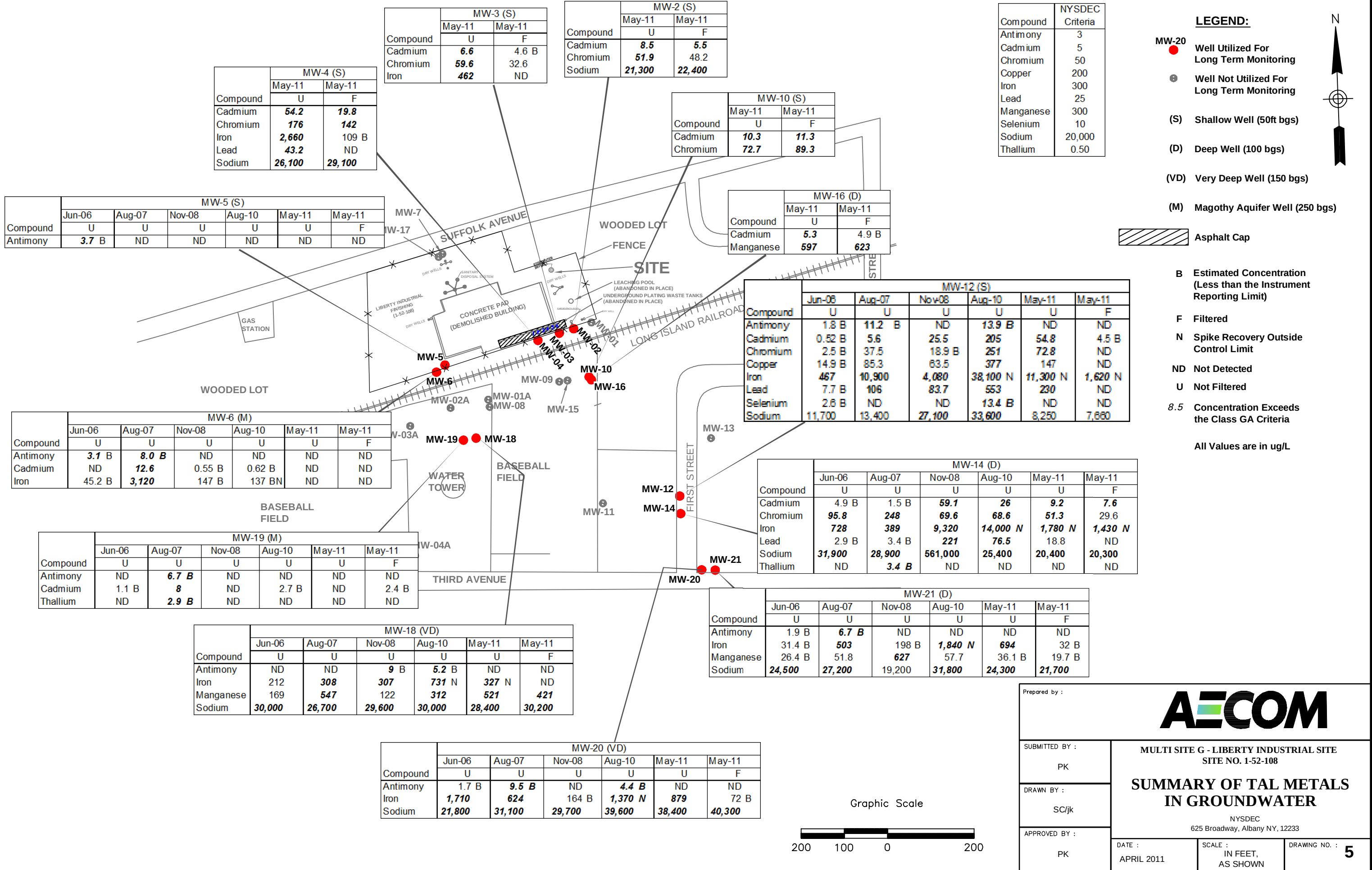
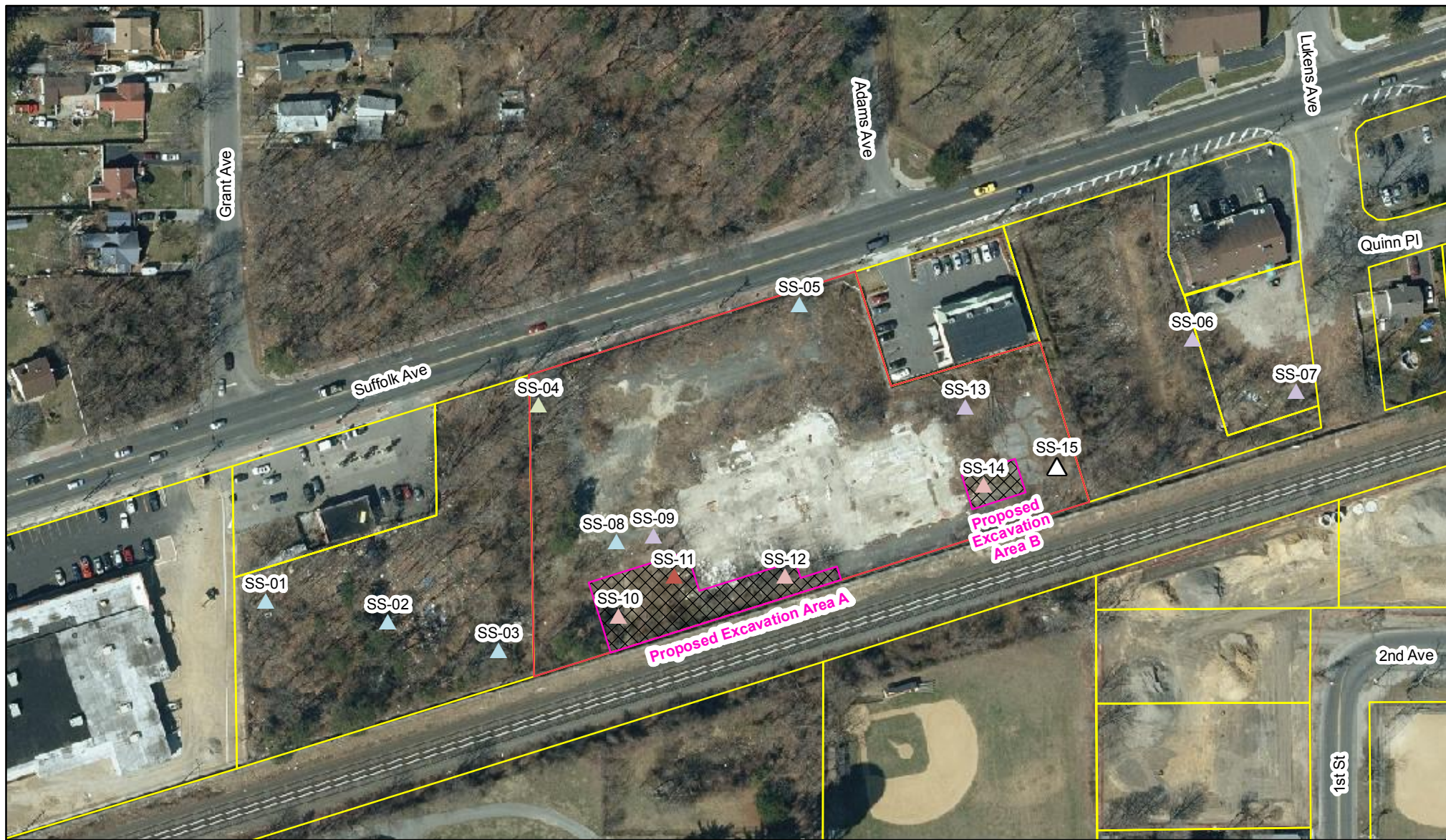


Figure 4A
Liberty Industrial Finishing Site (1-52-108)
Groundwater Hydrograph - Shallow Wells







Legend:

- X Proposed Excavation Areas
- Site-Boundary
- TaxParcels

Metals Concentrations

- ▲ Unrestricted
- ▲ >Unrestricted SCO
- ▲ >Residential SCO
- ▲ >Commercial SCO
- ▲ >Industrial SCO
- △ Not Analyzed

0 25 50 100 150 200
 Feet

Reference:
 2013 Half Foot 4 Band Long Island Zone
 New York Statewide Digital Orthoimagery Program

Prepared by:

AECOM

Prepared for:



Multi Site G
 Operation, Maintenance & Monitoring
 Liberty Industrial Finishing Site

Soil Sample Location Map - June 2013

Date:
 February 2014

Scale:
 1 inch = 125 feet

Figure No. :
 6

Appendix A

Record Of Decision



Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision
Liberty Industrial Finishing Site
Town of Islip, Suffolk County
Site Number 1-52-108

March 1999

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Liberty Industrial Finishing Inactive Hazardous Waste Disposal Site Town of Islip, Suffolk County, New York Site No. 1-52-108

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Liberty Industrial Finishing inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Liberty Industrial Finishing Inactive Hazardous Waste Disposal Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Liberty Industrial Finishing site and the criteria identified for evaluation of alternatives the NYSDEC has selected source removal and mitigation and assessment of on-site and off-site groundwater quality as the remedy for this site. The components of the remedy are as follows:

- Removal of the upper two (2) feet of contaminated soil from the area of the underground plating waste storage tanks and pipe gallery;
- Removal of soil to a minimum of eight (8) feet below ground surface (bgs) at the west end of the underground storage tank (UST) pipe gallery;
- Installation of a nonporous asphalt cap over the UST and pipe gallery area to prevent surface water from infiltrating the contaminated area and leaching metals from the subsurface soil into the groundwater;

- Excavation and off-site disposal of contaminated sediments/sludge from four storm water dry wells and one leaching pool;
- Installation of deep groundwater monitoring wells and performance of long-term groundwater monitoring of shallow and deep wells to insure the effectiveness of the remedial measures and to protect the public drinking water supply;
- Remediation of the groundwater contamination plume by natural attenuation;
- Implementation of institutional controls and recording of deed restrictions in the chain of title of the property to restrict future use of groundwater at the site.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 31, 1998
Date

Michael J. O'Toole, Jr.
Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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<u>Appendix</u>	Appendix A:	Responsiveness Summary
	Appendix B:	Administrative Record

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) has selected a remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at the Liberty Industrial Finishing Site, which has been designated a Class 2 site by the NYSDEC. A Class 2 site is a site that has been determined to be a significant threat to human health and/or the environment. Liberty Industrial Finishing operated a metal finishing facility at the site from 1978-1997. The Suffolk County Department of Health Services has documented disposal of hazardous wastes, including chromium and cadmium on several occasions from Liberty's operations at the site. Discharges to the environment included: leaks from a tank farm containing six underground storage tanks, discharges to surface soils, and discharges to drainage structures such as stormwater dry wells and leaching pools. Some of the wastes have migrated from the site to surrounding areas, including the shallow groundwater southeast of the site. These disposal activities have resulted in the following significant threats to the public health and/or the environment:

- a significant environmental threat associated with the impacts of contaminants to surface soil, subsurface soil, and groundwater.
- a significant threat to human health associated with potential exposure to site-related contaminants in contaminated surface soil and on-site contaminated shallow groundwater.

As more fully described in Sections 3 and 4 of this document, the Remedial Investigation (RI) performed by the NYSDEC revealed areas of surface and subsurface soils that were significantly contaminated with metals. These contaminated soils are situated above the water table. The sediments in four stormwater dry wells and one leaching pool were found to be significantly contaminated with metals and semivolatile organic compounds. Shallow groundwater on-site and downgradient of the site (southeast) was found to be contaminated with metals, primarily chromium.

Two Interim Remedial Measures (IRMs) were conducted during the RI. First, the EPA conducted an emergency removal action at the site to remove waste materials inside the factory building and close the six on-site underground storage tanks (USTs) in place. The following tasks were performed on the interior of the building: pressure washing of vats; vacuuming and pressure washing of floors; and removal of contaminated debris from the vat areas and floors. All waste materials were drummed and disposed of off-site at a permitted disposal facility.

As part of the IRM, the EPA closed the six underground plating waste storage tanks in place using the following procedure: cleaning and sandblasting each tank, filling each tank with clean soil to one (1) foot below the top of the tank, and filling the remainder of the tank and the fill pipe with concrete. The tanks were not removed because the adjacent Long Island Railroad commuter train line would have to have been shut down during excavation. No other remedial actions were performed by EPA as part of this IRM.

Surface soil testing revealed metals contamination at the Town of Islip Ballfield and at the Brentwood Water District property. The metals contamination is not associated with the site. The Town of Islip

excavated one area at the Ballfield and two areas at the Water District Property and backfilled the excavations with clean soil.

In order to restore the Liberty Industrial Finishing inactive hazardous waste disposal site to predisposal conditions to the extent feasible and authorized by law, but at a minimum to eliminate or mitigate the significant threats to the public health and/or the environment that the hazardous waste disposed at the site has caused, the following remedy was selected:

- Removal of the upper two (2) feet of contaminated soil from the area of the underground plating waste storage tanks and pipe gallery;
- Removal of soil to a minimum of eight (8) feet bgs at the west end of the UST pipe gallery;
- Installation of a nonporous asphalt cap over the UST and pipe gallery area to prevent surface water from infiltrating the contaminated area and leaching metals from the subsurface soil into the groundwater;
- Excavation and off-site disposal of contaminated sediments/sludge from four storm water dry wells and one leaching pool;
- Installation of deep groundwater monitoring wells and performance of long-term groundwater monitoring of shallow and deep wells to insure the effectiveness of the remedial measures and to protect the public drinking water supply;
- Remediation of the groundwater contamination plume by natural attenuation;
- Implementation of institutional controls and recording of deed restrictions in the chain of title of the property to restrict future use of groundwater at the site.

The selected remedy, discussed in detail in Section 7 of this document, is intended to attain the remediation goals selected for this site in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

The Liberty Industrial Finishing Site (Site #1-52-108) is situated on 3.9 acres, 1.3 acres of which are undeveloped, in a suburban area at 550 Suffolk Avenue in the Hamlet of Brentwood, Town of Islip, Suffolk County. The site includes one 30,000 square foot single story industrial building. The building was used as a metal finishing facility engaging in finishing, plating, and non-destructive testing of parts and components used primarily in the aircraft industry. The site is bordered by Suffolk Avenue on the north and the Long Island Railroad on the south. Directly south of the railroad is the Town of Islip Athletic Field and the Brentwood Water District well field. The Site Location Map and Study Area Map are included as Figure 1 and Figure 2, respectively.

Six underground storage tanks (USTs) ranging from 3,000-7,000 gallons in capacity are situated on-site and are located outside of the building adjacent to the south wall. These tanks formerly contained waste liquids from the industrial plating operations. The tanks are connected to the building via an underground pipe gallery, located west of the tanks. These vertically-oriented cylindrical tanks are situated two (2) to three (3) feet below ground surface (bgs) and range from four (4) to twelve (12) feet in length.

To date, the site has not been connected to the public sewer system. Liberty Industrial used three types of drainage structures: sanitary leaching pools, stormwater dry wells, and an emergency leaching pool. The sanitary leaching pools were connected to the industrial building and were used for discharge of in-plant sanitary waste. The storm water dry wells collected on-site surface runoff. The emergency leaching pool was connected to the pipe gallery that supplies the USTs. When the USTs were overfilled, the remaining plating waste would discharge into the emergency leaching pool.

Public water is supplied to area residents and businesses. As part of the Remedial Investigation, a well survey was conducted to determine if private wells exist that may be potentially affected by site contamination. Results of the survey indicate that no private wells have been impacted by the site.

The Brentwood public water district well field is located less than 100 feet south of the subject site. The wells are situated at 450-900 feet below ground surface (bgs) in the Magothy aquifer. Groundwater at the site flows southeast and therefore flows to the east and away from the Brentwood Water District property. To date, these wells have not been affected by contamination at the Liberty Industrial Finishing site.

Several clay layers ranging from one (1) foot to 60 feet in thickness, exist above 450 feet bgs at the Brentwood well field. Although the clay layers are discontinuous, they would likely protect the Brentwood well field by slowing or stopping the downward migration of contaminants.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Liberty Industrial Finishing operated a metal finishing facility at the site from 1978-1997. Shortly after Liberty moved into the Brentwood facility, the Suffolk County Department of Health Services (SCDHS) noted serious problems with their operations. Plating wastes were discharged to various leaching pools throughout the site. The highest concentrations were found in the emergency leaching pool located immediately east of the underground plating tanks. Surface discharges were also observed by SCDHS and the plating tanks themselves were also a concern. The SCDHS was most concerned with possible contamination of the nearby supply wells located to the south of the site. In 1982, Liberty signed a Consent Order with Suffolk County to correct the deficiencies. Liberty agreed to: perform leak tests on USTs, repair and test leak detection systems on USTs, seal off piping from the pipe gallery to the emergency leaching pool, and install groundwater monitoring wells. Records from the SCDHS indicated that Liberty had satisfied the terms of the agreement.

On September 18, 1984, during a NYSDEC inspection, problems were noticed at the site. A liquid sample from the sanitary system contained 33 parts per million (ppm) of cadmium, 35.9 ppm of copper, 6 ppm of lead, 6 ppm of silver, 17 ppm of zinc, lesser concentrations of chromium and cyanide, and as much as 3.8 ppm of 1,1,1-trichloroethane. A stormwater dry well was contaminated with lead, cadmium and chromium. A soil sample from outside the northeast corner of the building contained an EP Toxicity concentration of 3.04 ppm for cadmium. As a result of this inspection, the sanitary system and the dry well were pumped and cleaned in July 1985.

3.2: Remedial History

The site was originally listed as a class "2a" on the Registry of Inactive Hazardous Waste Disposal Sites on December 12, 1987. A class "2a" was a temporary classification for this site pending further investigation. The results of the investigation were used to determine if the site would be reclassified or delisted. Under a Consent Order with the NYSDEC, a Phase II Investigation was performed by Liberty's consultant in 1987. Five monitoring wells were installed and sampled, including upgradient, on-site, and downgradient wells. Four wells from a prior investigation were also sampled. Two on-site wells exhibited concentrations of 210 parts per billion (ppb) and 8,120 ppb of chromium, which exceeded the groundwater standard of 50 ppb.

A Supplemental Phase II investigation was performed in 1991. Soil sampling for EP Toxicity, volatile organic compounds, and cyanide was performed at three locations. The most notable detection was 11.5 ppm of cyanide in the sediment at the bottom of the leaching pool. Additional rounds of groundwater samples were collected. Chromium concentrations ranging from 2,300 ppb to 5,800 ppb were detected in these samples, which exceeded the groundwater standard of 50 ppb.

A remedial measure was performed by Liberty at the request of the SCDHS on the industrial emergency leaching pool, as a result of the 11.5 ppm of cyanide detected in the Supplemental Phase II Investigation. A total of 45 inches of soil were excavated from the bottom of the leaching pool in 1992.

The site was reclassified as a class "2" on February 10, 1994 because of the disposal of plating wastes into drainage structures and the contaminated groundwater which exceeded NYSDEC groundwater standards. A Consent Order, with an effective date of March 18, 1996, required the site operator/owner to perform a Focused Remedial Investigation (FRI) limited to the area around the six underground plating tanks that leaked and the emergency leaching pool that had historically received untreated plating wastes. Based on available information, these areas were suspected to be the main sources for high levels of hexavalent chromium and, to a lesser extent cadmium, detected in a downgradient off-site monitoring well. Remedial work required by the Consent Order was not implemented by Liberty Industrial Finishing because of alleged financial difficulties.

In 1997, with oversight from the NYSDEC, Liberty Industrial Finishing removed waste materials from the interior of the on-site industrial building. The following materials were disposed of as part of this removal action: cyanide plating waste, phosphates, copper strips, copper strip sludge, metal hydroxide sludges, paint wastes containing methyl-ethyl-ketone, waste from the vapor degreaser containing trichloroethene (TCE), chromic acid solutions, solutions containing cadmium and chromium, and cyanide salts.

Floor sweepings were drummed and disposed of as hazardous waste due to cyanide and metals. All wood flooring was collected but left on-site. The flooring was later disposed of by the Environmental Protection Agency (EPA) as part of an Interim Remedial Measure.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to the environment posed by the presence of hazardous waste, the NYSDEC has recently conducted a Remedial Investigation/Feasibility Study (RI/FS).

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted between September 1997 and November 1998. A report entitled, "Remedial Investigation Report", dated January 1999 has been prepared which describes the field activities and findings of the RI in detail.

The RI included the following activities:

- *Public and private water supply well survey to identify potential groundwater receptors;*
- *Geophysical survey to determine the location of subsurface drainage systems that could have been used for waste disposal and areas of buried waste;*
- *Excavation of six test trenches and collection of two soil samples to determine if waste was present in an area of suspected disposal;*
- *Collection of 17 sediment/sludge samples from stormwater dry wells, sanitary leaching pools and an emergency leaching pool to determine if wastes were disposed to these drainage systems;*
- *Collection of 65 surface soil and 42 subsurface soil samples to determine if activities at the site resulted in contamination of soil both on-site and off-site;*
- *Collection of 25 Geoprobe groundwater samples to determine if activities at the site contaminated groundwater on-site and off-site;*
- *Installation and sampling of seven new monitoring wells, together with ten existing, to determine on-site and off-site groundwater quality;*
- *Monitoring of vapors and gases to determine impacts on ambient air;*

- *Performance of a wildlife habitat survey to determine environmental conditions and impacts at the site; and*
- *Performance of an exposure assessment to determine impacts on human health.*

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data were compared to New York State Standards, Criteria, and Guidance values (SCGs). Groundwater and drinking water SCGs identified for the Liberty Industrial Finishing site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For soils, NYSDEC TAGM 4046 provides soil cleanup objectives for the protection of groundwater, background conditions, and health-based exposure scenarios.

High levels of metals, specifically chromium, were found in the on-site surface soils (maximum 412 ppm), subsurface soils (maximum 1,530 ppm), drainage structures (maximum 579 ppm), and on- and off-site groundwater (maximum 3,600 ppb). High levels of SVOCs (maximum 10,100 of total SVOCs) were also found in the on-site drainage structures. Based on the results of the RI, remediation of these media is required.

For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1 Nature of Contamination

As described in the RI Report, many soil, groundwater and sediment samples were collected at the site to characterize the nature and extent of contamination. The main categories of contaminants which exceed their SCGs are semivolatile organic compounds and inorganics.

The inorganic contaminants of concern are cyanide and the following metals: cadmium, chromium, copper, nickel and zinc. The semivolatile organic compounds are limited to contaminated sediments and include: phenol, benzo(a)anthracene, chrysene, and benzo(a)pyrene.

4.1.2 Extent of Contamination

The following are the media which were investigated and a summary of the findings of the investigation. The analytical data are presented in the following format:

Name of compound (analytical result > soil cleanup objective or groundwater standard).

Soil

Contaminated surface soil was found on-site at the eastern end of the UST farm. The surface soil at this location (SS-31) exhibited maximum concentrations of cadmium (277 ppm > 10 ppm), chromium (412 ppm > 50 ppm), copper (145 ppm > 25 ppm), iron (43,000 ppm > 10,000 ppm), mercury (1.5 ppm > 0.1 ppm), nickel (146 ppm > 13 ppm), and zinc (607 ppm > 47 ppm) that exceeded the NYSDEC soil cleanup objectives.

Contaminated surface soil was also found at the Town of Islip Athletic Field and the Brentwood Water District well field. Arsenic-contaminated soil [(381 ppm and 967 ppm) > 7.5 ppm] was found at the southwest corner of the athletic field (SS-01) at concentrations exceeding the NYSDEC cleanup objective. Surface soil contaminated with barium [(385-943 ppm) > 300 ppm], chromium [(217-1,010 ppm) > 50 ppm], cobalt [(97-393 ppm) > 30 ppm], copper [(34-393 ppm) > 25 ppm], nickel [(272-1,050 ppm) > 13 ppm], and zinc [(87.2-3,450 ppm) > 47 ppm] was identified at two locations (SS-24 & SS-25) on the Brentwood Water District property at concentrations exceeding the soil cleanup objectives. These two areas were remediated as an Interim Remedial Measure in August 1998 (see Section 4.2). A summary of the analytical results for surface soil sampling is included in Table 1. Locations of surface soil samples are depicted in Figure 3.

Contaminated subsurface soil was found at two locations adjacent to the six USTs [B-12 (12-16 feet bgs) & B-15 (2-6 feet bgs)] and at one location approximately 125 feet west of the USTs [B-29 (0-8 feet bgs)]. Analytical results revealed concentrations of cadmium [(118-126 ppm) > 10 ppm], chromium [(972-1530 ppm) > 50 ppm] and nickel [(22-139 ppm) > 13 ppm] that exceed soil cleanup objectives. A summary of the analytical results for the subsurface soil sampling locations is included in Table 2. Sample locations are depicted in Figure 4.

Sediments

Contaminated sediment/sludge was detected in one of the four sanitary leaching pools, which is the western most pool (S-07). This pool exhibited concentrations of cadmium (90 ppm > 10 ppm), chromium (148 ppm > 50 ppm), copper (519 ppm > 25 ppm), and zinc (127 ppm > 47 ppm) that exceeded the NYSDEC soil cleanup objectives.

As part of this investigation, ten (10) on-site stormwater dry wells were sampled. Contaminated sediment/sludge was detected in four stormwater dry wells, one of which is located in the area of the western loading dock (S-03) and the remaining three located in the area of the former eastern loading dock (S-13, S-14, S-15). Analytical results from these dry wells revealed exceedances of soil cleanup objectives for several semivolatile organic compounds and metals, including phenol [(77-1,300 ppb) > 30 ppb], benzo(a)anthracene [(790-1,900 ppb) > 224 ppb], chrysene [(1,300-2,600 ppb) > 400 ppb], benzo(a)pyrene [(760-2,000 ppb) > 61 ppb], cadmium [(35-303 ppb) > 10 ppb], chromium [(191-579 ppb) > 50 ppb], nickel [(32-102 ppb) > 13 ppb] and zinc [(248-866 ppb) > 47 ppb].

The emergency leaching pool (Sample #B-04) was also tested as part of the RI. As discussed in Section 3.2, a remedial measure was performed on this leaching pool in 1992. The analytical results from the RI indicate that this leaching pool was not contaminated above soil cleanup objectives; therefore, the emergency leaching pool is no longer an environmental concern for the site.

Analytical results for sediment/sludge samples are included in Table 3. Sample locations are depicted in Figure 5.

Groundwater

Groundwater was sampled by two methods as part of this investigation. One method utilized was obtaining grab samples using the Geoprobe™ direct push sampling apparatus. This method was used as a screening tool to determine placement of groundwater monitoring wells and to determine relative levels of contaminants. By measuring water levels in the wells, it was determined that groundwater flow is toward the southeast. The data validation report indicates that the results for metals are estimated as biased high for the Geoprobe™ samples due to high turbidity results. The high levels of metals are likely attributable to the suspended solids contained in the samples.

Groundwater monitoring wells were used to determine on-site and off-site groundwater quality. The monitoring wells were developed for several days prior to sampling and contain larger screen sections which allow for greater water flow rates. These wells provided a more reliable assessment of actual contaminant concentrations than the Geoprobe™ sampling results. Therefore, the discussion below concerning the nature and extent of groundwater contamination will utilize primarily the groundwater monitoring well analytical data.

Monitoring wells were placed in upgradient, on-site, and downgradient locations to determine the boundaries and potential for migration of groundwater contamination. Shallow wells (MW-01 to MW-05, MW-7 to MW-13, MW-15) were installed directly below the water table at approximately 50 feet bgs. Deep wells (MW-14, MW-16, MW-17) were installed at 100 feet bgs. However, one deep well (MW-06) that was sampled is screened in the Magothy aquifer at 265 feet bgs.

Groundwater monitoring well data downgradient (southeast) of the underground plating waste storage tanks and the former eastern loading dock stormwater dry wells indicates exceedances of cadmium, cyanide, and chromium, likely resulting from plating waste disposal or spills and/or leaking underground waste storage tanks. Groundwater contaminated with cadmium (maximum 369 ppb at MW-10 > 10 ppb) and cyanide (maximum 417 ppb at MW-04 > 100 ppb) is primarily in the shallow on-site wells and extends approximately 150 feet downgradient of the site. Analytical results from the December 15, 1997 sampling event indicate that shallow chromium-contaminated groundwater on-site ranged up to 3,600 ppb at MW-04 (groundwater standard: 50 ppb) and immediately off-site (about 150 feet at MW-10) was 3,070 ppb. Results from the most recent sampling event on June 3, 1998 indicate groundwater concentrations of 1,960 ppb for MW-04 and 2,930 ppb for MW-10. Only one deep well (MW-14) exhibited chromium concentrations above groundwater standards. This downgradient well, located about 500 feet from the site and 100 feet bgs, shows a chromium concentration of 53.7 ppb, which slightly exceeds the groundwater standard of 50 ppb. The shallow monitoring well at this location (MW-12) exhibited a chromium concentration of 1.2 ppb. Upgradient wells at the Brentwood Public Library show no evidence of groundwater contamination. Locations of monitoring wells and Geoprobe™ sampling locations are included in Figure 6 and Figure 7, respectively. Figure 6 also includes chromium concentrations for each monitoring well from the June 3, 1998 sampling event. A summary of the analytical results from the monitoring well samples and Geoprobe™ sampling locations are included in Tables 4 and 5, respectively.

Figure 8 depicts the extent of the groundwater plume. As indicated on the figure, the plume emanates southeast from the on-site UST and pipe gallery area and moves in the direction of groundwater flow. The site history (Section 3.1) indicates that discharges to groundwater began in the late 1970's. However, the groundwater

monitoring well data indicate that chromium concentrations meet groundwater standards 500 feet downgradient of the site.

Figure 9 depicts a cross section of the highest concentration gradient for chromium. As indicated on the figure, exceedances of groundwater standards for chromium are limited to the wells situated directly below the water table, except for MW-14 (53.7 ppb) which slightly exceeds the groundwater standard of 50 ppb.

The groundwater contamination plume associated with this site does not threaten the Brentwood Water District well field. Neither groundwater monitoring well located upgradient of the well field (MW-3A & MW-8) exhibited detectable concentrations of chromium. Figure 8 shows that the extent of the groundwater contamination plume is 120 feet east of the Brentwood well field. In addition, the groundwater contamination is limited to 100 feet bgs and has a chromium concentration of 6.2 ppb at the nearest downgradient deep monitoring well (MW-16). The Brentwood wells are screened at a minimum of 450 feet bgs. Also, the Brentwood supply wells are tested on an annual basis and have not shown any evidence of contamination to date. Therefore, the groundwater contamination from the site does not threaten the water quality of the Brentwood well field.

A well survey was conducted as part of the RI. The well survey indicated that there are no public or private wells located within 1.5 miles downgradient of the site. Therefore, there are no known completed exposure pathways within 1.5 miles of this site.

4.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. Two IRMs were completed while performing the RI/FS.

IRM #1

Analytical results for the Town of Islip Athletic Field and the Brentwood Water District property revealed the presence of surface soils that were contaminated with heavy metals (see Section 4.1.2 for analytical results). In August 1998, the Town of Islip performed an IRM in which soil was excavated from areas of both properties for off-site disposal. Referring to Figure 3, soil was excavated from a square-shaped area centered on SS-01 at the Town of Islip ballfield measuring 7 feet by 7 feet by 2 feet deep. Circular excavations were also performed at SS-24 and SS-25 at the Brentwood Water District property, each measuring 6 feet in diameter and 6 feet deep.

IRM #2

The United States Environmental Protection Agency performed an Emergency Removal Action on the site from August 1998 to January 1999. This IRM included removing waste materials from the interior of the factory building and closing the six USTs in place.

The USTs on the south side of the building were closed in place using the following procedure:

- Removing the remaining contents of the tanks including the plastic liners;

- Cleaning and sandblasting the empty tanks;
- Filling the USTs with soil to approximately one (1) foot from the top of each tank; and filling the remaining foot with concrete.

The USTs were not removed because of the proximity of the adjacent Long Island Railroad tracks. An electric line that supplies power to the railroad is located between the tanks and the railroad tracks. Excavation of the tanks would have required the electric line to be shut off which would have resulted in interruption of railroad service.

As part of the IRM performed by the EPA, waste materials were removed from the interior of the factory building. The following tasks were performed in the interior of the building:

- Pressure washing of process vats.
- Vacuuming and pressure washing of floors.
- Removal of contaminated debris from vat areas and floors.
- Packaging all waste materials in drums for off-site disposal at a permitted disposal facility.

4.3 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 6.0 of the RI Report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Pathways which are known to or may exist at or around the site include:

- ingestion of surface soil in the eastern portion of the underground waste storage tank area.
- ingestion of shallow groundwater.

Residences and businesses located downgradient of the site are provided with public water; therefore, contact with shallow groundwater is unlikely. Ingestion of surface soil will be addressed in Section 7.

4.4 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site.

No significant pathways for environmental exposure have been identified at the site.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Potentially Responsible Party (PRP) for the site is:

**Liberty Industrial Finishing
550 Suffolk Avenue
Brentwood, New York 11717**

Liberty Industrial Finishing has ceased manufacturing operations at the site. The PRP declined to implement the RI/FS at the site when requested by the NYSDEC because of alleged financial hardship. The RI/FS is being conducted with State Superfund money. After the remedy is selected, the PRP will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRP, the NYSDEC will implement the selected remedial action under the State Superfund. The PRP is subject to legal actions by the State for recovery of all response costs the State has incurred.

The following is the chronological enforcement history of this site.

<u>Date</u>	<u>Index No.</u>	<u>Subject of Order</u>
1987	W1-0025- 84-08	Phase II investigation of USTs and areas of documented discharges.
1996	W1-0714- 95-01	Remedial Investigation and remediation of the area around the six USTs.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria and Guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected should eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- *Eliminate sources of contamination that exceed SCGs, such as: surface soil, subsurface soil, and stormwater dry well or sanitary leaching pool sediment.*

- *Eliminate, to the extent practicable, ingestion of groundwater affected by the site that does not attain NYSDEC Class GA Ambient Water Quality Criteria.*
- *Mitigate the impacts of contaminated groundwater to the environment by natural attenuation.*
- *Eliminate the potential for direct human contact with the contaminated soil on site.*

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Liberty Industrial Finishing site were identified, screened and evaluated in the report entitled Feasibility Study Report, dated January 1999.

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to construct the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated soil, sediments, and groundwater at the site.

Alternative #1: No Further Action

<i>Present Worth:</i>	\$ 264,000
<i>Capital Cost:</i>	\$ 0
<i>Annual O&M:</i>	\$ 17,200
<i>Time to Implement</i>	0 years

This alternative recognizes remediation of the site conducted under two previously completed IRMs. Only continued monitoring would be necessary to evaluate the effectiveness of the remediation completed under the IRM. The monitoring would consist of quarterly sampling of six wells, two on-site (MW-5 and MW-6) and four downgradient (MW-10, MW-12, MW-14, MW-16). Three wells are screened just below the water table at approximately 50 feet bgs (MW-5, MW-10, MW-12), two wells are screened at 100 feet bgs (MW-14, MW-16), and one well is screened at 265 feet bgs (MW-6).

This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative #2: Source Removal and Mitigation and Assessment of On-site and Off-site Groundwater Quality

<i>Present Worth:</i>	\$ 501,700
<i>Capital Cost:</i>	\$ 237,700

*Annual O&M:
Time to Implement*

*S 17,200
6 months*

This remedy would consist of four distinct remedial actions: soil excavation, installation of an asphalt cap, removal of sediment from drainage structures, and installation of long-term monitoring wells. First, two (2) feet of soil would be excavated in the vicinity of the UST farm and pipe gallery. This excavation would measure 20 feet long by 150 feet wide.

Since the subsurface soil samples at the west end of the pipe gallery at sample location B-29 (see Figure 4) exhibited concentrations of chromium (1320-1530 ppm) that may exceed characteristic hazardous waste threshold limits, soil at this location would be excavated an additional six (6) feet to a minimum depth of eight (8) feet bgs. This excavation would measure fifteen (15) feet long by fifteen (15) feet wide. A sample would be obtained from the bottom of the excavation and analyzed by the Toxicity Characteristic Leaching Procedure (TCLP) and for total metals to determine if further excavation would be needed. Structural support for the building would be required during excavation.

The soil from both excavations would be disposed of at an off-site permitted treatment, storage, and disposal facility (TSDF).

This remedial action would mitigate the human health concern associated with human contact with contaminated surface soil and would remove the potential hazardous waste from the on-site soils at sample location B-29.

Excavation would not occur at the other two locations exhibiting subsurface soil contamination (B-12, B-15). These sample locations are directly adjacent to the USTs, which were closed in place during the EPA removal action. Excavation at these locations to depths below two (2) feet may damage or compromise the integrity of the USTs. Excavation may also compromise the structural integrity of the adjacent building.

Also, sample location B-12 is directly adjacent to the Long Island Railroad right-of-way. The Long Island Railroad supplies power to its trains using an underground electric line, which is located between the UST farm and the railroad tracks. Excavation of soil below two (2) feet at sample location B-12 would require shutting off the electricity in the power cable and providing structural support for the railroad bed. Therefore, rail service would be disrupted during excavation at this location.

To mitigate the environmental threat associated with the subsurface soils, this alternative would include the installation of a nonporous asphalt cap over the entire 150-foot by 20-foot excavation above the UST farm and pipe gallery extending to location B-29. After backfilling the deeper excavation with clean soil to two (2) feet bgs, both excavations would be covered with 1.5 feet of clean soil followed by a six (6) inch base consisting of clean gravel. Two (2) inches of asphalt would be laid over the gravel. This remedial measure would prevent surface water from infiltrating the contaminated area and leaching metals from the subsurface soil into the groundwater. Since this contamination source would be immobilized, groundwater would naturally attenuate and long-term monitoring would be conducted to verify that contaminants would reach New York State Class GA groundwater standards.

Other potential sources of groundwater contamination are the sediments in four stormwater dry wells and in one leaching pool. The structures would be cleaned using standard removal techniques such as utilization of a vacuum truck or "guzzler" to remove the sediment and any standing water to a depth of approximately five (5) feet below the sediment surface. The dry wells and leaching pool would be cleaned with a power washer during removal of the sediment. Once the sediment has been removed, end point samples would be collected in order to determine if additional remediation would be required. The contaminated sediments would be disposed of at a permitted TSDF.

For this alternative, groundwater remediation would occur by natural attenuation. This alternative would remove all on-site sources of contamination which would prevent further release of contaminants into the groundwater and result in declining contaminant concentrations in the plume as it disperses downgradient of the site. The plume concentrations meet groundwater standards 500 feet downgradient of the site. As stated in Section 4.1, there are no complete exposure pathways within 1.5 miles downgradient of the site and the Brentwood Public Water Supply well field is not threatened by this site. Therefore, natural attenuation would reduce groundwater contamination to below groundwater standards without threatening the public health or the environment.

Finally, two pairs of groundwater monitoring wells would be installed as part of the remedy: one pair downgradient of the site and one pair on the Brentwood Water District property. For each well pair, one well would be installed in the deep upper glacial aquifer (approximately 150 feet bgs) and the other well would be screened in the shallow Magothy aquifer (approximately 250 feet bgs). These four new wells, along with two existing on-site wells (MW-5 and MW-6) and two existing off-site wells (MW-12 and MW-14), would be monitored on a quarterly basis for up to 30 years to insure the quality of the public water supply and confirm that the groundwater contamination would be confined to the shallow upper glacial aquifer. Proposed locations of long-term monitoring wells are included in Figure 10.

Alternative #3: Source Removal and Mitigation and Treatment of Contaminated Groundwater

<i>Present Worth:</i>	<i>\$ 2,946,000</i>
<i>Capital Cost:</i>	<i>\$ 1,102,000</i>
<i>Annual O&M:</i>	<i>\$ 148,000</i>
<i>Time to Implement</i>	<i>1 year</i>

This alternative would include the following remedial actions: excavation and off-site removal of contaminated surface soil and subsurface soil at sample location B-29, installing an asphalt cap above the UST farm and pipe gallery, removal and off-site disposal of contaminated sediment in one leaching pool and four stormwater dry wells, and groundwater treatment. The first three elements of this alternative were discussed in the previous alternative. The fourth remedial measure would include treatment of contaminated groundwater using an extraction well and on-site treatment system. The well would be installed downgradient of the site on the Town of Islip Athletic Field property at an approximate depth of 70 feet bgs. The well location is depicted on Figure 8. The well would pump at a rate of approximately 80 gallons per minute and well would have a horizontal zone of capture of 120 feet. Metals and cyanide would be removed from the groundwater by precipitation and filtration. The water would be treated to New York State GA drinking water standards before discharge. The treated groundwater would be discharged into a stormwater system via a recharge basin.

The groundwater treatment system would be selected as a focused remedy for this site. The system would be designed to treat the portion of the shallow groundwater plume exceeding 100 ppb of chromium. However, some contaminated groundwater between 50 ppb and 100 ppb, and possibly as high as 500 ppb, has already passed the point where the well would be installed and it is unlikely that this well would remediate the contaminated groundwater found below a depth of 60 feet.

Comprehensive remediation of the groundwater would require a number of both shallow and deep wells placed at varying distances from the source. The more comprehensive system would cost several times more than this alternative.

Since the source areas would be removed and/or isolated as part of this alternative, the remaining contamination is expected to meet groundwater standards by natural attenuation by the same mechanisms discussed in Alternative #2.

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Feasibility Study.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The three media that require remediation at this site are soil, sediment/sludges, and groundwater. The SCGs for the soil and sediment/sludges are the recommended soil cleanup objectives from the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046: Determination of Soil Cleanup Objectives and Cleanup Levels. The SCGs for groundwater are the Class GA water standards from the Technical and Operational Guidance Series (TOGS) 1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Alternative #1 would not meet the SCGs established at this site, since contaminants would remain in all three media at unacceptably high levels.

Alternatives #2 and #3 would meet the SCGs for the surface soil and sediment/sludge by removal of these media. However, some contaminated subsurface soils would remain in place and would not reach SCGs. The contaminants in these soils would be immobilized due to the installation of the nonporous asphalt cap and would not continue to pose a threat to the environment.

For Alternative #2, Groundwater would naturally attenuate to below the SCGs because the sources of the contamination would be removed/mitigated.

Alternative #3 would meet the SCGs for groundwater by actively remediating the threat through the groundwater treatment system. The remaining groundwater contamination would meet SCGs by natural attenuation.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative #1 would not be protective of human health and the environment since receptors that gain access to the site could potentially come into contact with contaminated soil. Also, the continued release of contaminants from the site could threaten the public water supply.

Alternatives #2 and #3 would be protective of human health and the environment through the removal of contaminated dry well/leaching pool sediment/sludge and soil. Groundwater contamination is limited to the shallow upper aquifer. Alternative #2 would rely on natural attenuation to remediate the contaminated groundwater and would include extensive long-term monitoring to insure that natural attenuation of groundwater progresses satisfactorily. Alternative #3 would mitigate the groundwater threat by using extraction and treatment technology and by natural attenuation.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative #1 would not have any short-term construction related impacts and could be fully implemented immediately.

Alternative #2 could be fully implemented within about six months of issuance of the Record of Decision. This alternative would be immediately effective in mitigating the potential for direct contact with contaminated soil and mitigating continued impacts to groundwater. No short term impacts are expected with proper implementation of construction related health and safety and construction quality assurance plans.

Alternative #3 could be implemented within one year. In addition to the benefits listed for Alternative #2, this alternative would hydraulically control contaminated shallow groundwater from migrating into the deep aquifer and further downgradient from the site. Some disruption to the community would be expected during installation of the groundwater extraction and treatment system, since the system would be on public property.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Alternative #1 would not provide for long-term effectiveness and permanence, since remediation of contaminated sediment/sludge and soil would not occur, contaminants would continue to be released to groundwater, and natural attenuation would not be effective.

Alternative #2 would be considered semi- permanent, with respect to the removal of soil and contaminated sediment/sludge. Placement of the asphalt cover to isolate the contaminated subsurface soil would be considered an effective remedial action in the long-term, but would not be not considered permanent because the asphalt cap would require periodic maintenance. The risk posed by the contaminants that remain in the subsurface are minimal, since these contaminants would be isolated from direct exposure and leaching to groundwater. By mitigating release of contaminants to groundwater, it would be expected that natural attenuation of existing groundwater contamination would eventually be effective and permanent.

In addition to the remedial actions evaluated for Alternative #2, Alternative #3 would include hydraulically controlling and treating groundwater, which would be considered permanent and effective.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative #1 would not be effective in reducing the toxicity, volume or mobility of the contaminants at the site, and as a result, natural attenuation would also not be effective. Contaminants would continue to be released to groundwater and migrate in significant, unacceptable concentrations.

Alternative #2 would reduce the mobility and volume of contaminants on-site by removing the contaminated sediment/sludge and the contaminated surface soil for off-site disposal. Placement of the asphalt cap would also significantly reduce the mobility of the contaminants that remain in the subsurface soil. Natural attenuation of the existing impacted groundwater would reduce the toxicity of contaminants in groundwater through dilution, dispersion, and adsorption onto soil.

In addition to the benefits listed for the source areas in Alternative #2, Alternative #3 would reduce the toxicity, mobility and volume of contaminants in groundwater by hydraulically controlling and treating the existing impacted groundwater and by natural attenuation.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Alternative #1 could be easily implemented, but as discussed above, would not be effective in protecting human health and the environment.

There are no expected delays in implementation of Alternative #2. Since all work would be conducted on-site, with the exception of the early warning monitoring wells, there would be no expected administrative delays in coordination with local agencies.

The technologies associated with Alternative #3 are commercially available and have been proven effective and reliable. The only potential delay in implementation would be obtaining approval to construct the groundwater

remediation system on Town of Islip property and authorization for discharge of treated groundwater to Town of Islip/Suffolk County Department of Public Works facilities.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 6.

The estimated long-term (30 year) operation and maintenance (O&M) present worth cost associated with Alternative #1 would be \$264,000. The estimated capital cost and present worth O&M cost for Alternative #2 would be \$501,700, based on 30 years of continued monitoring. The estimated capital cost and present worth O&M cost of Alternative #3 would be \$2,946,000 based on 20 years of operation for the treatment system and continued monitoring. A discount rate of five (5) percent is used to calculate present worth cost.

8. Community Assessment - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and how the Department will address the concerns raised.

In general the public comments received were supportive of the selective remedy. Comments were received, however, pertaining to the on-site underground storage tanks. Two citizens requested that the underground tanks be removed as part of the remedy. The underground tanks were properly closed in place as part of the EPA removal action. The remaining liquid was pumped from the tanks and the tanks were cleaned and sandblasted. The tanks were then filled with clean soil and capped with concrete. Since the underground tank and pipe gallery area will be capped with asphalt and the underground tanks have been closed in place with a concrete cap, the remaining contaminants in the subsurface soil will be immobilized. However, if tank removal were performed, the adjacent Long Island Railroad line would be shut down because of the presence of a high-voltage underground power line and the integrity of the on-site building may be compromised. Since tank removal would present these significant disadvantages and would only provide a marginal benefit, the tanks will not be removed as part of the remedy.

Also, a citizen requested that more deep monitoring wells be installed at the west end of the site. After reviewing the RI data, the NYSDEC has determined that the nature of on-site groundwater contamination has been sufficiently characterized and that additional on-site investigation is therefore not necessary.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative #2 as the remedy for this site. Alternative #2 includes source removal and mitigation and assessment of on-site and off-site groundwater quality.

This selection is based upon the evaluation of the three alternatives for this site. Alternative #1, the no further action alternative, was eliminated because it did not meet either of the two threshold criteria, compliance with SCGs and protection of human health and the environment.

Of the remaining two alternatives, both alternatives met the requirements of the first six evaluation criteria, except for compliance with SCGs for subsurface soils. The only known remedial action that would enable the subsurface soils to satisfy SCGs would be excavation of subsurface soil, which was determined to be infeasible at two locations. These locations (B-12, B-15) are directly adjacent to the UST farm. The USTs were closed in place as part of an EPA removal action. Therefore, excavating the contaminated soil would risk damaging the USTs and compromising their closure. Also, the excavation would occur adjacent to the industrial building, which may compromise the structural integrity of the building.

One of the sample points (B-12) is directly adjacent to the railroad bed. If this location were excavated, the integrity of the railroad bed may be compromised and the underground power line that is located north of the bed and supplies power to the railroad would need to be shut off. Therefore, excavation at this point would disrupt railroad service.

Capping the UST area and pipe gallery would prevent contaminants in the subsurface soil from leaching into the groundwater and would not present the problems associated with excavating at sample locations B-12 and B-15. For Alternative #2, the groundwater would eventually attenuate to below SCGs. For Alternative #3, the groundwater would be treated to below SCGs by the groundwater treatment system. The subsurface soil would no longer pose a threat to the environment.

Both Alternative #2 and Alternative #3 would mitigate the threat to human health and the environment. As stated in Section 7.1, under Alternative #2 the contaminated groundwater would meet SCGs by natural attenuation prior to completion of exposure pathways. Alternative #3 would actively pump contaminated groundwater in the most contaminated area of the plume but would rely on natural attenuation in less contaminated regions of the plume to meet SCGs for groundwater. Alternative #2 is an acceptable remedy for this site because:

- Sources of groundwater contamination will be removed or mitigated as part of this alternative. Since all remaining soil contamination will be above the water table, continued leaching of contaminants into the groundwater would be eliminated.
- The size of the groundwater contamination plume is limited. Although disposal activities began in 1978, the extent of the plume is only 500 feet downgradient from the site. Chromium concentrations exceeding 1 ppm extend to only 200 feet downgradient of the site.
- The groundwater contamination plume is shallow, with the highest chromium concentrations (3,600 ppb) at 50 feet bgs. The deeper monitoring wells (100 foot bgs) exhibited chromium concentrations (53.7 ppb) that were only slightly above SCGs (50 ppb). Since disposal of plating waste began at this site over 20 years ago, the analytical data suggests that the plume is not sinking into the deeper aquifer.
- Groundwater travels southeast from the site; therefore, the Brentwood Water District well field which is directly south of the site is not downgradient of the site and is over 100 feet west of the contaminant plume. Annual testing of the well field indicates no impacts from this site. Further, the Brentwood Water District wells draw their water from a minimum depth of 450 feet bgs, well below the plume.

- The well survey conducted for the RI indicated that there are no groundwater receptors within 1.5 miles downgradient of the site.

Alternative #2 was preferred for short-term effectiveness, implementability, and cost. The advantages of Alternative #3 include long-term effectiveness and permanence, and reduction of toxicity, mobility and volume. Since Alternative #2 satisfies all seven evaluation criteria and the additional remedial benefit of Alternative #3 does not justify the large cost increase, Alternative #2 was chosen for this site.

The estimated present worth cost to implement the remedy is \$501,700. The cost to construct the remedy is estimated to be \$237,700 and the estimated average annual operation and maintenance cost for 30 years is \$17,200.

The elements of the selected remedy are as follows:

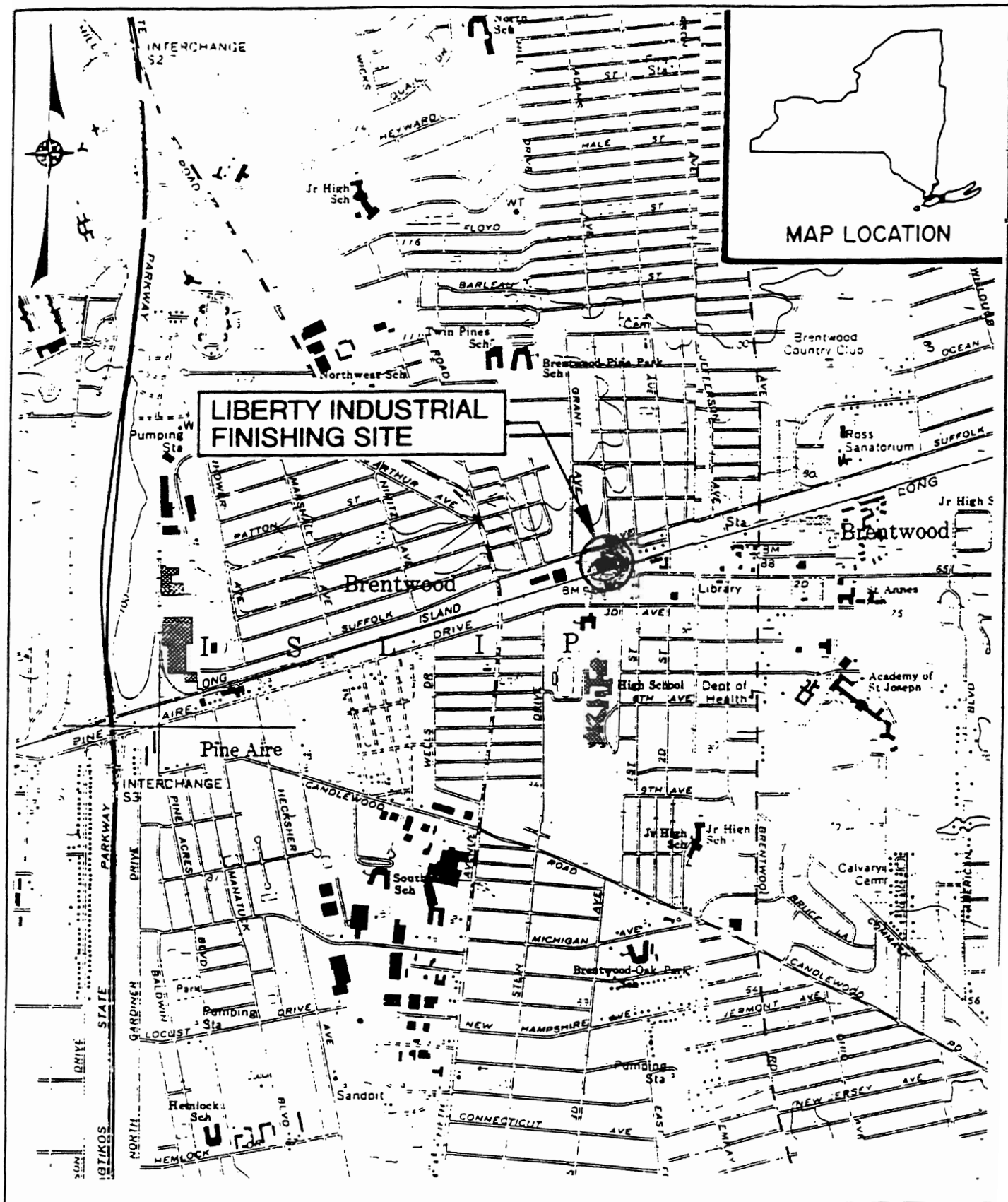
1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved; and
2. Construction of the remedial design, which will include the following remedial actions;
 - Removal of contaminated soil from the upper two (2) feet in the area of the underground plating waste storage tanks and pipe gallery;
 - Removal of soil to a minimum of eight (8) feet bgs at the west end of the UST pipe gallery;
 - Installation of an asphalt cap over the UST and pipe gallery area;
 - Excavation and off-site disposal of contaminated sediments/sludge from four stormwater dry wells and one sanitary leaching pool; and
 - Institutional controls will be implemented and deed restrictions will be recorded in the chain of title of the property to restrict future use of groundwater at the site.

Since the remedy results in untreated contaminated groundwater remaining at the site, a long term monitoring program will be instituted. Four groundwater monitoring wells will be installed with two wells located downgradient of the site and two wells located on the Brentwood Water District property. These wells, together with four existing on-site monitoring wells, will be tested on a quarterly basis for a 30-year period. Monitoring requirements will be reevaluated on an annual basis, based on analytical results. This program will allow the effectiveness of the source removal and mitigation to be monitored and will be a component of the operation and maintenance for the site.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials local media and other interested parties.
- Fact Sheets were mailed to the contact list in August 1997 and February 1999 to update interested parties on the site status.
- Public informational meetings were held in September 1997 and March 1999 to discuss the project and answer questions posed by the public.
- In February 1999 a public information sheet was mailed to the public contact list and a public meeting was held on March 11, 1999 to present the Liberty Industrial Finishing Site Proposed Remedial Action Plan (PRAP). A 30 day public comment period was established for the receipt of written comments which ended on March 26, 1999.
- In March 1999 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.



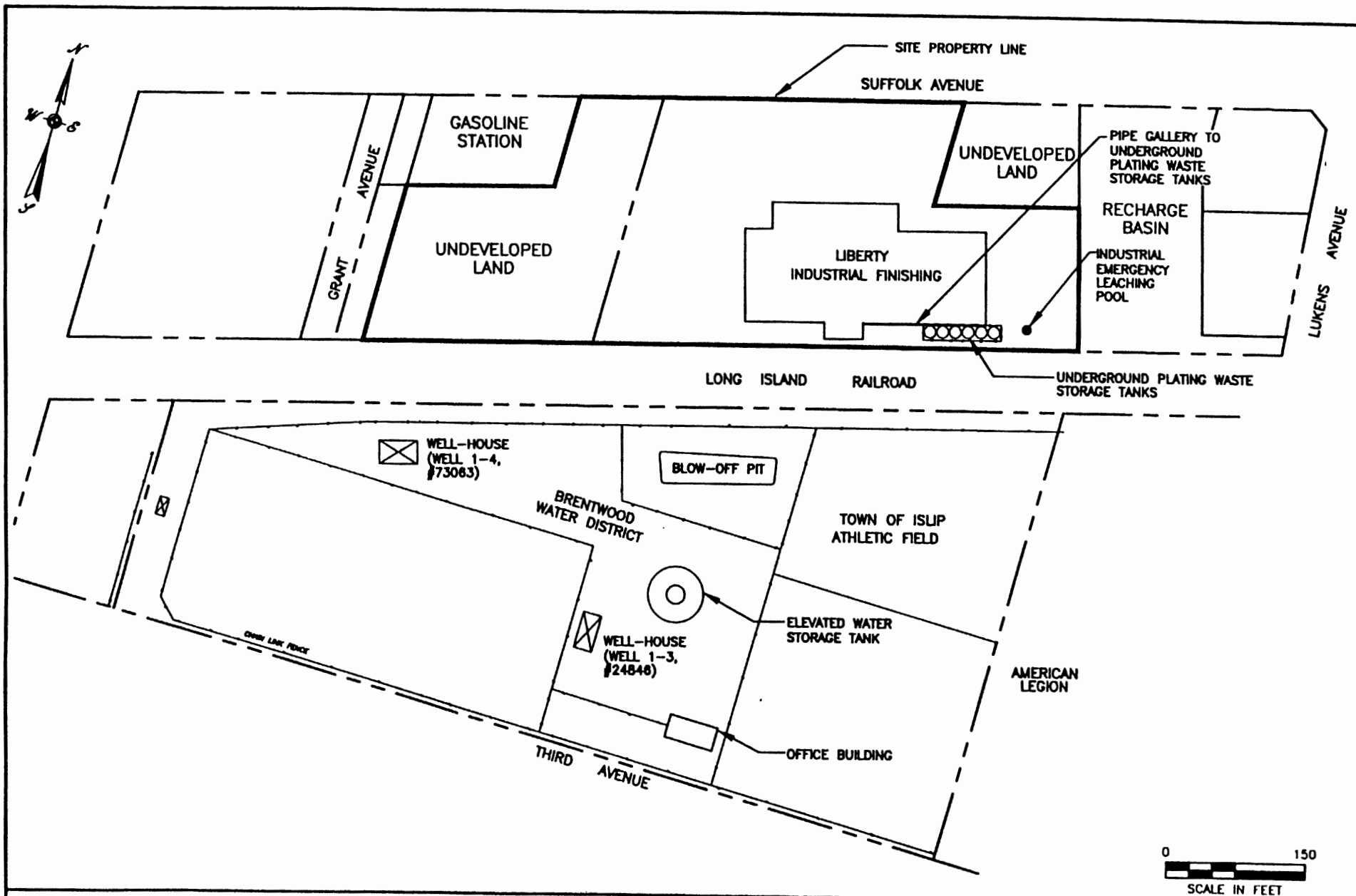
LIBERTY INDUSTRIAL FINISHING SITE
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 BRENTWOOD, NEW YORK

SITE LOCATION MAP



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 Consulting Engineers
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FIGURE 1



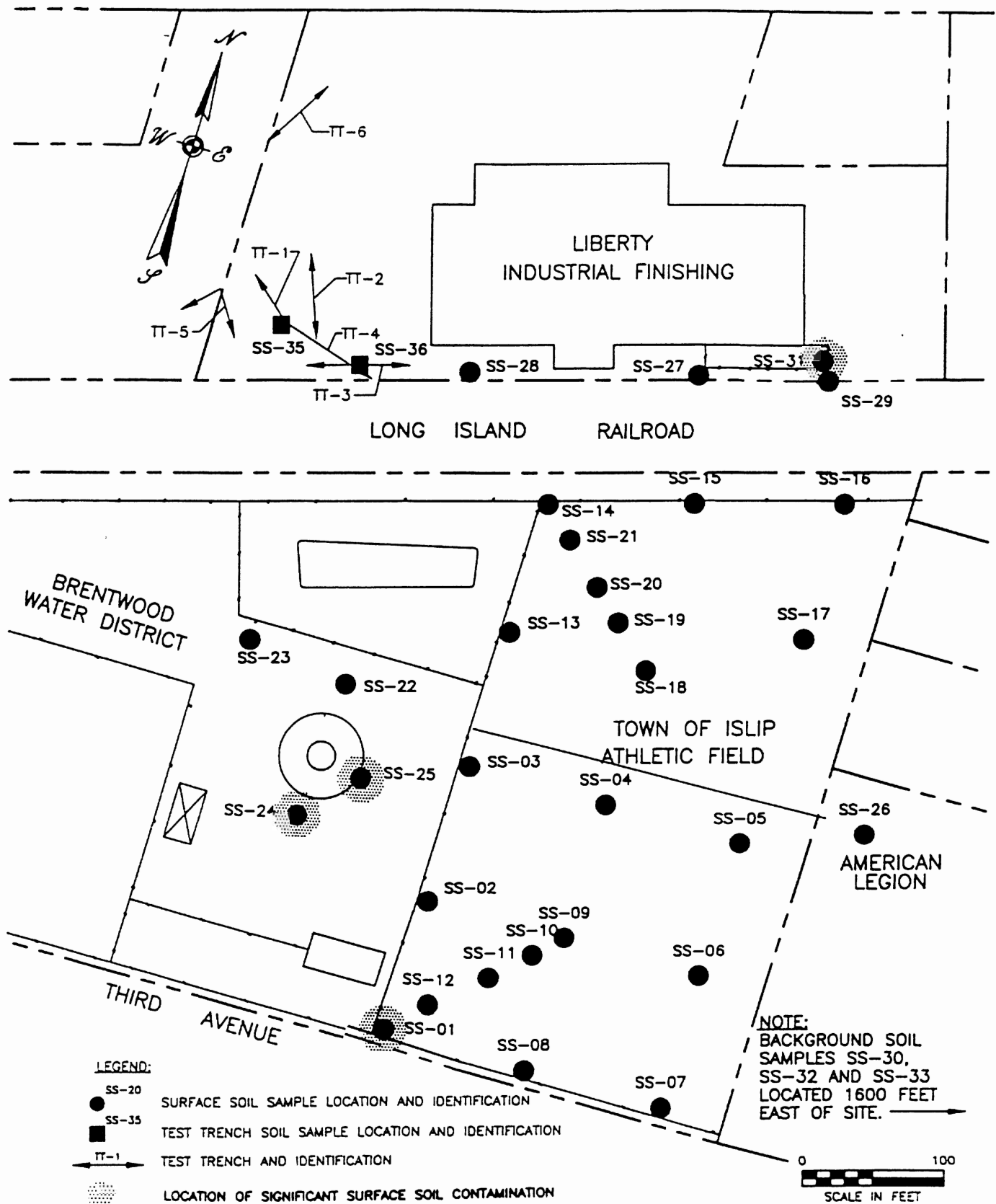
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

STUDY AREA MAP



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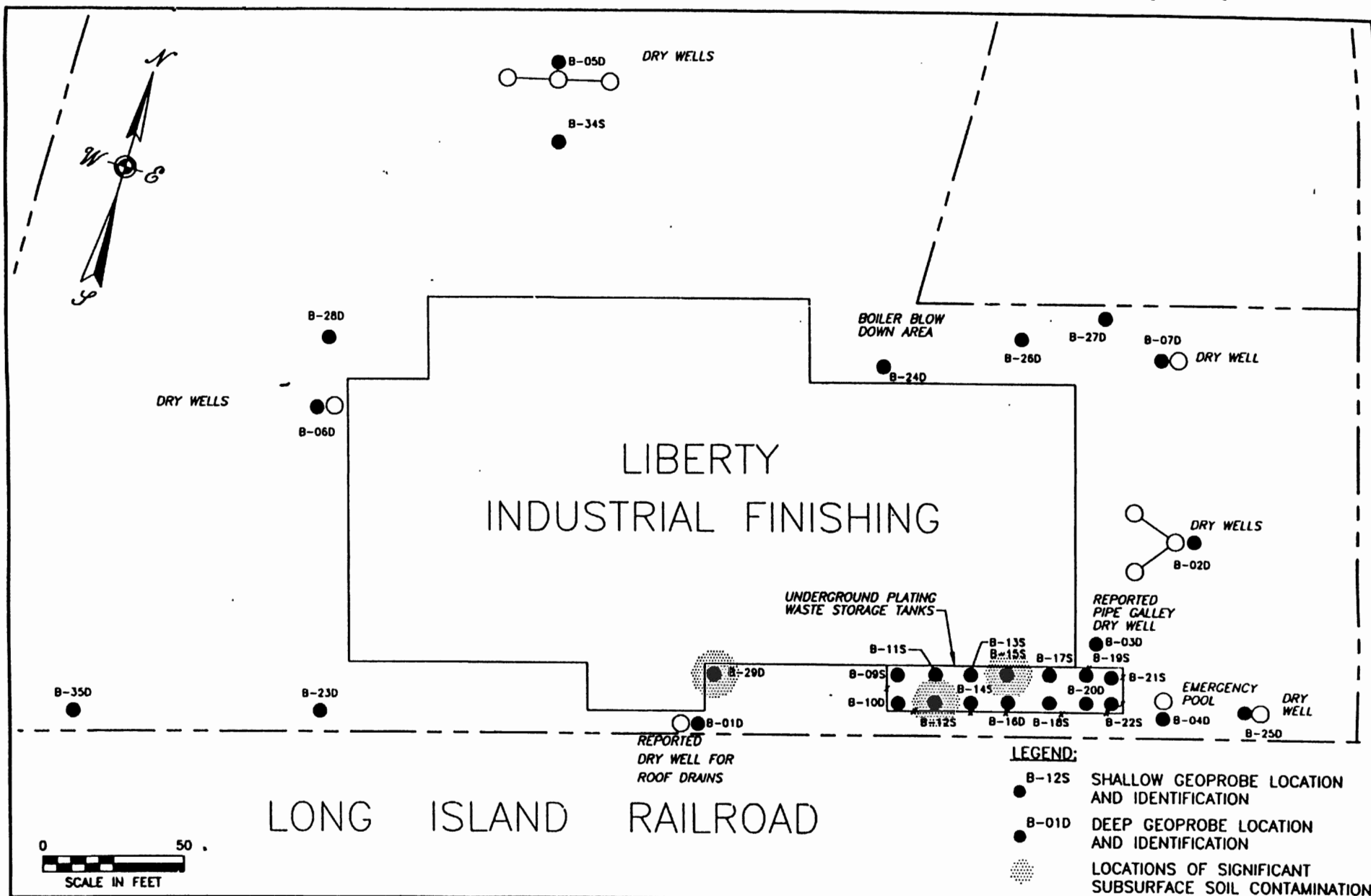
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

SURFACE SOIL SAMPLE AND TEST TRENCH LOCATIONS

FIGURE 3

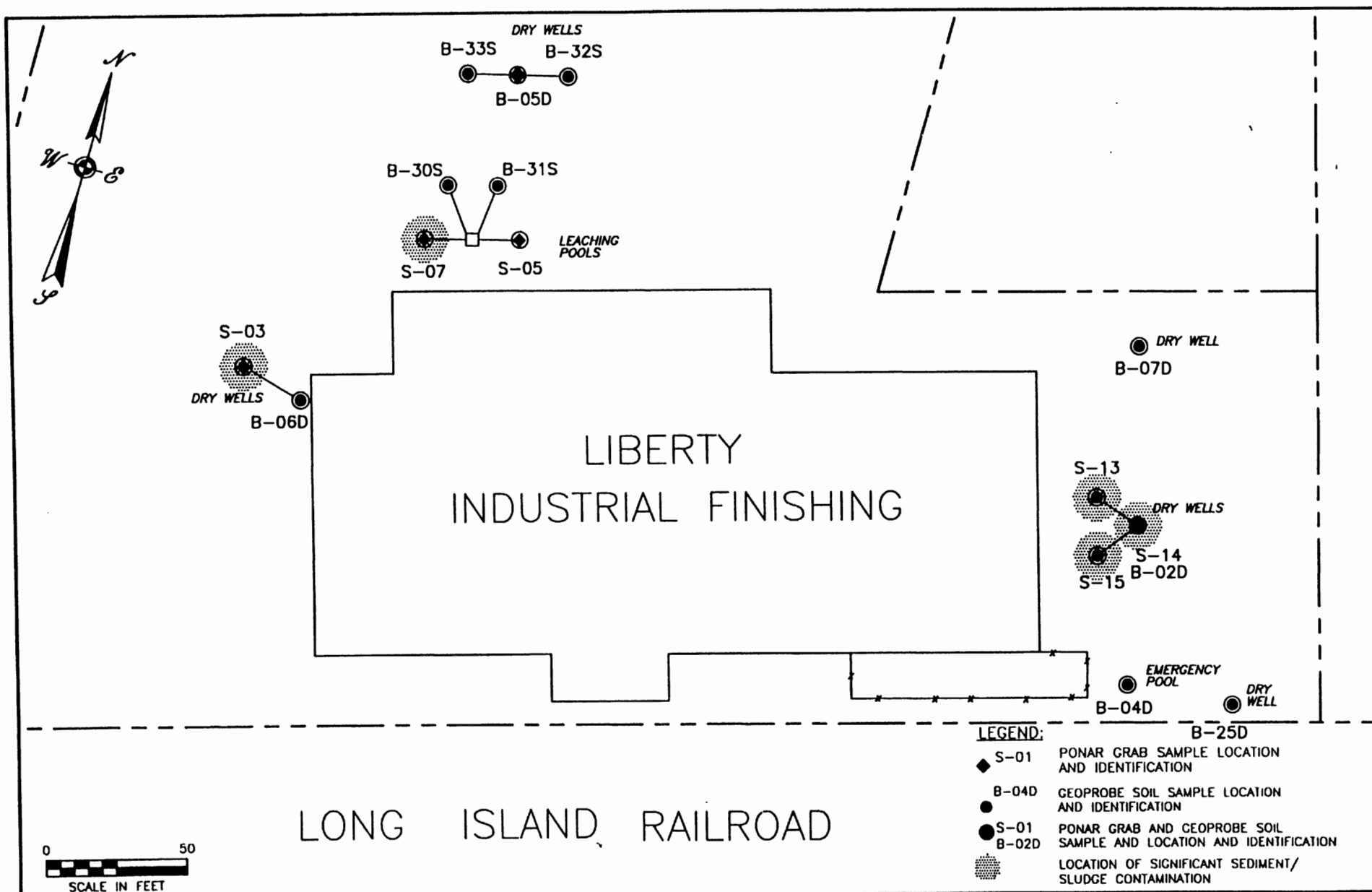


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FIGURE 4



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

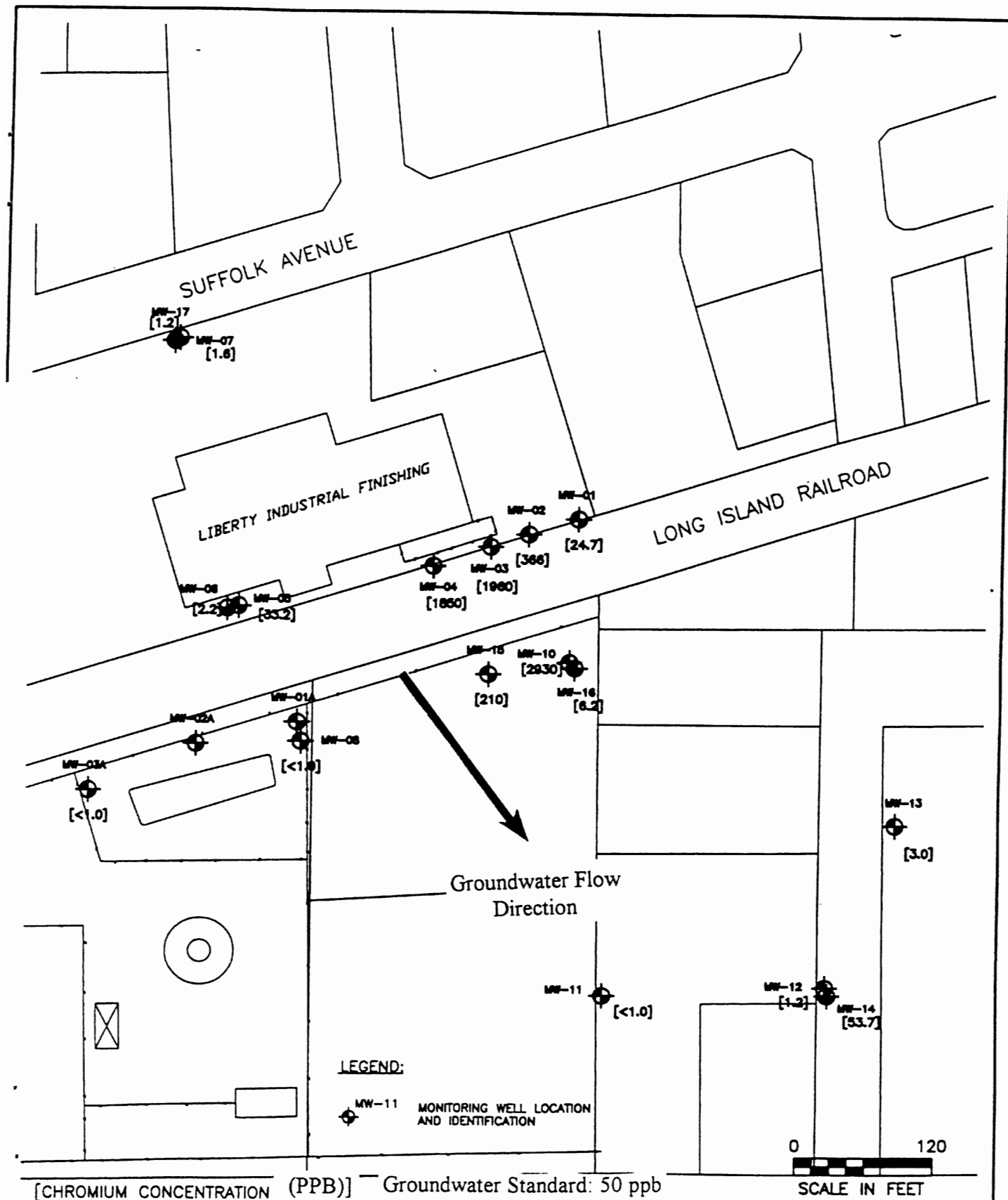
LOCATIONS OF SIGNIFICANT DRYWELL/
LEACHING POOL SEDIMENT/SLUDGE CONTAMINATION



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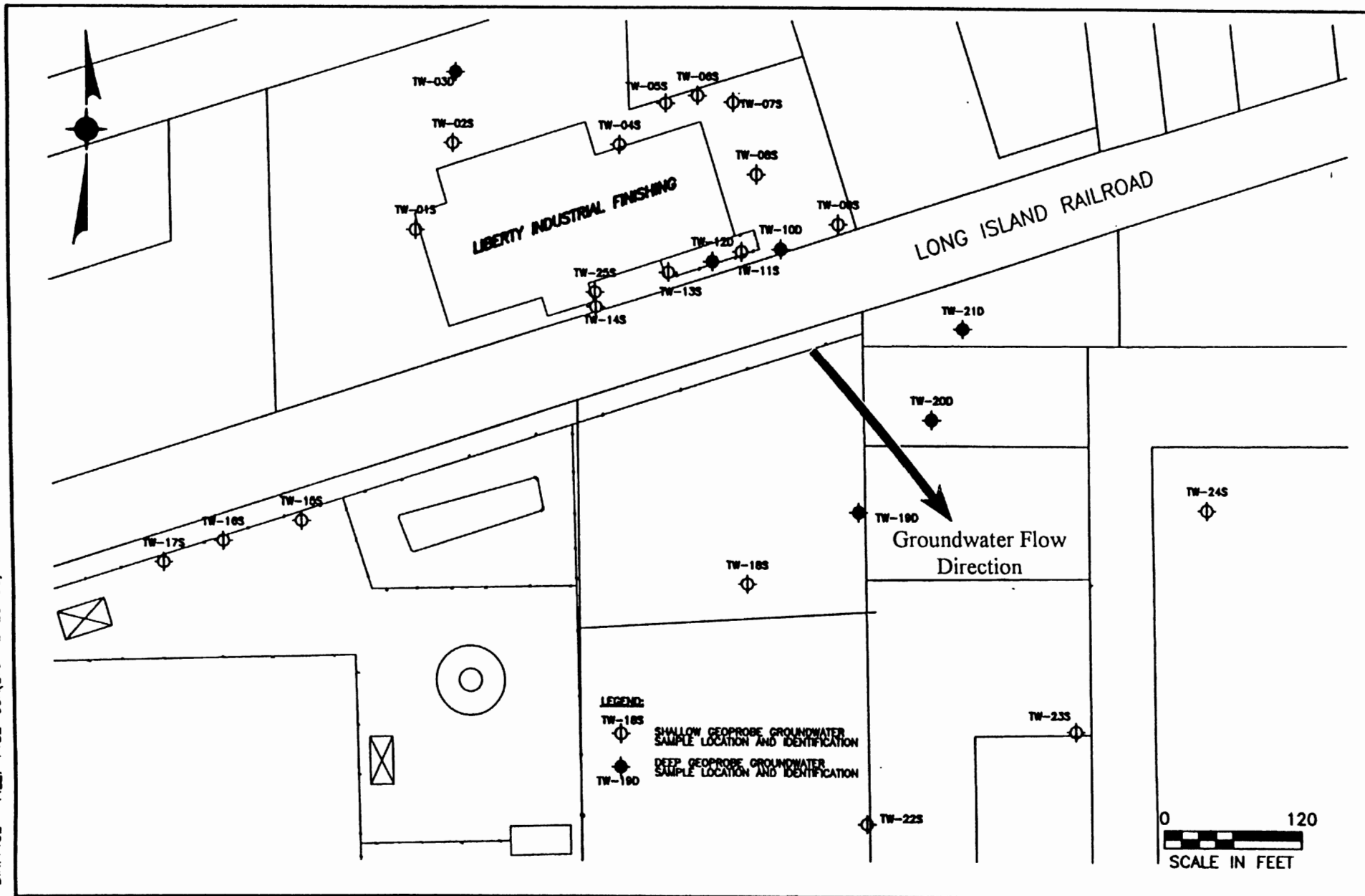
1000 William S. Connelley Associates, P.C.

FIGURE 5



Dvirka and Bartilucci
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FIGURE 6

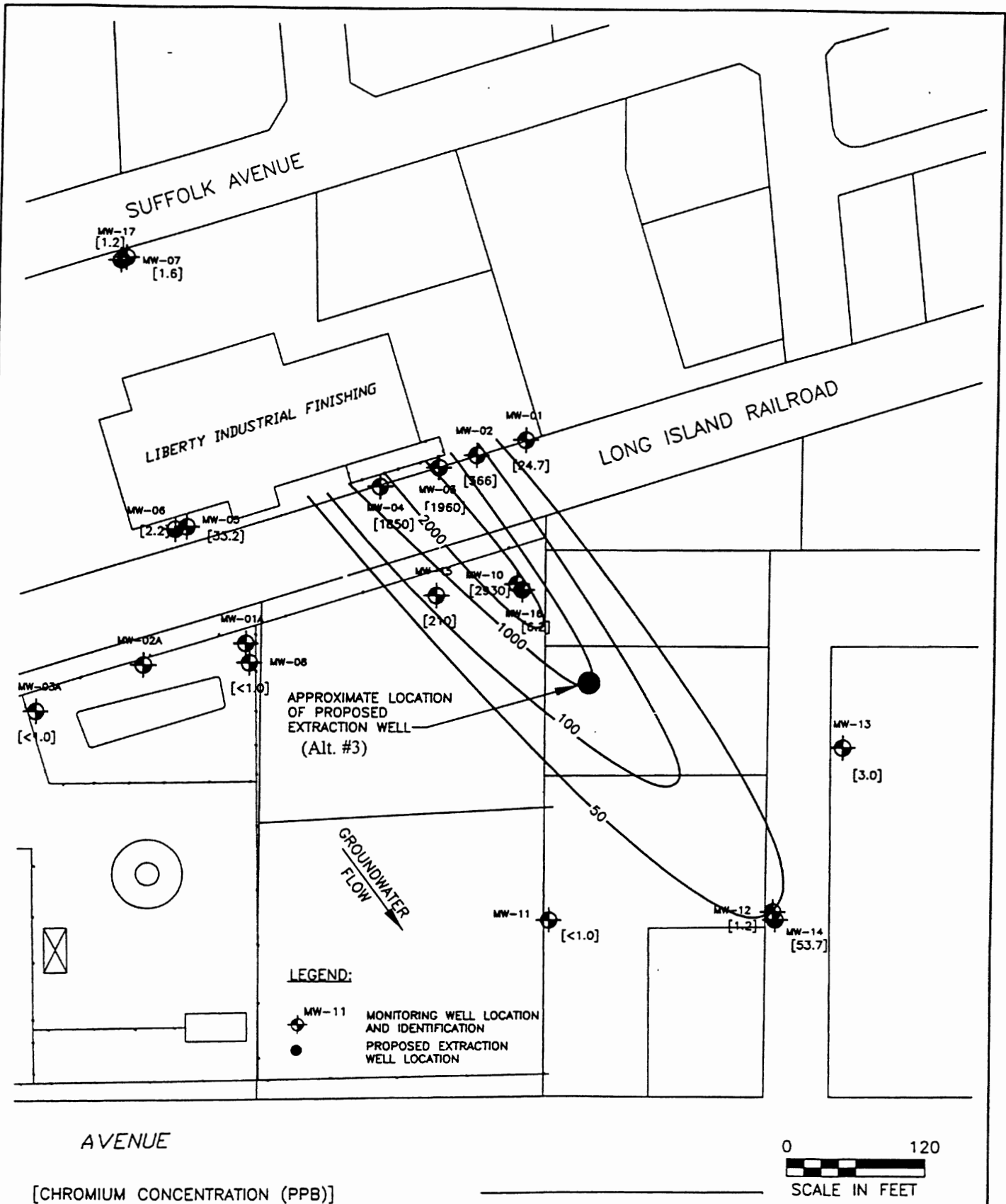


LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

GEOPROBE GROUNDWATER SAMPLE LOCATIONS



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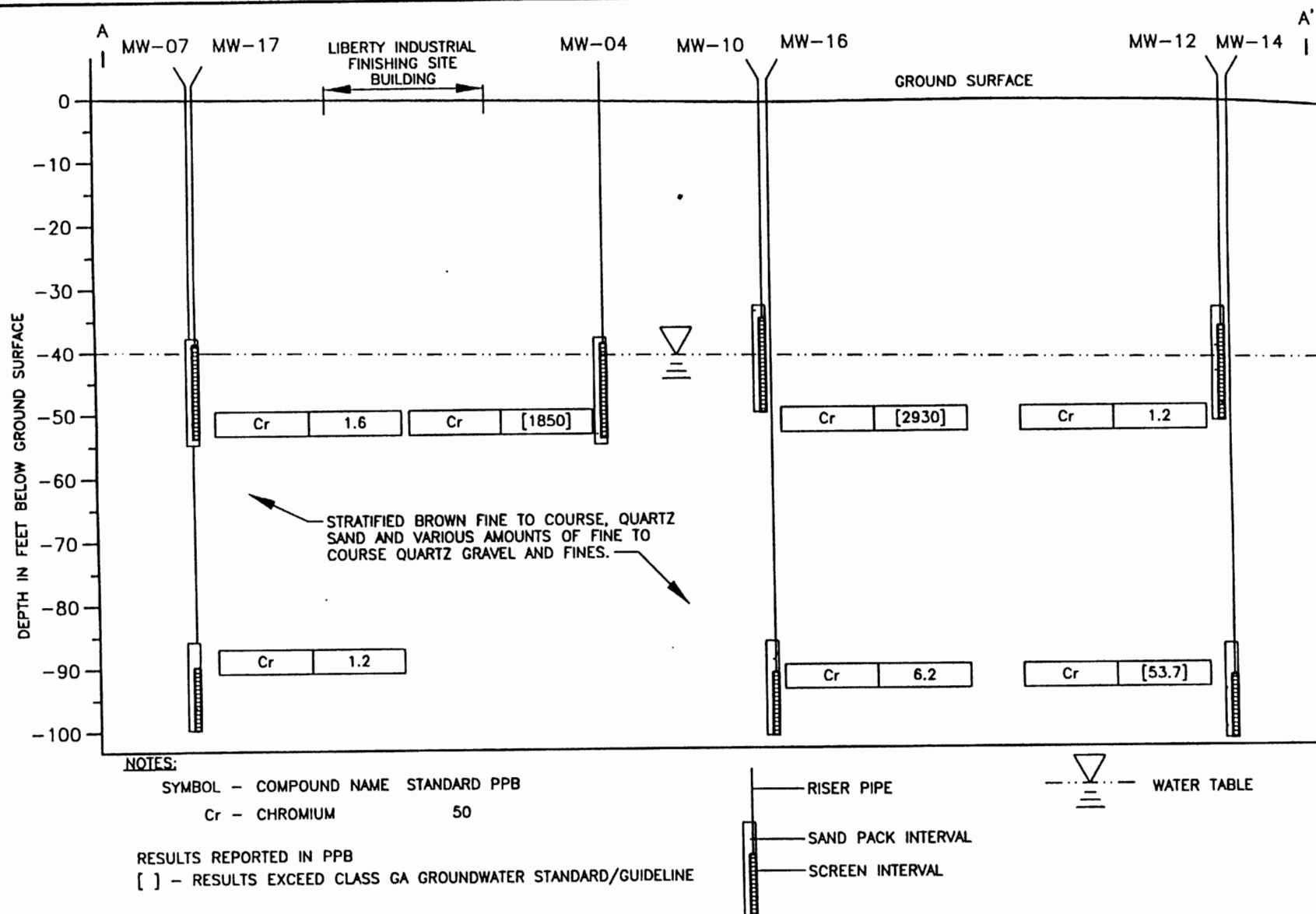
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

GROUNDWATER CONTAMINATION CONTOURS SAMPLE RESULTS FOR CHROMIUM



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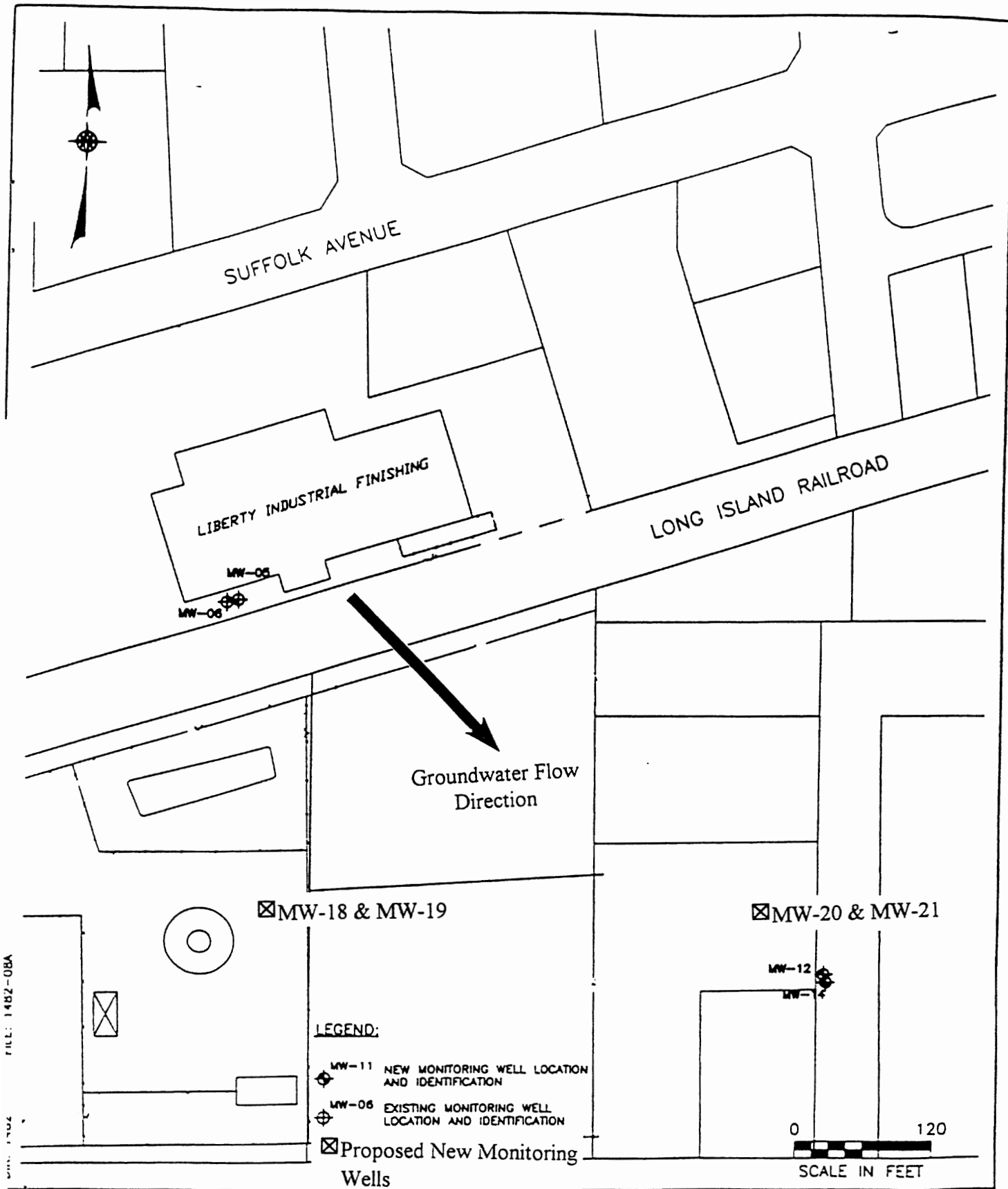
LIBERTY INDUSTRIAL FINISHING SITE
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BRENTWOOD, NEW YORK



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CHROMIUM CONTAMINATION CROSS-SECTION

FIGURE 9



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK



LONG-TERM MONITORING WELL LOCATIONS
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FIGURE 10

TABLE 1
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SURFACE SOIL SAMPLE RESULTS
SAMPLED FROM APRIL TO JUNE 1997

SAMPLE LOCATION	On-site		Off-site				Background**		Soil Cleanup Objectives
	0-2	2-6	Athletic Field*		Water District*		0-2	2-6	
SAMPLE DEPTH, INCHES	0-2	2-6	0-2	2-6	0-2	2-6	0-2	2-6	
METALS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Arsenic	BSC	BSC	BSC-381	BSC-967	BSC-7.6	BSC	3.83	3.27	7.5
Barium	BSC	BSC	BSC	BSC	BSC-943	BSC	24.1	20.2	300
Beryllium	BSC-0.50	12.8-35.4	BSC-1.5	BSC-0.84	0.72-17.8	BSC-5.8	0.26	0.23	0.24***
Cadmium	BSC-277	10.6-35.4	BSC	BSC	BSC	BSC	0.24	ND	10
Chromium	BSC-412	BSC-80.5	BSC-74.6	BSC	BSC-1,010	BSC-264	10.8	8.4	50
Cobalt	BSC	BSC	BSC-35.9	BSC	BSC-393	BSC-106	2.77	2.33	30
Copper	BSC-145	BSC-48.3	BSC-208	BSC-37	BSC-3,130	128-1,020	7.8	5.7	25
Iron	BSC-43,000	BSC	BSC-22,400	BSC-44,700	10,500-153,000	BSC-54,300	11,347	8,627	10,000***
Lead	BSC	BSC	BSC	BSC	BSC-2,220	BSC-1,360	60.7	52.7	400
Mercury	BSC-1.5	BSC	BSC-0.43	BSC-0.36	BSC	BSC-0.44	ND	ND	0.1
Nickel	BSC-146	13.9-63.0	BSC-77.1	BSC-18.8	50.3-1,050	BSC-437	6.33	5.03	13
Selenium	BSC	BSC	BSC-4.5	BSCD-2.5	BSC-50.1	BSC-11.5	1.06	1.00	2
Vanadium	BSC	BSC	BSC	BSC	BSC	BSC	17.1	13.7	150
Zinc	52.9-607	89.8-180	BSC-728	BSC-182	408-3,540	66.8-2,730	58.6	34.8	47***

BSC - below soil cleanup objectives

ND - indicates that the analyte was not detected

* Samples collected before IRM

** Background samples collected at Brentwood Public Library, located 1600 feet east of site

*** Soil Cleanup Objectives calculated by averaging of six background soil samples

TABLE 2
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SUBSURFACE SOIL SAMPLES
TAL METALS

SAMPLE LOCATION	On-Site (UST Area)										NYSDEC SOIL CLEANUP OBJECTIVES
SAMPLE ID	B-12S	B-14S	B-15S	B-16D	B-17S	B-18S	B-19S	B-20D	B-29D	B-29D	
SAMPLE DEPTH, FT	12-16	12-16	2-6	12-16	8-12	12-16	8-12	8-12	0-4	4-8	
DATE SAMPLED	3/11/98	3/12/98	3/12/98	3/12/98	3/12/98	3/12/98	3/6/98	3/6/98	3/10/98	3/10/98	
METALS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Cadmium	126	19	118	7	19.7	6.7	22.7	0.96	1.4	0.4	10
Chromium	12.9	6.4	972	27.5	30.9	3.1	3	5.4	1320	1530	50
Copper	3.9	6.8	87.8	8.3	3.8	18.6	2.8	1.3	39.8	31.6	25
Nickel	8.6	7.6	139	14.8	9.3	18.7	17.4	13.2	22	9.9	13
Cyanide*	8.08	5.58	14.6	ND	17.9	2.13	5.38	ND	ND	ND	

NOTES

Results in bold exceed NYSDEC Recommended Soil Cleanup Objectives

*Detections of Cyanide - no NYSDEC Recommended Soil Cleanup Objective

ND: Not Detected

TABLE 3
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
DRYWELL/LEACHING POOL SEDIMENT/SLUDGE SAMPLES

SAMPLE LOCATION	Sanitary Leaching Pools	Storm Water Dry Wells				NYSDEC
SAMPLE ID	S-07	S-03	S-13	S-14	S-15	Soil Cleanup
SAMPLE DEPTH	0-2"	0-2"	0-2"	0-2"	0-2"	Objectives
DATE OF COLLECTION	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97	(mg/kg)
SEMIVOLATILE ORGANICS (ppb)						
Phenol	ND	77	ND	120	1300	30
Dimethyl Phthalate	ND	140	2300	3500	2300	2000
Benzo(a)anthracene	130	790	860	920	1900	224
Chrysene	240	2000	1300	1600	2600	400
Benzo(b)fluoranthene	75	1200	920	1300	2000	1100
Benzo(k)fluoranthene	72	1300	1100	1200	1600	1100
Benzo(a)pyrene	120	760	1000	1100	2000	61
Dibenzo(a,h)anthracene	ND	ND	ND	170	ND	14
Total CaPAHs***	637	6050	5180	6290	10100	10000
METALS (mg/kg)						
Beryllium	ND	0.42	0.54	ND	0.4	0.24**
Cadmium	89.8	303	52.8	186	34.9	10
Chromium	148	579	330	314	191	50
Copper	519	131	172	208	62.5	25
Iron	6380	10700	7980	9630	12800	10000**
Mercury	0.96	ND	ND	ND	ND	0.1
Nickel	11.5	102	51.7	67	31.9	13
Selenium	3.8	2	1.1	2	1.2	2
Zinc	127	528	554	866	248	47**
Cyanide	2.6*	ND	6.69*	ND	4.34*	

NOTES

Results in bold exceed NYSDEC Recommended Soil Cleanup Objectives

*: Detections of Cyanide - no NYSDEC Recommended Soil Cleanup Objective

**: Soil cleanup objectives calculated using results from background samples SS-30, SS-32, SS-33

***: CaPAH refers to Carcinogenic polycyclic aromatic hydrocarbons

ND: Not Detected

TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SUMMARY OF EXCEEDANCES OF NEW YORK STATE GROUNDWATER STANDARDS
GROUNDWATER MONITORING WELL SAMPLES

SAMPLE TYPE	Shallow Wells (50 feet bgs)			Deep Wells (100 feet bgs)*			NYSDEC Groundwater Standards (ppb)
SAMPLE LOCATION	Upgradient	On-site	Downgradient	Upgradient	On-site	Downgradient	
	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	
SAMPLE DATE	12/97 & 6/98	12/97 & 6/98	12/97 & 6/98	6/98	12/97 & 6/98	12/97 & 6/98	
Antimony	BGA	BGA-22.5	BGA-20.7	4.9	BGA	BGA	3
Cadmium	BGA	BGA-16.3	BGA-369	BGA	BGA	BGA-15.2	10
Chromium	BGA	BGA-3,600	BGA-3,070	BGA	BGA	BGA-53.7	50
Sodium	27,700-43,200	BGA-90,200	BGA-41,100	BGA	BGA	BGA-27,200	20000
Cyanide	BGA	BGA-417	BGA	BGA	BGA	BGA	100

NOTES

BGA: Result does not exceed NYSDEC Groundwater Standards

*: The on-site deep well was screened at 265 feet bgs

TABLE 5
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
GEOPROBE GROUNDWATER SAMPLING RESULTS

SAMPLE TYPE	Shallow Samples (50 feet bgs)			Deep Samples (100 feet bgs)			NYSDEC Class GA
SAMPLE LOCATION	Upgradient	On-site	Downgradient	Upgradient	On-site	Downgradient	Groundwater
	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	Standards
SAMPLE DATE	2/98-3/98	2/98-3/98	2/98-3/98	2/98-3/98	2/98-3/98	2/98-3/98	(ppb)
Antimony	6.2	3.9-35.7	3.1-9.2	6.1	4.1-8.9	6.3-8.6	3
Arsenic	26.3	BGA-34.7	BGA-27.2	60.9	BGA-26.2	34.9-70.6	25
Beryllium	BGA	BGA-5.2	BGA-3.7	6.8	BGA-3.2	5.8-7.7	3
Cadmium	BGA	BGA-22.8	BGA-18.9	BGA	BGA	BGA-14.2	10
Chromium	1510	174-9,070	359-1,930	2,680	941-1,170	1,880-4,290	50
Copper	BGA	BGA-342	BGA	503	BGA-248	223-508	200
Iron	178,000	14,800-467,000	54,600-312,000	424,000	112,000-198,000	275,000-676,000	300
Lead	63.3	BGA-571	BGA-91.6	194	27.2-76.6	89.7-231	25
Manganese	5,860	BGA-5,860	1,780-7,600	10600	2,660-3,180	4,770-13,400	300
Selenium	14.9	BGA-16.4	BGA-14.8	28.4	BGA-19.1	13.2-27.6	10
Sodium	BGA	BGA-88,500	BGA-34,400	20900	BGA-22,200	22,000-27,000	20,000
Thalium	BGA	BGA-15.4	BGA-14.7	14.5	BGA-8.2	14.6-33	4
Zinc	679	BGA-1940	BGA-1,170	993	BGA-467	BGA-1,660	300

Notes

BGA: Below New York State Groundwater Limit

All samples were unfiltered

Table 6
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
Alt. #1: No Further Action	\$0	\$17,200	\$264,000
Alt. #2: Source Removal and Mitigation and Assessment of On-Site and Off-Site Groundwater Quality	\$237,700	\$17,200	\$501,700
Alt. #3: Source Removal and Mitigation and Treatment of Contaminated Groundwater	\$1,102,000	\$148,000	\$2,946,000

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

**Liberty Industrial Finishing Site
Proposed Remedial Action Plan
Town of Islip, Suffolk County
Site No. 1-52-108**

The Proposed Remedial Action Plan (PRAP) for the Liberty Industrial Finishing site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repositories on February 24, 1999. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil, sediment, and groundwater at the Liberty Industrial Finishing site. The preferred remedy is source removal and assessment of on-site and off-site groundwater quality.

The release of the PRAP was announced via a notice to the mailing list and notice to the print and electronic media, informing the public of the PRAP's availability.

A public meeting was held on March 11, 1999 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received from Assemblyman Paul Harenberg, Mr. Sy Robbins of the Suffolk County Department of Health Services (SCDHS), and Ms. Elsa Ford of the Brentwood/Bayshore Breast Cancer Coalition.

The public comment period for the PRAP ended on March 26, 1999.

This Responsiveness Summary responds to all questions and comments raised at the March 11, 1999 public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC's responses:

COMMENT 1: Why aren't the Brentwood water supply wells tested quarterly instead of annually?

RESPONSE 1: According to the Suffolk County Department of Health Services, the wells are tested twice each year: once by the SCDHS and once by the Brentwood Water District. In addition to the annual samples, both the Brentwood Water District and the SCDHS test several distribution samples throughout the year. The SCDHS indicated that the current testing frequency is sufficient because of the well depths (minimum 450 feet bgs). They indicated that any contamination entering the public water supply would be detected before a public health risk occurs.

COMMENT 2: The Fact Sheet indicated that the surface soils at the Town of Islip Athletic Field were contaminated with metals? Is there a public health risk for children utilizing the athletic field?

RESPONSE 2: The only contaminated soils found at the athletic field were located in a small area at the southwest corner of the property. These soils were excavated by the Town of Islip and disposed of off-site. The area was then filled with clean soil. Since no known contaminated soil remains at the athletic field, the field is not a public health risk.

COMMENT 3: The RI predicted dire consequences for the groundwater and public water supply. However, the FS appeared to discount the groundwater contamination. Why is the groundwater contamination being discounted?

RESPONSE 3: The RI data indicate that the groundwater contamination plume continues to be fed by the on-site source areas. Since all of the on-site source areas will be removed and/or mitigated as part of the selected remedy, the groundwater contamination will naturally attenuate to meet NYSDOH drinking water standards. The Brentwood Public Water Supply Wells are located at 450 feet bgs while the groundwater contamination is limited to the upper aquifer (50 feet bgs). The groundwater flows southeast while the public supply wells are located southwest of the site.

COMMENT 4: Six hundred children use the Town of Islip Athletic Field. Will these children be protected from airborne contaminants during construction of the remedy? Can the construction be delayed until after August 1, 1999, which is the end of the youth baseball season?

RESPONSE 4: Before construction of the remedy begins, a Community Health and Safety Plan will be implemented to protect nearby residents from potential impacts from the construction activities. The construction schedule can be arranged to coordinate with the athletic field schedule. A public meeting will be planned before construction activities begin to address issues related to construction of the remedy.

COMMENT 5: Can the soils at the Town of Islip Athletic Field be tested following construction of the remedy?

RESPONSE 5: Yes, the athletic field surface soils will be tested before commencement and after completion of construction activities to determine if they were impacted by construction activities.

COMMENT 6: Could the contaminated groundwater seep into basements?

RESPONSE 6: The water table is located at approximately 50 feet bgs, well below the depth of a residential basement. The contaminants are metals which tend to bind to the soil, rather than emit vapors. Therefore, groundwater contamination related to the Liberty Industrial site will not affect residential basements.

COMMENT 7: Could contamination be present in the groundwater south of the furthest monitoring wells? Groundwater downgradient of the site should be tested until chromium concentrations of zero are detected.

RESPONSE 7: Since the furthest downgradient wells detected metals concentrations that meet or marginally exceed NYSDOH drinking water standards, it is unlikely that groundwater contamination would be found further downgradient. However, additional monitoring wells will be placed further downgradient of the site to insure that groundwater contamination has not migrated further downgradient of the site and monitor the effectiveness of the implemented remedy.

COMMENT 8: Deeper profile testing should be taken to determine if discharges from the 1970's have washed down to deeper groundwater levels upgradient of the Brentwood Water District well field. More outpost monitoring wells are needed.

RESPONSE 8: The on-site nature and extent of on-site groundwater contamination has been sufficiently characterized by an extensive groundwater sampling program including the analysis of Geoprobe groundwater samples and groundwater monitoring well samples at various depths. The results of this investigation indicate that the groundwater contamination plume is limited to the area southeast of the Liberty Industrial site, which is east of the Brentwood Water District supply wells. However, the NYSDEC will be installing outpost monitoring wells upgradient of the supply wells at 150 feet bgs and 250 feet bgs to detect any contamination that may affect the supply wells before contaminants reach them. Remedial actions would be considered in the unlikely event that the outpost monitoring wells detect contamination.

COMMENT 9: Were any soil samples taken directly below the underground tanks?

RESPONSE 9: No soil samples were obtained below the underground tanks because the sampling activities would have interfered with the in-place closure of the tanks. However, several subsurface soil samples were obtained directly adjacent to the tanks and should have similar contaminants and concentrations as the soils directly below the tanks.

COMMENT 10: Two citizens requested that the underground tanks be removed and that the soil beneath the tanks be excavated. They indicated that the soil below the tanks may be the most contaminated soil at the site. Was the decision to leave the tanks in the ground based on financial rather than health and environmental reasons?

RESPONSE 10: The underground tanks were properly closed in place as part of the EPA removal action. The remaining liquid was pumped from the tanks and the tanks were cleaned and sandblasted. The tanks were then filled with clean soil and capped with concrete. Since the underground tank and pipe gallery area will be capped with asphalt and the underground tanks have been closed in place with a concrete cap, the remaining contaminants in the subsurface soil will be immobilized. However, if tank removal were performed, the adjacent Long Island Railroad line would be shut down because of the presence of a high-voltage underground power line and the integrity of the on-site building may be compromised. Since tank removal would

present these significant disadvantages and would only provide a marginal benefit, the tanks will not be removed as part of the remedy.

COMMENT 11: What are the human health effects of chromium?

RESPONSE 11: Inhalation of high levels of chromium can cause irritation to the nose. Long-term exposure to airborne chromium has been associated with lung cancer in workers exposed to levels that were 100 to 1,000 times higher than those found in the environment. Certain people have an allergy to chromium which causes skin rashes upon dermal contact. Ingestion of large amounts of chromium can cause damage to the kidneys, liver, and stomach. However, the chromium contamination levels associated with this site are not expected to result in any adverse health effects.

COMMENT 12: There have recently been several cases of childhood Leukemia in the Brentwood area. Has a Leukemia study been done in the Brentwood area? Can a GIS mapping study or site-specific analysis be done for this site?

RESPONSE 12: No cancer case verification study has been performed in the Brentwood area by the NYSDOH. A cancer case verification study or case review involves confirming suspected cancer cases and an examination of the characteristics of the confirmed cases in order to detect any unusual patterns that would indicate the need for further investigation. Approximately one in 300 children will be diagnosed with some type of cancer between birth and age 19. Leukemia is the most common childhood cancer, accounting for approximately one third of all childhood cancer cases. The number of leukemia cancer cases that might be associated with one specific site is usually too small for a statistical analysis to be conducted. However, if specific information on the suspected cases is sent to the NYSDOH, staff will use the Cancer Registry to confirm the cases and will review them to see if they show an unusual pattern. Researchers use geographical mapping programs and databases (GIS) when they conduct a case review.

A letter dated February 16, 1999 was received from Assemblyman Paul Harenberg which included the following comments:

COMMENT 1: He and his constituents are anxious and worried about the soil contaminants of cadmium and chromium. He urged us to give this project an expedited position on our list of projects awaiting action.

RESPONSE 1: This project has been given a high priority by the NYSDEC. With the issuance of this ROD, design of the remedy and construction of the remedy will follow.

A copy of the letter from Mr. Harenberg is attached.

A letter dated March 12, 1999 was received from Mr. Sy Robbins of the SCDHS which included the following comments:

COMMENT 1: The abandonment of the tanks in place does not conform to the requirements of Article 12 of the Suffolk County Sanitary Code.

RESPONSE 1: The referenced section of the Suffolk County Sanitary Code indicates that the removal of abandoned underground storage tanks is required except under certain extenuating circumstances. These circumstances exist with respect to the tanks at the Liberty Industrial site. Removal of the tanks would have required interruption of railroad service because a high-voltage underground power line would have been shut off during tank removal. Instead, the tanks were closed in place by emptying the contents, cleaning and sandblasting the tanks, filling the tanks with sand, and capping them with concrete.

COMMENT 2: The design of the outpost monitoring wells should be finalized with input from the SCDHS, and will probably require the collection of vertical profile data prior to the selection of screened intervals.

RESPONSE 2: As discussed at the public meeting, the NYSDEC will consult with the SCDHS in placing the downgradient monitoring wells.

A copy of Mr. Robbins' letter is attached.

A letter dated March 25, 1999 was received from Ms. Elsa Ford of the Brentwood/Bayshore Breast Cancer Coalition which included the following comments. Other comments are responded to elsewhere in the Responsiveness Summary.

COMMENT 1: The building should be tested after the clean up to be sure there will be no exposure from future use.

RESPONSE 1: The interior of the building, including the flooring, was remediated as part of the EPA Emergency Removal Action. The emergency removal action included the following tasks: pressure washing of process vats; vacuuming and pressure washing of floors; removal of contaminated debris from vat areas and floors; and packaging all waste materials in drums for off-site disposal at a permitted disposal facility. Since the EPA performed a thorough cleanup of the on-site building, no further testing is needed in the interior of the building.

COMMENT 2: A number of health-related issues were not addressed as part of this investigation such as: exposure to a combination of toxins, routes of exposure, and especially sensitive individuals.

RESPONSE 2: As stated in the February 1999 Feasibility Study Report, an exposure assessment was performed for the site to determine the constituents of concern and the possible routes of exposure. Several constituents were identified in on-site soils as being in excess of DEC standards, criteria and guidelines (SCGs), however, chromium was the only contaminant in the groundwater that presented a potential health concern. What is important to remember is whether or not the exposure pathways are completed. The routes of exposure examined in the exposure assessment

were again discussed at the March 11, 1999 PRAP meeting. These routes are inhalation, direct contact and ingestion.

Inhalation of contaminated dust or dirt, during remedial activities, by children playing on the ballfield directly south of the site is a potential exposure pathway. This pathway, however, will be prevented by the community health and safety plan which is used to protect the community from exposures to site-related contaminants during any kind of site-related remedial activity, usually involving the disturbance of soils. Particulate air monitoring was included during the RI activities and will be included in the remedial construction in the protective procedures to prevent contaminated dusts or particulates from leaving the site.

Direct contact is an exposure pathway which is unlikely to be completed since the majority of soil contamination on-site is subsurface. Surface soil contamination has been identified, but is located in an area that is not easily accessible to trespassers. Surface soil contamination will be remediated as a part of the selected remedy. Off-site soil contamination identified in the athletic field and at the Brentwood water district were determined to originate from sources other than the site. Contamination identified in these areas has been removed.

Ingestion of site-related contaminants is not considered an exposure pathway that will be completed since the on-site and off-site groundwater contamination is currently not affecting any public supply or private wells. Site-related groundwater contamination, chromium, has been detected no deeper than 50 feet below ground surface (BGS). The groundwater flow direction has been determined to be to the southeast. The closest supply well, the Brentwood water district, is located to the southwest with wells 450 and 700 feet BGS, much deeper than the current groundwater contaminant plume.

Although sensitive individuals are not specifically referenced within the data, determination of exposure pathways considers sensitive populations such as children and the elderly.

A copy of Ms. Ford's letter is attached.



THE ASSEMBLY
STATE OF NEW YORK
ALBANY

PAUL HARENBERG
Assemblyman 5th District
Room 724
Legislative Office Building
Albany, New York 12248
(518) 455-3937

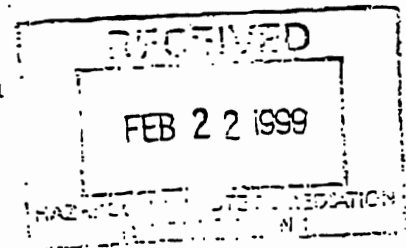
1217-2 Montauk Highway
Jardale, New York 11769
(516) 589-8685

CHAIRMAN
Majority Steering Committee

COMMITTEES
Higher Education
Mental Health
Veterans Affairs
Ways & Means

February 16, 1999

Raymond Cowen, Regional Director
New York State Dept. of Environmental Conservation
State University of New York
Bldg. 40
Stony Brook, New York 11790



Dear Mr. Cowen:

I write to urge your good faith efforts to expedite plans for a clean-up of the site of the former Liberty Industrial Plant in Brentwood.

My constituents and I are anxious and worried about the soil contaminants of cadmium and chromium. We are anxious that the clean-up happen soon, for fear that pedestrians and youngsters who traffic that area may be hurt. The Liberty site is not far from a school and a library.

I join Supervisor McGowan, Rev. McGowan, and Elsa Ford, as well as all the residents of the Brentwood community in urging that you give this project an expedited position in your list of projects awaiting action.

Thank you.

Very truly yours,

PAUL HARENBERG
Member of Assembly

PH:gb

COUNTY OF SUFFOLK



ROBERT J. GAFFNEY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

CLARE B. BRADLEY, M.D., M.P.H.
COMMISSIONER

March 12, 1999

Mr. Jeffrey Dyber, Project Manager
Division of Environmental Remediation
NYS Dept. of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

RECEIVED

MAR 22 1999

Bureau of Eastern
Remedial Action

Dear Mr. Dyber:

RE: PRAP FOR LIBERTY INDUSTRIAL FINISHING (#152108)

On behalf of the Suffolk County Department of Health Services, I would like to offer the following comments on the Proposed Remedial Action Plan for Liberty Industrial Finishing, Brentwood (Site #152108) prepared by the Division of Environmental Remediation (Jan. 1999):

The proposed remedy, which includes soil removal from the underground tank and pipe gallery area, installation of an asphalt cap over this area, removal of contaminated sediment from four stormwater drywells and one sanitary leaching pool, institutional controls and deed restrictions, and long-term groundwater monitoring, should be protective of public health. You should be aware, however, that the abandonment of the tanks in place does not conform to the requirements of Article 12 of the Suffolk County Sanitary Code; you will, therefore, have to contact Mr. Alex Santino of the SCDHS' Office of Pollution Control at (516) 854-2529 to discuss future options. In addition, the design of the outpost monitoring wells should be finalized with input from me, and will probably require the collection of vertical profile data prior to the selection of screened intervals.

If you have any questions, please call me at (516) 853-3196.

Very truly yours,

Sy F. Robbins, C.P.G.
County Hydrogeologist

cc: A. Santino, SCDHS
J. Nealon, NYSDOH
B. Becherer, NYSDEC Region 1
G. Proios, Office Co. Exec.



BRENTWOOD/BAYSHORE
BREAST CANCER COALITION
POST OFFICE BOX 927
BRENTWOOD, N.Y. 11717-0993

To: Mr. Jeffrey L. Dyber
From: Elsa Ford
Ref: Liberty Industrial Finishing Site
Town of Islip, N.Y.
SITE #: 1-52-108

REMEDY FOR LIBERTY INDUSTRIAL FINISHING
TOWN OF ISLIP, N.Y.
SITE # 1-52-108

A remedy can not be selected before there is more information of the exact extent of contamination.

#1: Since there were reports of violations at the site since the '70's¹, the possibility of deeper groundwater contamination above the Brentwood Water District on the west end of the property should be explored. Deep profile testing should be taken to see if contaminants found a S03 dry well and leaching pool S07 for example, have washed down to deeper ground water levels upgradient of the Brentwood Water District well field. There is the possibility of both semi volatiles and metals presence. Heavy metals, usually immobile in soil can move more readily in combination with acid. Acid was involved in the Liberty processes. Ingestion of contaminated ground-water between testing periods of the Brentwood Water District is a possibility that must be addressed. Proposed monitoring wells 18 and 19 are too little, not addressing the upgradient possibility. Any findings would require changes in the proposed remedy. The sooner such threat is detected the better for the Brentwood Water District and community so that specific remedial actions could be taken. The remedy would have to be addressed in the ROD. Note that liberty is located in the Ground water Management Zone 1.

#2: The full extent of the plume from the tank farm has not been plotted to 0. This information is needed for exact determination. Profile testing with a number of screen levels is needed.

#3: I was told that Liberty signed a consent order to remove the underground storage tanks, but later claimed lack of funding. The DEC 4/98 IHWDS in NYS report notes that the EPA was waiting for final approval for appropriation of funds for a removal action. Was the decision to leave the tanks in based on financial rather than health and environmental reasons? The train schedule problem sited in the PRAP could be overcome by using diesel trains on a temporary basis while the problem is corrected. Leaving the tanks in prevents ground water and other testing at the place where contamination is likely to be the greatest. A deep test well is needed here.

#4: Soil removal work can be scheduled with representatives of the Little League so that contaminated soil won't blow on children playing. This is a route of exposure. The soil at the Little League fields would have to be tested after the Liberty soil removal work is completed.

#5: There should be testing of the building after the clean up to be sure there will not be exposure from future use.

¹ PRAP page 5. "Plating wastes were discharged to various leaching pools throughout the site."



BRENTWOOD/BAYSHORE BREAST CANCER COALITION

#6: While granting that the health risk analysis follows current procedures and guidelines, there is reason to apply a stronger measure of prudent avoidance. This is due to the proximity of the Little League Ball Field and the Brentwood Water District. A number of issues not addressed in the current health analysis are exposure to a combination of toxins, routes of exposure, and especially sensitive individuals. For example the same child may eat the contaminated soil and breathe it.

The need for extraction at proposed or other sites and levels cannot be ruled out at this point. Note that the site for the proposed extraction well on Figure 8 is not on the ball field as stated on page 16 of the PRAP, but on the American Legion property.

I request that these and other issues raised at the public meeting should be reviewed and presented at another public meeting before the writing of the ROD's final selection of remedy for this site.

Elsa Ford, President
Brentwood/Bay Shore Breast Cancer Coalition
18 Stockton St.
Brentwood, N.Y. 11717
516-273-4074

APPENDIX B

Administrative Record

APPENDIX B
LIBERTY INDUSTRIAL FINISHING ADMINISTRATIVE RECORD

1. Work Plan for Remedial Investigation/Feasibility Study of Liberty Industrial Finishing Site, Dvirka and Bartilucci Consulting Engineers, September 1997
2. Remedial Investigation Report for Liberty Industrial Finishing Site, Dvirka and Bartilucci Consulting Engineers, January 1999
3. Feasibility Study Report for Liberty Industrial Finishing Site, Dvirka and Bartilucci Consulting Engineers, February 1999
4. Proposed Remedial Action Plan for Liberty Industrial Finishing Site, NYSDEC, February 1999

Appendix B

Soil Boring Logs and Monitoring Well Completion Logs

PLACEHOLDER PAGE

Boring logs and/or monitoring well completion logs could not be located for the monitoring wells listed below. This information will be added to the SMP as it becomes available.

MW-1

MW-2

MW-3

MW-4

MW-12

MW-14

MW-18

MW-19

MW-20

MW-21

JOB LOCATION: <u>Brentwood N.Y.</u> 	WARREN GEORGE. INC. FOOT OF JERSEY AVENUE P. O. BOX 413 JERSEY CITY, N.J. 07303 FOR: <u>Liberty Industries</u>	SHEET <u>1</u> OF <u>8</u> LOCATION <u>Brentwood N.Y.</u> HOLE NO. <u>MW-6</u> LINE & STA. _____ OFFSET _____
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DEPTH _____ FT. CASING OUT DATE: _____	DATE, START: <u>4/8/87</u>	GROUND ELEVATION _____
DEPTH _____ FT. ALL CASING OUT DATE: _____	DATE, FINISH: <u>4/17/87</u>	GROUND WATER ELEVATION _____

CASING O.D. <u>6" Auger</u> I.D. _____ SAMPLER O.D. <u>2"</u> I.D. _____ DIAMOND BIT SIZE _____	WEIGHT OF HAMMER <u>300-140</u> LBS. INSIDE LENGTH OF SAMPLER _____ IN.	HAMMER FALL _____ CASING <u>24"</u> SAMPLER <u>30"</u>
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DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
0		1	0'-2'		2-	1-	1-1			
		2	5'-7'		9-	13-	13-9			Light brown medium to coarse Sand, cobbles, some medium Gravel
10		3	10'-12'		10-	20-	31-39			0'-10'
		4	15'-17'		18-	30-	42-44			
20		5	20'-22'		11-	22-	25-22			Light brown medium to coarse Sand, medium Gravel
		6	25'-27'		21-	26-	36-39			10'-28'
30		7	30'-32'		22-	36-	41-36			Light brown medium to coarse Sand, some Cobbles
		8	35'-37'		30-	38-	46-54			28'-35'
40										

Soils Engineer: _____	Driller: <u>Victor Aimar</u>
Drilling Inspector: _____	Helper: <u>Don McMahon</u>

JOB LOCATION: <u>Brentwood N.Y.</u>	WARREN GEORGE. INC. FOOT OF JERSEY AVENUE P. O. BOX 413 JERSEY CITY, N.J. 07303	SHEET <u>2</u> OF <u>8</u> LOCATION <u>Brentwood N.Y.</u> HOLE NO. <u>MW-6</u> LINE & STA. _____ OFFSET _____
FOR: <u>Liberty Industries</u>		

DEPTH _____ FT.	FT. CASING OUT DATE: _____	DATE, START: <u>4/8/87</u>	GROUND ELEVATION _____
DEPTH _____ FT.	ALL CASING OUT DATE: _____	DATE, FINISH: <u>4/17/87</u>	GROUND WATER ELEVATION _____
CASING O.D. <u>6" Auger</u> I.D. _____ SAMPLER O.D. <u>2"</u> I.D. _____ DIAMOND BIT SIZE _____		WEIGHT OF HAMMER <u>300-140</u> LBS. INSIDE LENGTH OF SAMPLER _____ IN.	HAMMER FALL _____ CASING <u>24"</u> SAMPLER <u>30"</u>

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
40		9	40'-42'		27-	39-	38-32			
		10	45'-47'		29-	26-	52-52			
10		11	50'-52'		17-	27-	28-39			
		12	55'-57'		25-	30-	32-19			
20										
60		13	60'-62'		21-	34-	28-38			
		14	65'-67'		34-	47-	38-38			
30										
70		15	70'-72'		30-	35-	38-35			
		16	75'-77'		34-	41-	40-43			

Soils Engineer: _____	Driller: <u>Victor Aimar</u>	
Drilling Inspector: _____	Helper: <u>Don McMahon</u>	

JOB LOCATION:

Brentwood N.Y.

WARREN GEORGE. INC.

FOOT OF JERSEY AVENUE

P. O. BOX 413

JERSEY CITY, N.J. 07303

FOR:

Liberty Industries

SHEET 3 OF 8

LOCATION Brentwood N.Y.

HOLE NO. MW-6

LINE & STA.

OFFSET

DEPTH _____ FT. _____ FT. CASING OUT DATE: _____

DATE, START: 4/8/87

GROUND ELEVATION _____

DEPTH _____ FT. ALL CASING OUT DATE: _____

DATE, FINISH: 4/17/87

GROUND WATER ELEVATION _____

CASING O.D. 6" Auger I.D. _____

SAMPLER O.D. 2" I.D. _____

DIAMOND BIT SIZE _____

WEIGHT OF HAMMER 300-140 LBS.

INSIDE LENGTH OF SAMPLER _____ IN.

HAMMER FALL

CASING 24" SAMPLER 30"

DEPTH BEL- ON SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
80		17	80'-82'		22-	21-	23-25			Brown medium to coarse Sand, some Gravel
										60'-85'
		18	85'-87'		23-	25-	35-32			Brown medium to coarse Sand, Cobbles
										85'-90'
90		19	90'-92'		36-	35-	47-47			
		20	95'-97'		32-	50-	68-66			
100		21	100'-102'		20-	21-	18-23			
		22	105'-107'		38-	42-	48-57			
110		23	110'-112'		23-	31-	50-50			
		24	115'-117'		38-	42-	58-57			
120										

Soils Engineer: _____

Driller: _____

Victor Aimar

Drilling Inspector: _____

Helper: _____

Don McMahon

JOB LOCATION: <u>Brentwood N.Y.</u>		WARREN GEORGE. INC. FOOT OF JERSEY AVENUE P. O. BOX 413 JERSEY CITY, N.J. 07303		SHEET <u>4</u> OF <u>8</u> LOCATION <u>Brentwood N.Y.</u> HOLE NO. <u>MW-6</u> LINE & STA. _____ OFFSET _____	
FOR: <u>Liberty Industries</u>					
DEPTH _____ FT. _____ FT. CASING OUT DATE: _____		DATE, START: <u>4/8/87</u>		GROUND ELEVATION _____	
DEPTH _____ FT. ALL CASING OUT DATE: _____		DATE, FINISH: <u>4/17/87</u>		GROUND WATER ELEVATION _____	
CASING O.D. <u>6" Auger</u> I.D. _____ SAMPLER O.D. <u>2"</u> I.D. _____ DIAMOND BIT SIZE _____		WEIGHT OF HAMMER <u>300-140</u> LBS. INSIDE LENGTH OF SAMPLER _____ IN.		HAMMER FALL _____ CASING <u>24"</u> SAMPLER <u>30"</u>	

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 5" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
0										
120		25	120'-122'		31-	40-	34-30			
		26	125'-126'6"		25-	73-	80			
10										
130		27	130'-132'		27-	51-	62-67			
		28	135'-137'		35-	43-	63-68			
20										
140		29	140'-141'5"		61-	98-	100/5"			
		30	145'-147'		35-	54-	54-48			
30										
150		31	150'-152'		38-	40-	34-60			
		32	155'-156'6"		40-	77-	74			
40										
160										

Soils Engineer: _____ Drilling Inspector: _____	Driller: <u>Victor Aimar</u> Helper: <u>don McMahon</u>
--	--

JOB LOCATION: <u>Brentwood N.Y.</u>		WARREN GEORGE. INC. FOOT OF JERSEY AVENUE P. O. BOX 413 JERSEY CITY, N.J. 07303 FOR: <u>Liberty Industries</u>			SHEET <u>5</u> OF <u>8</u> LOCATION <u>Brentwood N.Y.</u> HOLE NO. <u>MIV-6</u> LINE & STA. _____ OFFSET _____	
DEPTH _____ FT. _____ FT. CASING OUT DATE: _____ DEPTH _____ FT. ALL CASING OUT DATE: _____		DATE, START: <u>4/8/87</u> DATE, FINISH: <u>4/17/87</u>		GROUND ELEVATION _____ GROUND WATER ELEVATION _____		
CASING O.D. <u>6" Auger</u> I.D. _____ SAMPLER O.D. <u>2"</u> I.D. _____ DIAMOND BIT SIZE _____		WEIGHT OF HAMMER <u>300-140</u> LBS. INSIDE LENGTH OF SAMPLER _____ IN.		HAMMER FALL _____ CASING <u>24"</u> SAMPLER <u>30"</u>		

DEPTH BEL- ON SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
0										
160		33	160'-162'		45-	48-	68-62			
		34	165'-166'6"		38-	44-	84			
10		35	170'-171'6"		35-	78-	90			
170										
		36	175'-175'11"		76-	100/5"				
20										
180		37	180'-182'		34-	53-	62-67			
		38	185'-186'6"		40-	82-	86			
30										
190		39	190'-192'		28-	35-	50-73			
		40	195'-197'		30-	53-	54-60			
40										
200										

Soils Engineer: _____ Drilling Inspector: _____	Driller: <u>Victor Aimar</u> Helper: <u>Don McMahon</u>
--	--

JOB LOCATION: <u>Brentwood N.Y.</u>	WARREN GEORGE. INC. FOOT OF JERSEY AVENUE P. O. BOX 413 JERSEY CITY, N.J. 07303	SHEET <u>6</u> OF <u>6</u> LOCATION <u>Brentwood N.Y.</u> HOLE NO. <u>MW-6</u> LINE & STA. _____ OFFSET _____
FOR: <u>Liberty Industries</u>		

DEPTH _____ FT. CASING OUT DATE: _____	DATE, START: <u>4/8/87</u>	GROUND ELEVATION _____
DEPTH _____ FT. ALL CASING OUT DATE: _____	DATE, FINISH: <u>4/17/87</u>	GROUND WATER ELEVATION _____
CASING O.D. <u>6" Auger</u> I.D. _____ SAMPLER O.D. <u>2"</u> I.D. _____ DIAMOND BIT SIZE _____	WEIGHT OF HAMMER <u>300-140</u> LBS. INSIDE LENGTH OF SAMPLER _____ IN.	HAMMER FALL CASING <u>24"</u> SAMPLER <u>30"</u>

DEPTH BEL- OW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
0										
200		41	200'-202'		20-	31-	26-58			
		42	205'-207'		27-	35-	44-43			
10										
210		43	210'-212'		38-	31-	28-31			
		44	215'-217'		35-	52-	63-74			
20										
220		45	220'-222'		18-	33-	56-62			
		46	225'-227'		30-	46-	62-68			
30										
230		47	230'-231'5"		56-	83-	100/5"			
		48	235'-236'		73-	126/6"				
40										
240										

Soils Engineer: _____	Driller: <u>Victor Aimar</u>
Drilling Inspector: _____	Helper: <u>Don McMahon</u>

JOB LOCATION: <u>Brentwood N.Y.</u>	WARREN GEORGE. INC. FOOT OF JERSEY AVENUE P. O. BOX 413 JERSEY CITY, N.J. 07303	SHEET <u>7</u> OF <u>8</u> LOCATION <u>Brentwood N.Y.</u> HOLE NO. <u>MW-6</u> LINE & STA. _____ OFFSET _____
FOR: <u>Liberty Industries</u>		

DEPTH _____ FT. FT. CASING OUT DATE: _____	DATE, START: <u>4/8/87</u>	GROUND ELEVATION _____
DEPTH _____ FT. ALL CASING OUT DATE: _____	DATE, FINISH: <u>4/17/87</u>	GROUND WATER ELEVATION _____
CASING O.D. <u>6" Auger</u> I.D. _____ SAMPLER O.D. <u>2"</u> I.D. _____ DIAMOND BIT SIZE _____	WEIGHT OF HAMMER <u>300-140</u> LBS. INSIDE LENGTH OF SAMPLER _____ IN.	HAMMER FALL _____ CASING <u>24"</u> SAMPLER <u>30"</u>

DEPTH BEL- OW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
0										
240		49	240'-242'		WR-5-		53-70			
		50	245'-247'		WR-24-		35-70			
-10										
250		51	250'-252'		40-	49-	51-52			
		52	255'-257'		24-	38-	56-50			
-20										
260		53	260'-262'		27-	35-	45-48			
		54	265'-267'		25-	31-	32-54			
-30										
270		55	270'-272'		34-	36-	46-47			
		56	275'-277'		16-	31-	31-36			
		57	280'-280'10"		54-	100/4"				

Soils Engineer: _____ Drilling Inspector: _____	Driller: <u>Victor Aimar</u> Helper: <u>Don McMahon</u>
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JOB LOCATION: <u>Brentwood N.Y.</u>	WARREN GEORGE. INC. FOOT OF JERSEY AVENUE P. O. BOX 413 JERSEY CITY, N.J. 07303 FOR: Liberty Industries	SHEET <u>1</u> OF <u>2</u> LOCATION <u>Brentwood N.Y.</u> HOLE NO. <u>MW-7</u> LINE & STA. _____ OFFSET _____
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DEPTH _____ FT. FT. CASING OUT DATE: _____ DEPTH _____ FT. ALL CASING OUT DATE: _____	DATE, START: <u>4/20/87</u> DATE, FINISH: <u>4/20/87</u>	GROUND ELEVATION _____ GROUND WATER ELEVATION <u>45'</u>
CASING O.D. <u>6" Auger</u> I.D. _____ SAMPLER O.D. <u>2"</u> I.D. _____ DIAMOND BIT SIZE _____	WEIGHT OF HAMMER <u>300-140</u> LBS. INSIDE LENGTH OF SAMPLER _____ IN.	HAMMER FALL _____ CASING <u>24"</u> SAMPLER <u>30"</u>

DEPTH BEL- OW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
0		1	0'-2'		3-	6-	6-8			
		2	5'-7'		11-	19-	41-37			
-10		3	10'-12'		7-	16-	19-21			
		4	15'-17'		15-	13-	19-17			
-20		5	20'-22'		11-	11-	15-15			
		6	25'-27'		16-	19-	15-17			
-30		7	30'-32'		22-	23-	26-29			
		8	35'-37'		13-	28-	34-32			
-40										

Soils Engineer: _____	Driller: <u>Reynolds Bridgpal</u>
Drilling Inspector: _____	Helper: _____

JOB LOCATION: <u>Brentwood N.Y.</u>	WARREN GEORGE. INC. FOOT OF JERSEY AVENUE P. O. BOX 413 JERSEY CITY, N.J. 07303 FOR: <u>Liberty Industries</u>	SHEET <u>1</u> OF <u>2</u> LOCATION <u>Brentwood N.Y.</u> HOLE NO. <u>MW-8</u> LINE & STA. _____ OFFSET _____
--	---	---

DEPTH _____ FT. CASING OUT DATE: _____ DEPTH _____ FT. ALL CASING OUT DATE: _____	DATE, START: <u>4/23/87</u> DATE, FINISH: <u>4/23/87</u>	GROUND ELEVATION _____ GROUND WATER ELEVATION <u>45'</u>
CASING O.D. <u>6" Auger</u> I.D. _____ SAMPLER O.D. <u>2"</u> I.D. _____ DIAMOND BIT SIZE _____	WEIGHT OF HAMMER <u>300-140</u> LBS. INSIDE LENGTH OF SAMPLER _____ IN.	HAMMER FALL _____ CASING <u>24"</u> SAMPLER <u>30"</u>

DEPTH BEL- ON SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER			DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
					0-6	6-12	12-18			
0		1	0'-2'		5-	4-	3-3			
		2	5'-7'		4-	20-	24-31			
-10		3	10'-12'		13-	20-	23-32			
		4	15'-17'		8-	11-	16-18			
-20		5	20'-22'		10-	15-	12-15			
		6	25'-27'		18-	27-	41-50			
-30		7	30'-32'		10-	16-	16-23			
		8	35'-37'		15-	32-	44-48			
-40										

Soils Engineer: _____	Driller: <u>Reynolds Bridgpal</u>
Drilling Inspector: _____	Helper: _____

H2M GEOLOGIC LOG

JOB NO. LIBT

WELL DATA: HOLE DIAM.: 6 1/4 TD 52' SCREEN SETTING: _____ SLOT .10
 CASING DIAM. 4" LENGTH 50' WELL STATUS COMPLETE

Borehole Location: MW-10 Completion Depth: 50'
 Contractor: Nenly + Nichol Date Started: 10/1/91 Finished: 10/1/91
 Driller: Steven Muller Weather: SUNNY + Cool Mo 50's
 Elevation: _____ Ref Point: _____ Logged by: M.N. Gentile Checked by: _____

Type of Rig: Truck ☒ Trailer Mounted _____ Tripod _____ Other _____
 Drilling Method: Hollow Stem Bit type: Carbide
 Sampler Hammer Weight: 140 (lbs).
 Average Hammer Fall (inches): 30

Depth to Groundwater: 39.5' Date: 10/1/91 Time: 0910 Aquifer: Upper Glackl

Sample Depth	No	Blows 6"	Hnu Res	Color	Recov (in)	Sample Description	Lithology
.5						Split spoons	
1						were first collected	
1.5						at 40'-42'	
2.0							
2.5						0-40' from	0-40' Lithology
3.0						grade reported	ranged from Medium
3.5						no Readings on	Dense Tan Brown
4.0						The HNU Photoionization	Coarse To Fine
4.5						Detector inside the	sands with little
5.0						borehole or in the	fine poorly graded
5.5						breathing zone.	gravels
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							
10.0							

SIGNATURE: Michael N. GentileDATE: 10/1/91

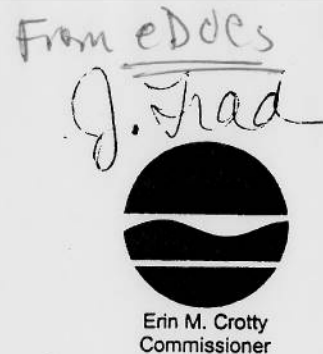
Logged by: *M. N. Gentile* Checked by:

DATE: 70/1/91

Appendix C

**August 30, 2004 NYSDEC
letter: Re-Classification
from Class 2 to Class 4**

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E, 12th Floor
625 Broadway, Albany, New York 12233-7013
Phone: (518) 402-9814 • FAX: (518) 402-9819
Website: www.dec.state.ny.us



MEMORANDUM

TO: Kelly Lewandowski, Site Control Section
THRU: Robert Marino, Chief, Bureau of Technical Support

FROM: Jeffrey Trad, Remedial Section A
THRU: Robert Knizek, Chief, Remedial Bureau E

SUBJECT: Site No. 1-52-108, Liberty Industrial Finishing Site, Suffolk County

DATE: AUG 30 2004

The NYSDEC has successfully completed the Remedial Action at the Liberty Industrial Finishing Site in accordance with the March 1999 ROD (attached) and approved design documents and is now in the O&M phase. This work included the following:

- Excavated the two areas containing contaminated soil;
- Applied a minimum of two feet of clean fill over residual metals contaminated soils;
- Installed an asphalt cap over the UST and pipe gallery area;
- Installation of groundwater monitoring wells;
- Excavation and offsite disposal of contaminated soil/sediment from two sanitary leaching polls, two storm water dry wells and two catch basins.

The attached "Final Remediation Report" describes the project in detail.

At this time, it is proposed to reclassify the site from a Class 2 - "Significant threat to the public health or environment - action required" to a Class 4 - "Site has been properly closed, requires continued management."

Supporting documentation is attached as justification for the proposed reclassification:

1. Site Investigation Information forms;
2. Registry of Inactive Hazardous Waste Site Information Sheets;
3. March 1999 Record of Decision;
4. Site Maps;
5. Final Remediation Report;
6. Draft Deed Restrictions;
7. October 2001 NYSDEC Groundwater Monitoring Results and the 2003 NYSDEC Groundwater Monitoring Results.

If you have any questions, please call Jeff Trad at 2-9814.

Attachments

cc: w/o Att.: S. Ervolina
P. Scully - NYSDEC, Region 1
W. Parish - NYSDEC, Region 1
C. Vasudevan

JET/ts

bcc: R. Knizek
J. Trad ✓
Dayfile

F:\Liberty Industrial Finishing\reclass.lib.wpd

1.0 Site Investigation Forms

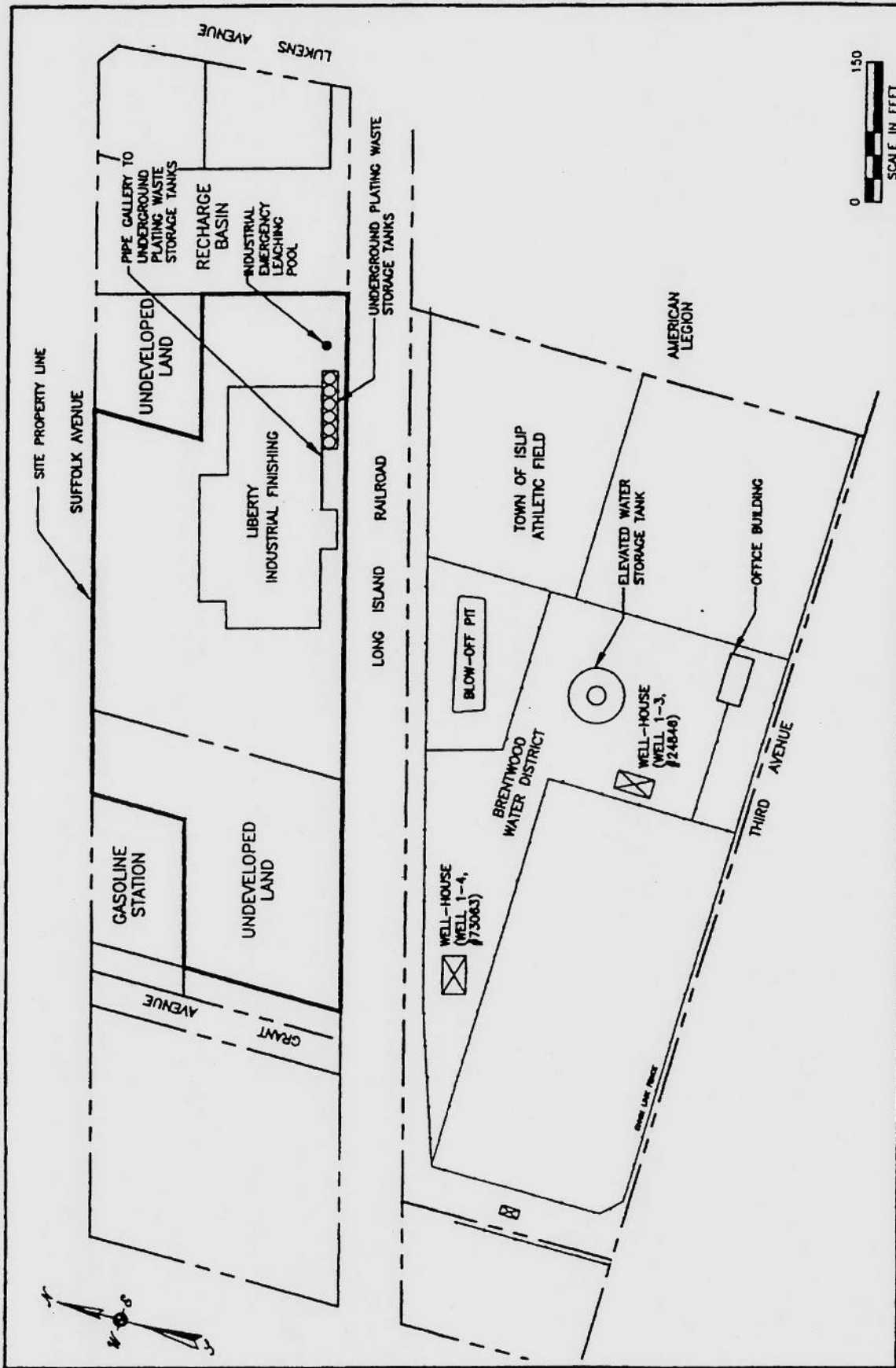


SITE INVESTIGATION INFORMATION

1. SITE NAME Liberty Industrial Finishing Products		2. SITE NUMBER 152108	3. TOWN/CITY/VILLAGE Brentwood	4. COUNTY Suffolk
5. REGION 1	6. PROGRAM TYPE BCP ☐ ERP ☐ SPILL ☐ SUPERFUND ☒ If Superfund: Current <u>2</u> Proposed <u>4</u> Modification X			
7. LOCATION OF SITE (Attach U.S.G.S. Topographic Map showing site location) a. Quadrange b. Site Latitude 4° 46' 40" Site Longitude 73° 15' 15" c. Tax Map Number(s) d. Site Street Address: 550 Suffolk Avenue, Brentwood, NY 11717				
8. BRIEFLY DESCRIBE THE SITE (Attach site map showing disposal/sampling locations) Liberty Industrial Finishing Products was a metal finishing facility engaged in the finishing and plating of parts and components used primarily in the aircraft industry. Metal finishing activities included passivation, phosphatization, electroplating, conversion coating, anodizing, painting and non-destructive testing. The Town demolished the building in 2002 leaving the slab and foundations intact. a. Area <u>3.9</u> acres b. Completed: () Env. Property Assessment (X) Site Characterization () SI () ESI (x) IRM (x) RI (x) Construction (x) OM&M () Spill Response () Other _____				
9. CONTAMINANTS DISPOSED (Hazardous Waste, Petroleum, Other. Includes EPA Hazardous Waste Numbers) 1,1,1 - trichloroethane(TCA) - F001, cadmium - D006, chromium - D007, spent cyanide plating bath solutions and sludges - F007, F008 An inspection in 1983 discovered potential leaks in two of the underground tanks containing cyanide and other compounds. Unauthorized discharges into cesspools and directly into the ground occurred in 1984. These wastewater discharges were contaminated with manganese phosphate, zinc phosphate, chromic acid and other compounds.				
10. ANALYTICAL DATA AVAILABLE a. () Air (X) Groundwater () Surface Water (x) Sediment (x) Soil () Waste () Leachate () EPTox () TCLP b. Contravention of Standards or Guidance Values A Phase II was performed in 1987 and groundwater exceedences for chromium were found. A supplemental Phase II was performed in 1991. High levels of cyanide was found in a leaching pool as well as chromium exceedences in groundwater. The DEC completed a State-funded RI/FS at the site. The 1999 RI Report confirmed contamination in the surface and subsurface soil, storm-water drywell/leaching pool, sediment and groundwater. The contaminated groundwater plume extends approximately 150 feet from the site in a SSE direction with chromium as the primary site-related contaminant.				
11. CONCLUSION The USEPA completed an IRM between August 1998 and January 1999 and removed waste materials from the interior of the industrial building and capped six underground storage tanks. The Town of Islip also excavated contaminated surface soil at the Town of Islip Athletic Field and the Brentwood Water District property under an IRM. The DEC issued a ROD in March 1999 that called for the removal of contaminated sediment from four drywells and one leaching pool; the excavation of contaminated soil; and the construction of an asphalt cap above the on-site underground storage tanks as the selected remedy. All of the remedial work specified in the ROD was completed on September 18, 2001. a. Institutional Controls (IC) Required? (X) Y () N b. If yes, identify: Restrict use of groundwater; long term groundwater monitoring; maintain asphalt cap c. Are these ICs in place and verified? () Y () N some are/ No property owner exists to apply a deed restriction for use of groundwater. Longterm GW monitoring has been performed; the asphalt cap has been inspected and maintained.				
12. SITE IMPACT DATA a. Nearest Surface Water: Distance 7500 ft. Direction: ESE Class: Orowac Creek - Class C b. Groundwater: Depth 50 ft. Flow Direction: SSE (x) Sole Source () Primary () Other High-Yield Aquifer c. Water Supply: Distance 100 ft. Direction: South Active (X) Yes () No d. Nearest Building: Distance 150 ft. Direction: WNW Use: Gas Station e. Documented fish or wildlife mortality? () Y (x) N h. Exposed hazardous waste? () Y (x) N f. Impact on special status fish or wildlife resource? () Y (x) N i. Site Priority Ranking Sheet -----Impact <u>N/A</u> Score g. Controlled Site Access? (X) Y () N j. EPA ID# NYD013563390 HRS <u>N/A</u> Score				
13. SITE OWNER'S NAME Liberty Industrial Finishing		14. ADDRESS 550 Suffolk Avenue, Brentwood, NY 11717		15. TELEPHONE NUMBER n/a
16. PREPARER Jeffrey Trad, EEII Signature Date <i>Jeffrey Trad</i> 8/30/04 Name, Title, Organization		17. APPROVED Robert C. Knizek, Director, Remedial Bureau E Signature Date Name, Title, Organization		

SITE INVESTIGATION INFORMATION

1. SITE NAME Liberty Industrial Finishing Products		2. SITE NUMBER 152108	3. TOWN/CITY/VILLAGE Brentwood	4. COUNTY Suffolk
5. REGION 1	6. PROGRAM TYPE BCP ☐ ERP ☐ SPILL ☐ SUPERFUND ☒ If Superfund: Current <u>2</u> Proposed <u>4</u> Modification X			
7. LOCATION OF SITE (Attach U.S.G.S. Topographic Map showing site location) a. Quadrange b. Site Latitude 4° 46'40" Site Longitude 73° 15' 15" c. Tax Map Number(s) d. Site Street Address: 550 Suffolk Avenue, Brentwood, NY 11717				
8. BRIEFLY DESCRIBE THE SITE (Attach site map showing disposal/sampling locations) Liberty Industrial Finishing Products was a metal finishing facility engaged in the finishing and plating of parts and components used primarily in the aircraft industry. Metal finishing activities included passivation, phosphatization, electroplating, conversion coating, anodizing, painting and non-destructive testing. The Town demolished the building in 2002 leaving the slab and foundations intact. a. Area <u>3.9</u> acres b. Completed: () Env. Property Assessment (X) Site Characterization () SI () ESI (x) IRM (x) RI (x) Construction (x) OM&M () Spill Response () Other				
9. CONTAMINANTS DISPOSED (Hazardous Waste, Petroleum, Other. Includes EPA Hazardous Waste Numbers) 1,1,1 - trichloroethane(TCA) - F001, cadmium - D006, chromium - D007, spent cyanide plating bath solutions and sludges - F007, F008 An inspection in 1983 discovered potential leaks in two of the underground tanks containing cyanide and other compounds. Unauthorized discharges into cesspools and directly into the ground occurred in 1984. These wastewater discharges were contaminated with manganese phosphate, zinc phosphate, chromic acid and other compounds.				
10. ANALYTICAL DATA AVAILABLE a. () Air (X) Groundwater () Surface Water (x) Sediment (x) Soil () Waste () Leachate () EPTox () TCLP b. Contravention of Standards or Guidance Values A Phase II was performed in 1987 and groundwater exceedences for chromium were found. A supplemental Phase II was performed in 1991. High levels of cyanide was found in a leaching pool as well as chromium exceedences in groundwater. The DEC completed a State-funded RI/FS at the site. The 1999 RI Report confirmed contamination in the surface and subsurface soil, storm-water drywell/leaching pool, sediment and groundwater. The contaminated groundwater plume extends approximately 150 feet from the site in a SSE direction with chromium as the primary site-related contaminant.				
11. CONCLUSION The USEPA completed an IRM between August 1998 and January 1999 and removed waste materials from the interior of the industrial building and capped six underground storage tanks. The Town of Islip also excavated contaminated surface soil at the Town of Islip Athletic Field and the Brentwood Water District property under an IRM. The DEC issued a ROD in March 1999 that called for the removal of contaminated sediment from four drywells and one leaching pool; the excavation of contaminated soil; and the construction of an asphalt cap above the on-site underground storage tanks as the selected remedy. All of the remedial work specified in the ROD was completed on September 18, 2001. a. Institutional Controls (IC) Required? (X) Y () N b. If yes, identify: Restrict use of groundwater; long term groundwater monitoring; maintain asphalt cap c. Are these ICs in place and verified? () Y () N some are/ No property owner exists to apply a deed restriction for use of groundwater. Longterm GW monitoring has been performed; the asphalt cap has been inspected and maintained.				
12. SITE IMPACT DATA a. Nearest Surface Water: Distance 7500 ft. Direction: ESE Class: Orowac Creek - Class C b. Groundwater: Depth 50 ft. Flow Direction: SSE (x) Sole Source () Primary () Other High-Yield Aquifer c. Water Supply: Distance 100 ft. Direction: South Active (X) Yes () No d. Nearest Building: Distance 150 ft. Direction: WNW Use: Gas Station e. Documented fish or wildlife mortality? () Y (x) N h. Exposed hazardous waste? () Y (x) N f. Impact on special status fish or wildlife resource? () Y (x) N i. Site Priority Ranking Sheet -----Impact <u>N/A</u> Score g. Controlled Site Access? (X) Y () N j. EPA ID# NYD013563390 HRS <u>N/A</u> Score				
13. SITE OWNER'S NAME Liberty Industrial Finishing		14. ADDRESS 550 Suffolk Avenue, Brentwood, NY 11717		15. TELEPHONE NUMBER n/a
16. PREPARER Jeffrey Trad, EEII Signature Date <u>5/30/04</u> Name, Title, Organization		17. APPROVED Robert Marino, Director, Technical Support Bureau Signature Date Name, Title, Organization		



LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

STUDY AREA MAP

db
Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

Appendix D

Environmental Notice

Appendix E

Excavation Work Plan

APPENDIX E – EXCAVATION WORK PLAN**E-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:

Payson Long
NYSDEC
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
Office (518) 402-9813
Email: pdlong@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 Excavation Work Plan (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 F of this document;
- Identification of disposal facilities for potential waste streams; and,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

E-2 SOIL SCREENING METHODS

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

Soils will be segregated based on previous environmental data and 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.

The asphalt cap and former building foundation at the Site is shown on Figure 2 of the Site Management Plan (SMP). Contaminated soil may exist under these areas. Any excavated soils from these areas will be segregated, stockpiled, and assumed contaminated until testing confirms otherwise. If these areas are disturbed during any intrusive work, the concrete and/or asphalt will be restored to existing conditions upon completion of the work.

In June of 2013, NYSDEC conducted surface soil sampling at the Site. The locations of the samples are shown on Figure 6 of the SMP. Analytical results are shown on Table 3 of the SMP. As shown on Figure 6, two areas were found to have concentrations of several metals above the cleanup criteria. Any excavation materials from these two areas will be segregated, stockpiled, and considered contaminated until testing confirms otherwise.

E-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 producing greater than ½ inches of rain within 24 hours. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

E-4 MATERIALS EXCAVATION AND LOAD OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements on the 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).

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.

E-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. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Truck transport routes are as follows:

Exit the Site, turn right onto Suffolk Ave, proceed east to Washington Avenue, turn left, proceed north on Washington Avenue to the Long Island Expressway. Follow the Service Road to the nearest entrance (east or westbound).

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.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

E-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, e.g. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report (PRR). 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 unrestricted soil cleanup objectives is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

E-7 MATERIALS REUSE ON-SITE

Chemical criteria for on-site reuse of material will be approved by NYSDEC prior to any excavation work. The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated 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.

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.

E-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 state pollution discharge elimination system (SPDES) permit.

E-9 CONCRETE PAD / ASPHALT COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the concrete pad / asphalt cover system (as shown on Figure 2 of the SMP) will be restored in a manner that complies with the Record of Decision. The demarcation layer, consisting of orange snow fencing material 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 SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the Remaining Contamination. A figure showing the modified surface will be included in the subsequent PRR and in any updates to the SMP.

E-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.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). 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.

E-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.

E-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.

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 PRRs prepared pursuant to Section 5 of the SMP.

E-13 COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan (CAMP) has been prepared and is included as Appendix G of the SMP.

E-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other

complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the PRR.

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: (a) direct load-out of soils to trucks for off-site disposal; (b) use of chemical odorants in spray or misting systems; and, (c) 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.

E-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.

E-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.

Appendix F

Health and Safety Plan

New York State Department of Environmental Conservation
Contract No. D007626
Task/Delivery Order No. 17, Site No. 1-52-108

HEALTH AND SAFETY PLAN

Multi Site G
Liberty Industrial Finishing
500 Suffolk Avenue
Brentwood, Suffolk County, NY

Prepared for:

Superfund Standby Program
New York State
Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Prepared by:

AECOM
100 Red Schoolhouse Road
Chestnut Ridge, NY 10977

Health and Safety Plan Expiration Date: January 31, 2015

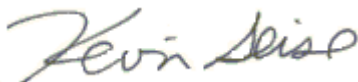
Project No: 60277021

Project Health and Safety Plan

approval page

This project Health and Safety Plan (HASP) was prepared for employees performing a specific, limited scope of work. It was prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the project site. While it is not possible to discover, evaluate, and protect in advance against all possible hazards, which may be encountered during the completion of this project, adherence to the requirements of the HASP will significantly reduce the potential for occupational injury.

By signing below, I acknowledge that I have reviewed and hereby approve the HASP for the Liberty Industrial Finishing site. This HASP has been written for the exclusive use of AECOM, its employees, and subcontractors. The plan is written for specified site conditions, dates, and personnel, and must be amended if these conditions change.

Prepared by:

Kevin Seise
EH&S Coordinator
201-923-7155

Date March 1, 2013

Concurrence by:

Peter Sullivan
EH&S Manager
978-905-2417

Date _____

Approved by:

Paul Kareth
Project Manager
845-425-4980

Date March 1, 2013

Executive Summary

The purpose of this Health and Safety Plan (HASP) is to address health and safety concerns related to AECOM managed activities at the Liberty Industrial Finishing site, located in Brentwood, New York. The specific roles, responsibilities, authority, and requirements as they pertain to the safety of employees and the scope of services are discussed herein. The document is intended to identify known potential hazards and facilitate communication and control measures to prevent injury or harm. Additionally, provisions to control the potential for environmental impact from these activities are included where applicable.

AECOM will be performing groundwater sampling and monitoring well maintenance as required to perform the long term monitoring of the site.

The primary physical hazards which may be encountered include:

- Traffic controls
- Biological hazards
- Heat and cold stress
- The chemical hazards which may be encountered include:
 - Chlorinate solvents dissolved in groundwater

All staff are bound by the provisions of this HASP and are required to participate in a preliminary project safety meeting to familiarize them with the anticipated hazards and respective onsite controls. The discussion will cover the entire HASP subject matter, putting emphasis on critical elements of the plan; such as the emergency response procedures, personal protective equipment, site control strategies, and monitoring requirements. In addition, daily tailgate safety meetings will be held to discuss: the anticipated scope of work, required controls, identify new hazards and controls, incident reporting, review the results of inspections, any lessons learned or concerns from the previous day.

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ATTACHMENTS

Attachment A	Task Hazard Analyses
Attachment B	Material Safety Data Sheets & Site-Specific Spill Response Plan
Attachment C	Client-Specific Health and Safety Guidelines
Attachment D	Applicable SH&E SOPs
Attachment E	Client-Specific SH&E Guidelines and Subcontractors SH&E information

1.0 Introduction

This Health and Safety Plan (HASP) including the Attachments provides a general description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted at the Liberty Industrial Finishing site, located at in Brentwood, New York. This HASP also identifies chemical and physical hazards known to be associated with the AECOM-managed activities addressed in this document.

HASP Supplements will be generated as necessary to address any additional activities or changes in site conditions, which may occur during field operations.

1.1 General

The provisions of this HASP are mandatory for all AECOM personnel engaged in fieldwork associated with the environmental services being conducted at the subject site. A copy of this HASP, any applicable HASP Supplements and the AECOM's North America Safety, Health, and Environmental (SH&E) Procedures and Manual shall be accessible on site and available for review at all times. Record keeping will be maintained in accordance with this HASP and the applicable Standard Operating Procedures (SOPs). In the event of a conflict between this HASP, the SOPs and federal, provincial, state, and local regulations, workers shall follow the most stringent/protective requirements. Concurrence with the provisions of this HASP is mandatory for all personnel at the site covered by this HASP and must be signed on the acknowledgement page.

1.2 Project Policy Statement

AECOM is committed to protecting the safety and health of our employees and meeting our obligations with respect to the protection of others affected by our activities. We are also committed to protecting and preserving the natural environment in which we operate. The safety of persons and property is of vital importance to the success of this project and accident prevention measures shall be taken toward the avoidance of needless waste and loss. It shall be the policy of this project that all operations be conducted safely. Onsite supervisors are responsible for those they supervise by maintaining a safe and healthy working environment in their areas of responsibility, and by fairly and uniformly enforcing safety and health rules and requirements for all project personnel. Subcontractors shall comply with the requirements of this HASP, provisions contained within the contract document and all applicable rules, requirements and health, safety and environmental regulations. All practical measures shall be taken to promote safety and maintain a safe place to work. Contractors are wholly responsible for the prevention of accidents on work under their direction and shall be responsible for thorough safety and loss control programs and the execution of their own safety plans for the protection of workers.

1.3 References

This HASP conforms to the regulatory requirements and guidelines established in the following documents:

- Title 29, Part 1910 of the Code of Federal Regulations (29 CFR 1910), Occupational Safety and Health Standards (with special attention to Section 120, Hazardous Waste Operations and Emergency Response).
- Title 29, Part 1926 of the Code of Federal Regulations (29 CFR 1926), Safety and Health Regulations for Construction.
- National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Publication No. 85-115, 1985.
- In Canada there is no direct federal or provincial counterpart to HAZWOPER; however, as due diligence and in compliance with applicable provincial duty of care/general duty clauses, staff working in Canada will comply with S3NA-509-PR Hazardous Waste Operations and Emergency Response Activities.

2.0 Site Information and Scope of Work

AECOM will conduct environmental services at the Liberty Industrial Finishing site. Work will be performed in accordance with the applicable Statement of Work (SOW) and associated Project Work Plan developed for project site. Deviations from the listed SOW will require that a Safety Professional review and changes made to this HASP, to ensure adequate protection of personnel and other property.

The following is a summary of relevant data concerning the project site, and the work procedures to be performed. The Project Work Plan prepared by AECOM as a companion document to this HASP provides more detail concerning both site history and planned work operations.

2.1 Site Information

This section provides a general description and historical information associated with the site.

2.1.1 General Description

The Liberty Industrial Finishing site is located at 500 Suffolk Avenue in Brentwood, Suffolk County, New York. The project site incorporates the entire plume which extends southwards from the site and underlies residential a mix of industrial and commercial properties. The Site is an Inactive New York State Superfund site (Site No. 1-52-108). The Site is bounded to the north by Suffolk Avenue, by the Long Island Railroad to the south, and undeveloped land to the east and the west. The groundwater flow direction is to the southeast in the vicinity of the Site based on previous investigations by other consultants. A total of eight wells have been identified for long-term monitoring at the Site.

2.1.2 Site Background/History

Historical information indicates that the site is a former metal finishing operation which inappropriately managed wastes impacted with heavy metals including chromium, arsenic, and cyanide. Reportedly, all remedial work required by a state-issued Record of Decision was completed by 2001. Continued monitoring of on-site and off-site groundwater has occurred, however, no information was available regarding recent concentrations of metals in groundwater.

2.1.3 Previous Investigations

Table 2-1: Previous Investigation Data

Contaminants	Groundwater (ug/l)
Cadmium	34.9 ug/L
Chromium	88.2 ug/L

2.2 Scope of Work

AECOM will perform periodic groundwater sampling from the existing monitoring wells. The groundwater sampling process will consist of initially purging each well using dedicated polyethylene tubing and a suitable pump. Physical measurements (i.e. pH, specific conductance, temperature, turbidity) will be collected, in addition to measuring water level and total well depths with a water level indicator, which will be washed in a Liquinox bath and rinsed with tap water before each use. Once the minimum volume of water has been evacuated, a dedicated Teflon bailer will be used to collect a groundwater sample from each well in accordance with the QAPP.

3.0 Hazard Assessment (Safety)

3.1 Physical Hazards

Work will be conducted on wells in residential and commercial neighborhoods and along busy roadways. Lifting of pumps and sampling equipment will be required.

3.2 Wildlife, Plant and Insect Hazards

The work involves sampling of wells in grassy areas and possible walking through vegetated areas. Poison ivy and stinging insects may be present. The sampling will be conducted in residential and commercial neighborhoods. Pets and the public may be present.

3.3 Ultraviolet Hazards

The 2009 historical UV Index for Brentwood, New York area showed that worker's UV exposures were in the HIGH category beginning in April and lasting until November with worker's exposures in the EXTREME category from July through September. In 2009, Bay Shore had 51 days in the HIGH category, 111 days in the VERY HIGH category, and 0 days in the EXTREME category. Workers performing field work outdoors may be susceptible to sunburn if not properly protected with sunscreen or protective clothing and hats. Skin can burn in minutes when the UV Index is VERY HIGH. Protective measures are advisable.

3.4 Weather Hazards

The Site Safety Officer will be attentive to daily weather forecasts for the project area each morning. Predicted weather conditions of potential field impact are to be included in safety briefings and the Task Hazard Analysis (THA) for that day. Weather changes should initiate a review and updates (THA) as necessary.

Severe weather can occur with little warning. Employees will be vigilant for the potentials for storms, lightning, high winds, and flash flood events.

3.5 Hazard Analysis

Task Hazard Analyses (THAs) have been completed for all tasks identified in the Scope of Work (Attachment A).

3.5.1 Unanticipated Work Activities/Conditions

As a result of unanticipated work activities or changing conditions, additional THAs may be required. All additional THAs will be reviewed and approved by the SH&E Professional.

3.6 Task Specific SH&E Procedures

As discussed in Section 5.0, personnel may be exposed to a variety of chemical, physical, and radiological hazards resulting from task or equipment-specific activities. The controls for many of these hazards are discussed in SOPs found in the **Series 300 to 500** North America SH&E SOPs.

SOP#	TITLE	SOP#	TITLE
S3NA 300 Series Field(Common)		S3NA 500 Series Industrial Hygiene	
☐ S3NA-301-PR	Confined Spaces	☐ S3NA-501-PR	Asbestos
☐ S3NA-302-PR	Electrical, General	☐ S3NA-502-PR	Benzene
☐ S3NA-303-PR	Excavation and Trenching	☐ S3NA-503-PR	Blood borne Pathogen Program
☐ S3NA-304-PR	Fall Protection	☐ S3NA-504-PR	Cadmium
☐ S3NA-305-PR	Hand and Power Tools	☐ S3NA-505-PR	Cold Stress Prevention
☐ S3NA-306-PR	Highway and Road Work	☐ S3NA-506-PR	Compressed Gases
☐ S3NA-307-PR	Housekeeping, Worksite	☐ S3NA-507-PR	Hazardous Materials Communication / WHMIS
☐ S3NA-308-PR	Manual Lifting, Field	☐ S3NA-508-PR	Hazardous Materials Handling and Shipping
☐ S3NA-309-PR	Mobile or Heavy Equipment	☐ S3NA-509-PR	Hazardous Waste Operations and Emergency Response Activities
☐ S3NA-310-PR	Rigging, Hoisting, Cranes and Lifting Devices	☐ S3NA-510-PR	Hearing Conservation Program
☐ S3NA-311-PR	Scaffolding	☐ S3NA-511-PR	Heat Stress Prevention
☐ S3NA-312-PR	Ladders and Stairways	☐ S3NA-512-PR	Laboratory Safety
☐ S3NA-313-PR	Wildlife, Plants and Insects	☐ S3NA-513-PR	Lead
☐ S3NA-314-PR	Working Alone & Remote Travel	☐ S3NA-514-PR	Munitions and Explosives of Concern / Unexploded Ordnance (MEC-UXO)
☐ S3NA-315-PR	Water, Working Around	☐ S3NA-515-PR	Nanotechnology
		☐ S3NA-516-PR	Radiation Safety Programs
S3NA 400 Series Field (Uncommon)		☐ S3NA-517-PR	Radiation, Non-Ionizing
☐ S3NA-401-PR	Aircraft Charters	☐ S3NA-518-PR	Radiation, Gauge Source program
☐ S3NA-402-PR	All Terrain Vehicles (ATVs)	☐ S3NA-519-PR	Respiratory Protection Program
☐ S3NA-403-PR	Avalanches	☐ S3NA-520-PR	Spill Response, Incidental
☐ S4NA(US)-404-PR	Commercial Motor Vehicles		
☐ S3NA-405-PR	Drilling and Boring		
☐ S3NA-406-PR	Electrical Lines, Overhead		
☐ S3NA-407-PR	Electro-fishing		
☐ S3NA-408-PR	Elevated Work Platforms and Aerial Lifts		
☐ S3NA-409-PR	Forklifts (operation of)		
☐ S3NA-410-PR	Hazardous Energy Control		
☐ S3NA-411-PR	Machine Guarding		
☐ S3NA-412-PR	Powder-Actuated Tools		
☐ S4NA(US)-413-PR1	Process Safety Management		
☐ S4NA(US)-414-PR	Railway Sites		
☐ S4NA(US)-415-PR	RCRA Regulated Facilities		
☐ S3NA-416-PR	Tunnel and Underground Work		
☐ S3NA-417-PR	Utilities, Underground		
☐ S3NA-418-PR	Welding, Cutting and Other Hot Work		
☐ S3NA-419-PR	Water, Marine Operations, Boating		
☐ S3-NA420-PR	Water, Underwater Diving		

4.0 SH&E Requirements (Safety)

4.1 HAZWOPER Qualifications

Personnel performing work at the job site must be qualified as HAZWOPER workers (unless otherwise noted in specific THAs or by the SSO), and must meet the medical monitoring and training requirements specified in the AECOM's North America SH&E Standard Operating Procedures.

If site monitoring procedures indicate that a possible exposure has occurred above the OSHA permissible exposure limit (PEL), employees may be required to receive supplemental medical testing to document any symptoms that may be specific to the particular materials present.

4.2 Site-Specific Safety Training

All AECOM personnel performing activities at the site will be trained in accordance with *S3NA-003-PR SH&E Training*. All personnel are required to remain current in all of their required training and evaluate their need for additional training when there is a change in work. In addition to the general health and safety training programs, personnel will be required to complete any supplemental task specific training developed for the tasks to be performed. Administration and compliance with the requirements for additional task-specific training will be the responsibility of the project or lead manager. Any additional required training that is completed will be documented and tracked in the project files.

4.2.1 Competent Person Training Requirements

In order to complete the planned scope of work, an (OSHA conformance) competent person must be designated to perform the required daily onsite inspections of operations and/or equipment. The competent person may be an AECOM (if responsible for supervising that activity) or the subcontractor's employee. Designated competent person(s) for this project are shown in Table 4-2:

Table 4.2.1-2: Task-Specific Competent Persons

Employee Name	Organization	Area of Competency
Paul Kareth	AECOM	Groundwater sampling
Kevin Seise	AECOM	Health and Safety

Note: The training requirements for competent persons are specified in the indicated SOPs and/or *S3NA-202-PR Competent Person Designation*. By identifying an employee as a "competent person", that person has now been authorized to take prompt corrective measures to eliminate hazards.

4.3 Tailgate Meetings

Prior to the commencement of daily project activities, a tailgate meeting will be conducted by the SSO to review the specific requirements of this HASP, applicable THA. Attendance at the daily tailgate meeting is mandatory for all employees at the site covered by this HASP and must be documented on the attendance form. All safety training documentation is to be maintained in the project file by the SSO.

4.4 Hazard Communication

Hazardous materials that may be encountered as existing on-site environmental or physical/health contaminants during the work activities are addressed in this HASP and their properties, hazards and associated required controls will be communicated to all affected staff and subcontractors.

In addition, any employee or organization (contractor or subcontractor) intending to bring any hazardous material onto this AECOM-controlled work site must first provide a copy of the item's Material Safety Data Sheet (MSDS) to the SSO for review and filing (the SSO will maintain copies of all MSDS on site). MSDS may not be available for locally-obtained products, in which case some alternate form of product hazard documentation will be acceptable in accordance with the requirements of *S3NA-507-PR Hazardous Materials Communication/WHMIS*.

All personnel shall be briefed on the hazards of any chemical product they use, and shall be aware of and have access to all MSDS.

All containers on site shall be properly labeled to indicate their contents. Labeling on any containers not intended for single-day, individual use shall contain additional information indicating potential health and safety hazards (flammability, reactivity, etc.).

Attachment B provides copies of MSDS for those items planned to be brought on site at the time this HASP is prepared. This information will be updated as required during site operations.

4.5 Confined Space Entry

The SSO/site supervisor shall identify all potential confined spaces in accordance with *S3NA-301-PR Confined Spaces*. In addition; the SSO/site supervisor will inform all employees of the location of onsite confined spaces, and their associated security controls and procedures.

4.6 Hazardous, Solid, or Municipal Waste

If hazardous, solid, and/or municipal wastes are generated during any phase of the project, the waste shall be accumulated, labeled, and disposed of in accordance with applicable Federal, State, Provincial, Territorial and/or local regulations. Consult the Regional SH&E Manager for further guidance.

4.7 General Safety Rules

All site personnel shall conduct themselves in a safe manner and maintain a working environment that is free of additional hazards, in adherence to *S3NA-001-PR Safe Work Standards and Rules* and *S3NA-103-PR General Housekeeping*.

4.7.1 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials.

4.7.2 Smoking, Eating, or Drinking

Smoking, eating and drinking will not be permitted inside any controlled work area at any time. Field workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Consumption of alcoholic beverages is prohibited at any AECOM site. Smoking, eating or drinking must be in an approved area.

4.7.3 Personal Hygiene

The following personal hygiene requirements will be observed:

Water Supply: A water supply meeting the following requirements will be utilized:

Potable Water - An adequate supply of potable water will be available for field personnel consumption. Potable water can be provided in the form of water bottles, canteens, water coolers, or drinking fountains. Where drinking fountains are not available, individual-use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified in order to distinguish them from non-potable water sources.

Non-Potable Water - Non-potable water may be used for hand washing and cleaning activities. Non-potable water will not be used for drinking purposes. All containers of non-potable water will be marked with a label stating:

***Non-Potable Water
Not Intended for Drinking Water Consumption***

Toilet Facilities: A minimum of one toilet will be provided for every 20 personnel on site, with separate toilets maintained for each sex except where there are less than 5 total personnel on site. For mobile crews where work activities and locations permit transportation to nearby toilet facilities on-site facilities are not required.

Washing Facilities: Employees will be provided washing facilities (e.g., buckets with water and Alconox) at each work location. The use of water and hand soap (or similar substance) will be required by all employees following exit from the Exclusion Zone, prior to breaks, and at the end of daily work activities.

4.7.4 Buddy System

All field personnel will use the buddy system when working within any controlled work area. Personnel belonging to another organization on site can serve as "buddies" for AECOM personnel. Under no circumstances will any employee be present alone in a controlled work area. For areas not in controlled work areas, the procedures outlined in *S3NA-314-PR Working Alone Remote Travel* will be followed at all times.

4.8 Stop Work Authority

All employees have the right and duty to stop work when conditions are unsafe and to assist in correcting these conditions as outlined in *S3NA-002-PR Stop Work Authority*. Whenever the SSO determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought.

Should the supervisor be unable or unwilling to correct the unsafe conditions, the SSO is authorized and required to stop work, which shall be immediately binding on all affected AECOM employees and subcontractors.

Upon issuing the stop work order, the SSO shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective; however, operations shall not resume until the Safety Professional has concurred that workplace conditions meet acceptable safety standards.

4.9 Client Specific Safety Requirements

The client has specified no additional health and safety requirements.

5.0 Exposure Monitoring Procedures (Health)

5.1 Contaminant Exposure Hazards

The following is a discussion of the hazards presented to worker personnel during this project from on-site chemical and radiological hazards known, suspected or anticipated to be present on site.

Exposure symptoms and applicable first aid information for each suspected site contaminant identified in the Scope of Work are located in the following subsections.

- Heavy Metals

5.1.1 Heavy Metals

As a group, the heavy metals (including lead, arsenic, chromium, nickel, cadmium, and selenium) are toxic to a number of organs and organ systems in the body including the liver, kidneys, blood-forming organs (primarily located in the bones), and the CNS (especially lead). Acute exposure to metals can produce symptoms such as stomach distress and vomiting, mental confusion and sluggishness, heart palpitations, breathing difficulties, and renal (kidney) failure. Chronic exposures can be characterized by deterioration in function of the liver and kidneys, CNS degradation, and abnormal changes in blood cell counts (especially white blood cells). Exposure to chromium may also lead to formation of lung and gastric cancers.

The primary route of exposure to heavy metals of concern during this project is contact with contaminated soils and water, which can lead to entry through open wounds or contamination and ingestion of food. Preventing this route of exposure necessitates the use of dust control measures and appropriate protective clothing and decontamination procedures.

5.2 Route of Entry Assessment of Exposure Hazards

Inhalation: Based on the known site conditions with dissolved and degraded chlorinated solvents, it is unlikely that inhalation of contaminants will occur. Monitoring of well headspace with a PID is required to confirm this condition.

Skin Contact: Based on the known site conditions with dissolved and degraded chlorinated solvents, it is unlikely that skin contact will occur, however, as a preventative measure, AECOM staff will be required to wear PPE including chemical resistant gloves when handling contaminate groundwater.

Ingestion: Drinking of groundwater is prohibited from the wells within the work area. Employees must wash their hands upon completion of work and prior to breaks or meals which would require hand to mouth contact. Protection against exposure via ingestion can be accomplished by performance of proper decontamination procedures when exiting contaminated work areas.

Monitoring procedures will be employed during site characterization activities to assess employee exposure to chemical and physical hazards. Monitoring will consist primarily of onsite determination of various parameters (e.g., airborne contaminant concentrations and heat stress effects), but may be supplemented by more sophisticated monitoring techniques, if necessary.

5.3 Real-Time Exposure Measurement

Monitoring shall be performed within the work area on site in order to detect the presence and relative levels of toxic substances. The data collected throughout monitoring shall be used to determine the appropriate levels of PPE. Monitoring shall be conducted as specified in each THA as work is performed.

Table 5-1 specifies the real-time monitoring equipment, which will be used for this project.

Table 5-1: Monitoring Parameters and Equipment

INSTRUMENT	MANUFACTURER/MODEL*	SUBSTANCES DETECTED
Photo Ionization Detector (PID)	RAE Systems mini-RAE Photovac Microtip HNU Model Hnu (min. 10.2 eV bulb)	Petroleum hydrocarbons Organic Solvents

*Or similar unit, as approved by the SH&E Professional

5.4 Health and Safety Action Levels

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area or other environmental conditions. The concentration level (above background level) and the ability of the PPE to protect

against that specific contaminant determine each action level. The action levels are based on concentrations in the breathing zone.

If ambient levels are measured which exceed the action levels in areas accessible to unprotected personnel, necessary control measures (barricades, warning signs, and mitigative actions to limit, etc.) must be implemented prior to commencing activities at the specific work area.

Personnel should also be able to upgrade or downgrade their level of protection with the concurrence of SSO or the Safety Professional.

Reasons to upgrade:

- Known or suspected presence of dermal hazards.
- Occurrence or likely occurrence of gas, vapor, or dust emission.
- Change in work task that will increase the exposure or potential exposure to hazardous materials.

Reasons to downgrade:

- New information indicating that the situation is less hazardous than was originally suspected.
- Change in site conditions that decrease the potential hazard.
- Change in work task that will reduce exposure to hazardous materials.

5.4.1 Monitoring Procedures

Upon arrival at each monitoring well to be sampled or repaired, the field personnel will open the lid and screen the headspace with a PID to assess vapor levels within the well head. The monitor will remain in place during the purging and sampling of the wells.

5.4.1.1 Monitoring Equipment Calibration

All instruments used will be calibrated at the beginning and end of each work shift, in accordance with the manufacturer's recommendations. If the owner's manual is not available, the personnel operating the equipment will contact the applicable office representative, rental agency or manufacturer for technical guidance for proper calibration. If equipment cannot be pre-calibrated to specifications, site operations requiring monitoring for worker exposure or off-site migration of contaminants will be postponed or temporarily ceased until this requirement is completed.

5.4.1.2 Personal Sampling

Should site activities warrant performing personal sampling (breathing zone) to better assess chemical exposures experienced by AECOM employees, the SSO, under the direction of a Certified Industrial Hygienist (CIH), Certified Safety Professional (CSP) will be responsible for specifying the monitoring required. Within five working days after the receipt of monitoring results, the CIH or CSP will notify each employee, in writing, of the results that represent that employee's exposure. Copies of air sampling results will be maintained in the SSO project files.

If the site activities warrant, the subcontractor will ensure its employees' exposures are quantified via the use of appropriate sampling techniques. The subcontractor shall notify the employees sampled in accordance with health and safety regulations, and provide the results to the SSO for use in determining the potential for other employees' exposure.

5.5 Heat and Cold Stress

Heat and cold stress may vary based upon work activities, PPE/clothing selection, geographical locations, and weather conditions. To reduce the potential of developing heat/cold stress, be aware of the signs and symptoms of heat/cold stress and watch fellow employees for signs of heat/cold stress.

Heat stress can be a significant field site hazard, particularly for non-acclimated personnel operating in a hot, humid setting. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and the prevention of heat stress casualties. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress as outlined in *S3NA-511-PR Heat Stress Prevention Program*.

5.5.1 Responding to Heat-Related Illness

The guidance below will be used in identifying and treating heat-related illness.

Table 5.5.1: Identification and Treatment of Heat-Related Illness

Type of Heat-Related Illness	Description	First Aid
Mild Heat Strain	The mildest form of heat-related illness. Victims exhibit irritability, lethargy, and significant sweating. The victim may complain of headache or nausea. This is the initial stage of overheating, and prompt action at this point may prevent more severe heat-related illness from occurring.	• Provide the victim with a work break during which he/she may relax, remove any excess protective clothing, and drink cool fluids. • If an air-conditioned spot is available, this is an ideal break location. • Once the victim shows improvement, he/she may resume working; however, the work pace should be moderated to prevent recurrence of the symptoms.
Heat Exhaustion	Usually begins with muscular weakness and cramping, dizziness, staggering gait, and nausea. The victim will have pale, clammy moist skin and may perspire profusely. The pulse is weak and fast and the victim may faint unless they lie down. The bowels may move involuntarily.	• Immediately remove the victim from the work area to a shady or cool area with good air circulation (<i>avoid drafts or sudden chilling</i>). • Remove all protective outerwear. • Call a physician. • Treat the victim for shock. (<i>Make the victim lie down, raise his or her feet 6–12 inches, and keep him/her cool by loosening all clothing</i>). • If the victim is conscious, it may be helpful to give him/her sips of water. • Transport victim to a medical facility ASAP.
Heat Stroke	The most serious of heat illness, heat stroke represents the collapse of the body's cooling mechanisms. As a result, body temperature may rise to 104 degrees Fahrenheit or higher. As the victim progresses toward heat stroke, symptoms such as headache, dizziness, nausea can be noted, and the skin is observed to be dry, red, and hot. Sudden collapse and loss of consciousness follows quickly and death is imminent if exposure continues. Heat stroke can occur suddenly.	• Immediately evacuate the victim to a cool/shady area. • Remove all protective outerwear and as much personal clothing as decency permits. • Lay the victim on his/her back w/the feet slightly elevated. • Apply cold wet towels or ice bags to the head, armpits, and thighs. • Sponge off the bare skin with cool water. • The main objective is to cool without chilling the victim. • Give no stimulants or hot drinks. • Since heat stroke is a severe medical condition requiring professional medical attention, emergency medical help should be summoned immediately to provide onsite treatment of the victim and proper transport to a medical facility.

6.0 Environmental Program (Environment)

6.1 Environmental Compliance and Management

This project and the individual tasks will comply with all federal, state, provincial, and local environmental requirements.

7.0 Personal Protective Equipment

7.1 Personal Protective Equipment

The purpose of personal protective equipment (PPE) is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. *S3NA-208-PR Personal Protective Equipment Program* lists the general requirements for selection and usage of PPE. Table 7-1 lists the minimum PPE required during site operations and additional PPE that may be necessary. The specific PPE requirements for each work task are specified in the individual THAs.

By signing this HASP the employee agree having been trained in the use, limitations, care and maintenance of the protective equipment to be used by the employee at this project. If training has not been provided, request same of the PM/SSO for the proper training before signing.

Table 7-1: Personal Protective Equipment

<u>TYPE</u>	<u>MATERIAL</u>	<u>ADDITIONAL INFORMATION</u>
Minimum PPE		
Safety Vest	ANSI Type II high-visibility	Must have reflective tape/be visible from all sides.
Boots	Leather	ANSI approved safety toe.
Safety Glasses		ANSI Approved; ≥98% UV protection.
Hard Hat		ANSI Approved; recommended wide-brim.
Work Uniform		No shorts/cutoff jeans or sleeveless shirts.
Additional PPE		
Hearing Protection	Ear plugs and/ or muffs	In hazardous noise areas.
Leather Gloves		If working with sharp objects or powered equipment.
Protective Chemical Gloves	Outer: Nitrile	To prevent contact with groundwater
Sunscreen	SPF 30 or higher	
Cold Weather Gear	Hard hat liner, hand warmers, insulated gloves	

7.2 PPE Doffing and Donning (UTILIZATION) Information

The following information is to provide field personnel with helpful hints that, when applied, make donning and doffing of PPE a more safe and manageable task:

- Never cut disposable booties from your feet with basic utility knives. This has resulted in workers cutting through the bootie and the underlying sturdy leather work boot, resulting in significant cuts to the legs/ankles. Recommend using a pair of scissors or a package/letter opener (cut above and parallel with the work boot) to start a cut in the edge of the bootie, then proceed by manually tearing the material down to the sole of the bootie for easy removal.
- When applying duct tape to PPE interfaces (wrist, lower leg, around respirator, etc.) and zippers, leave approximately one inch at the end of the tape to fold over onto itself. This will make it much easier to remove the tape by providing a small handle to grab while still wearing gloves. Without this fold, trying to pull up the tape end with multiple gloves on may be difficult and result in premature tearing of the PPE.
- Have a “buddy” check your ensemble to ensure proper donning before entering controlled work areas. Without mirrors, the most obvious discrepancies can go unnoticed and may result in a potential exposure situation.
- Never perform personal decontamination with a pressure washer.

7.3 Decontamination

7.3.1 General Requirements

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials, etc).

All personal decontamination activities shall be performed with an attendant (buddy) to provide assistance to personnel that are performing decontamination activities. Depending on specific site hazards, attendants may be required to wear a level of protection that is equal to the required level in the Exclusion Zone (EZ).

All persons and equipment entering the EZ shall be considered contaminated, and thus, must be properly decontaminated prior to entering the SZ.

Decontamination procedures may vary based on site conditions and nature of the contaminant(s). If chemicals or decontamination solutions are used, care should be taken to minimize reactions between the solutions and contaminated materials. In addition, personnel must assess the potential exposures created by the decontamination chemical(s) or solutions. The applicable Material Safety Data Sheet (MSDS) must be reviewed, implemented, and filed by personnel contacting the chemicals/solutions.

All contaminated PPE and decontamination materials shall be contained, stored and disposed of in accordance with site-specific requirements determined by site management.

7.3.2 Decontamination Equipment

The equipment required to perform decontamination may vary based on site-specific conditions and the nature of the contaminant(s). The following equipment is commonly used for decontamination purposes:

- Soft-bristle scrub brushes or long-handled brushes to remove contaminants;
- Hoses, buckets of water or garden sprayers for rinsing;
- Large plastic/galvanized wash tubs or children's wading pools for washing and rinsing solutions;
- Large plastic garbage cans or similar containers lined with plastic bags for the storage of contaminated clothing and equipment;
- Metal or plastic cans or drums for the temporary storage of contaminated liquids; and
- Paper or cloth towels for drying protective clothing and equipment.

7.3.3 Personal/Equipment Decontamination

All equipment leaving the EZ shall be considered contaminated and must be properly decontaminated to minimize the potential for exposure and off-site migration of impacted materials. Such equipment may include, but is not limited to: sampling tools, heavy equipment, vehicles, PPE, support devices (e.g., hoses, cylinders, etc.), and various handheld tools.

All employees performing equipment decontamination shall wear the appropriate PPE to protect against exposure to contaminated materials. The level of PPE may be equivalent to the level of PPE required in the EZ. Other PPE may include splash protection, such as face-shields and splash suits, and knee protectors. Following equipment decontamination, employees may be required to follow the proper personal decontamination procedures above.

Personal decontamination will consist of the removal of any coveralls followed by the removal of chemical resistant gloves.

For larger equipment, a high-pressure washer may need to be used. Some contaminants require the use of a detergent or chemical solution and scrub brushes to ensure proper decontamination.

For smaller equipment, use the following steps for decontamination:

- Remove majority of visible gross contamination in EZ.
- Wash equipment in decontamination solution with a scrub brush and/or power wash heavy equipment.
- Rinse equipment.
- Visually inspect for remaining contamination.
- Follow appropriate personal decontamination steps outlined above.

All decontaminated equipment shall be visually inspected for contamination prior to leaving the Contaminant Reduction Zone (CRZ). Signs of visible contamination may include an oily sheen, residue or contaminated soils left on the equipment. All equipment with visible signs of contamination shall be discarded or re-decontaminated until clean. Depending on the nature of the contaminant, equipment may have to be analyzed using a wipe method or other means.

8.0 Project Health and Safety Organization

8.1 Project Manager Paul Kareth

The Project Manager (PM) has overall management authority and responsibility for all site operations, including safety. The PM will provide the site supervisor with work plans, staff, and budgetary resources, which are appropriate to meet the safety needs of the project operations.

8.2 Site Supervisor To Be Determined

The site supervisor has the overall responsibility and authority to direct work operations at the job site according to the provided work plans. The PM may act as the site supervisor while on site.

8.2.1 Responsibilities

The site supervisor is responsible to:

- Discuss deviations from the work plan with the SSO and PM.
- Discuss safety issues with the PM, SSO, and field personnel.
- Assist the SSO with the development and implementation of corrective actions for site safety deficiencies.
- Assist the SSO with the implementation of this HASP and ensuring compliance.
- Assist the SSO with inspections of the site for compliance with this HASP and applicable SOPs.

8.2.2 Authority

The site supervisor has authority to:

- Verify that all operations are in compliance with the requirements of this HASP, and halt any activity that poses a potential hazard to personnel, property, or the environment.
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the SSO, the Safety Professional, and the PM.

8.2.3 Qualifications

In addition to being Hazardous Waste Operations and Emergency Response (HAZWOPER)-qualified (see Section 4.1), the Site Supervisor is required to have completed the 8-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

8.3 Site Safety Officer To Be Determined

8.3.1 Responsibilities

The SSO is responsible to:

- Update the site-specific HASP to reflect changes in site conditions or the scope of work. HASP updates must be reviewed and approved by the Safety Professional.
- Be aware of changes in AECOM Safety Policy.
- Monitor the lost time incidence rate for this project and work toward improving it.
- Inspect the site for compliance with this HASP and the SOPs using the appropriate audit inspection checklist provided by an AECOM Safety Professional.
- Work with the site supervisor and PM to develop and implement corrective action plans to correct deficiencies discovered during site inspections. Deficiencies will be discussed with project management to determine appropriate corrective action(s).
- Contact the Safety Professional for technical advice regarding safety issues.

- Provide a means for employees to communicate safety issues to management in a discreet manner (i.e., suggestion box, etc.).
- Determine emergency evacuation routes, establishing and posting local emergency telephone numbers, and arranging emergency transportation.
- Check that all site personnel and visitors have received the proper training and medical clearance prior to entering the site.
- Establish any necessary controlled work areas (as designated in this HASP or other safety documentation).
- Present tailgate safety meetings and maintain attendance logs and records.
- Discuss potential health and safety hazards with the Site Supervisor, the Safety Professional, and the PM.
- Select an alternate SSO by name and inform him/her of their duties, in the event that the SSO must leave or is absent from the site.

8.3.2 Authority

The SSO has authority to:

- Verify that all operations are in compliance with the requirements of this HASP.
- Issue a "Stop Work Order" under the conditions set forth in this HASP.
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the Safety Professional and the PM.

8.3.3 Qualifications

In addition to being HAZWOPER-qualified, the SSO is required to have completed the 8-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

8.4 Employees

8.4.1 Employee Responsibilities

Responsibilities of employees associated with this project include, but are not limited to:

- Understanding and abiding by the policies and procedures specified in the HASP and other applicable safety policies, and clarifying those areas where understanding is incomplete.
- Providing feedback to health and safety management relating to omissions and modifications in the HASP or other safety policies.
- Notifying the SSO, in writing, of unsafe conditions and acts.

8.4.2 Employee Authority

The health and safety authority of each employee assigned to the site includes the following:

- The right to refuse to work and/or stop work authority when the employee feels that the work is unsafe (including subcontractors or team contractors), or where specified safety precautions are not adequate or fully understood.
- The right to refuse to work on any site or operation where the safety procedures specified in this HASP or other safety policies are not being followed.
- The right to contact the SSO or the Safety Professional at any time to discuss potential concerns.
- The right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions.

8.5 Safety Professional Peter Sullivan

The Safety Professional is the member of the AECOM Safety, Health and Environmental Department assigned to provide guidance and technical support for the project. Duties include the following:

- Approving this HASP and any required changes.
- Approving the designated Site Safety Officer (SSO).
- Reviewing all personal exposure monitoring results.
- Investigating any reported unsafe acts or conditions.

8.6 Subcontractors

The requirements for subcontractor selection and subcontractor safety responsibilities are outlined in *S3NA-213-PR Subcontractors*. Each AECOM subcontractor is responsible for assigning specific work tasks to their employees. Each subcontractor's management will provide qualified employees and allocate sufficient time, materials, and equipment to safely complete assigned tasks. In particular, each subcontractor is responsible for equipping its personnel with any required personnel protective equipment (PPE and all required training.

AECOM considers each subcontractor to be an expert in all aspects of the work operations for which they are tasked to provide, and each subcontractor is responsible for compliance with the regulatory requirements that pertain to those services. Each subcontractor is expected to perform its operations in accordance with its own unique safety policies and procedures, in order to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to AECOM for review prior to the start of onsite activities, if required.

Hazards not listed in this HASP but known to any subcontractor, or known to be associated with a subcontractor's services, must be identified and addressed to the AECOM PM or the Site Supervisor prior to beginning work operations. The Site Supervisor or authorized representative has the authority to halt any subcontractor operations, and to remove any subcontractor or subcontractor employee from the site for failure to comply with established health and safety procedures or for operating in an unsafe manner.

8.7 Visitors

Authorized visitors (e.g., client representatives, regulators, AECOM management staff, etc.) requiring entry to any work location on the site will be briefed by the PM on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this HASP specifies the minimum acceptable qualifications, training and personal protective equipment which are required for entry to any controlled work area; visitors must comply with these requirements at all times.

8.7.1 Visitor Access

Visitors to any HAZWOPER controlled-work area must comply with the health and safety requirements of this HASP, and demonstrate an acceptable need for entry into the work area. All visitors desiring to enter any controlled work area must observe the following procedures:

- A written confirmation must be received by AECOM documenting that each of the visitors has received the proper training and medical monitoring required by this HASP. Verbal confirmation can be considered acceptable provided such confirmation is made by an officer or other authorized representative of the visitor's organization.
- Each visitor will be briefed on the hazards associated with the site activities being performed and acknowledge receipt of this briefing by signing the appropriate tailgate safety briefing form.
- All visitors must be escorted by an AECOM employee.

If the site visitor requires entry to any EZ, but does not comply with the above requirements, all work activities within the EZ must be suspended. Until these requirements have been met, entry will not be permitted.

Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

9.0 Site Control

9.1 General

The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent vandalism. The degree of site control necessary depends on the site characteristics, site size, and the surrounding community.

Controlled work areas will be established at each work location, and if required, will be established directly prior to the work being conducted. Diagrams designating specific controlled work areas will be drawn on site maps, posted in the support vehicle or trailer and discussed during the daily safety meetings. If the site layout changes, the new areas and their potential hazards will be discussed immediately after the changes are made.

9.2 Controlled Work Areas

Each HAZWOPER controlled work area will consist of the following three zones:

- Exclusion Zone: Contaminated work area.
- Contamination Reduction Zone: Decontamination area.
- Support Zone: Uncontaminated or “clean area” where personnel should not be exposed to hazardous conditions.

Each zone will be periodically monitored in accordance with the air monitoring requirements established in this HASP. The Exclusion Zone and the Contamination Reduction Zone are considered work areas. The Support Zone is accessible to the public (e.g., vendors, inspectors).

9.2.1 Exclusion Zone

The Exclusion Zone is the area where primary activities occur, such as sampling, remediation operations, installation of wells, cleanup work, etc. This area must be clearly marked with hazard tape, barricades or cones, or enclosed by fences or ropes. Only personnel involved in work activities, and meeting the requirements specified in the applicable THA and this HASP will be allowed in an Exclusion Zone.

The extent of each area will be sufficient to ensure that personnel located at/beyond its boundaries will not be affected in any substantial way by hazards associated with sample collection activities.

All personnel should be alert to prevent unauthorized, accidental entrance into controlled-access areas (the EZ and CRZ). If such an entry should occur, the trespasser should be immediately escorted outside the area, or all HAZWOPER-related work must cease. All personnel, equipment, and supplies that enter controlled-access areas must be decontaminated or containerized as waste prior to leaving (through the CRZ only).

9.2.2 Contamination Reduction Zone

The Contamination Reduction Zone is the transition area between the contaminated area and the clean area. Decontamination is the main focus in this area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. This area must also be clearly marked with hazard tape and access limited to personnel involved in decontamination.

9.2.3 Support Zone

The Support Zone is an uncontaminated zone where administrative and other support functions, such as first aid, equipment supply, emergency information, etc., are located. The Support Zone shall have minimal potential for significant exposure to contaminants (i.e., background levels).

Employees will establish a Support Zone (if necessary) at the site before the commencement of site activities. The Support Zone would also serve as the entry point for controlling site access.

9.3 Site Access Documentation

If implemented by the PM, all personnel entering the site shall complete the "Site Entry/Exit Log" located at the site trailer or primary site support vehicle.

9.4 Site Security

9.4.1 Site security is necessary to:

- Prevent the exposure of unauthorized, unprotected people to site hazards.
- Avoid the increased hazards from vandals or persons seeking to abandon other wastes on the site.
- Prevent theft.
- Avoid interference with safe working procedures.

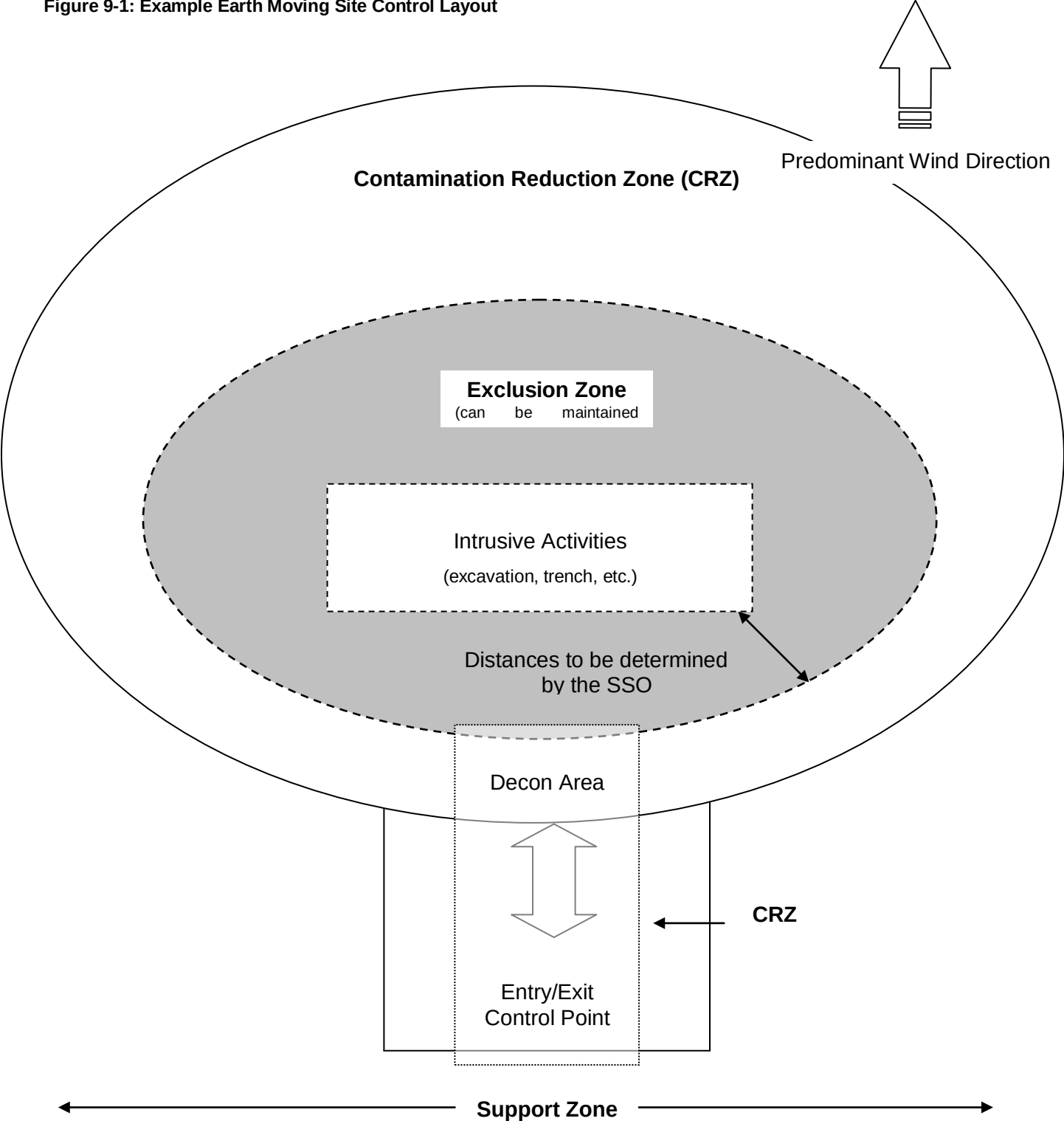
9.4.2 To maintain site security during working hours:

- Maintain security in the Support Zone and at access control points.
- Establish an identification system to identify authorized persons and limitations to their approved activities.
- Assign responsibility for enforcing authority for entry and exit requirements.
- When feasible, install fencing or other physical barrier around the site.
- If the site is not fenced, post signs around the perimeter and whenever possible, use guards to patrol the perimeter. Guards must be fully apprised of the hazards involved and trained in emergency procedures.
- Have the PM approve all visitors to the site. Make sure they have valid purpose for entering the site. Have trained site personnel accompany visitors at all times and provide them with the appropriate protective equipment.

9.4.3 To maintain site security during off-duty hours:

- If possible, assign trained, in-house technicians for site surveillance. They will be familiar with the site, the nature of the work, the site's hazards, and respiratory protection techniques.
- If necessary, use security guards to patrol the site boundary. Such personnel may be less expensive than trained technicians, but will be more difficult to train in safety procedures and will be less confident in reacting to problems around hazardous substances.
- Enlist public enforcement agencies, such as the local police department, if the site presents a significant risk to local health and safety.
- Secure the equipment.

Figure 9-1: Example Earth Moving Site Control Layout



10.0 Emergency Response Planning

10.1 Emergency Action Plan

Although the potential for an emergency to occur is remote, an emergency action plan has been prepared for this project should such critical situations arise. The only significant type of onsite emergency that may occur is physical injury or illness to a member of the AECOM team. The Emergency Action Plan (EAP) will be reviewed by all personnel prior to the start of field activities. A test of the EAP will be performed within the first three (3) days of the project field operations. This test will be evaluated and documented in the project records.

10.1.1 Three major categories of emergencies could occur during site operations:

- Illnesses and physical injuries (including injury-causing chemical exposure)
- Catastrophic events (fire, explosion, earthquake, or chemical)
- Workplace Violence, Bomb Threat
- Safety equipment problems

10.1.2 Emergency Coordinator

The duties of the Emergency Coordinator (EC) include:

- Implement the EAP based on the identified emergency condition.
- Notify the appropriate project and SH&E Department personnel of the emergency (Table 9-3).
- Verify emergency evacuation routes and muster points are accessible.
- Conduct routine EAP drills and evaluate compliance with the EAP.

10.1.3 Site-Specific Emergency Procedures

Prior to the start of site operations, the EC will complete Table 9-1 with any site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.

Table 10-1: Emergency Planning

Emergency	Evacuation Route	Muster Location
Chemical Spill	Upwind	To Be Determined
Fire/Explosion	Upwind	Vehicle
Tornado	Northward	Vehicle
Lightning	Sit in car	Vehicle
Additional Information		
Communication Procedures	Personnel will stay within voice range while working and will have cell phones when it is necessary to split up.	
CPR/First Aid Trained Personnel	Dependent on assigned personnel	
Site-Specific Spill Response Procedures	Spills will be cleaned up immediately and the spill reported to the Project Manager	

10.1.4 Spill Containment Procedure

Work activities may involve the use of hazardous materials (i.e. fuels, solvents) or work involving drums or other containers. Where these activities exist, a site-specific Spill Reporting Card will be developed (Attachment D). Procedures outlined below will be used to prevent or contain spills:

- All hazardous material will be stored in appropriate containers
- Tops/lids will be placed back on containers after use.
- Containers of hazardous materials will be stored appropriately away from moving equipment.

At least one spill response kit, to include an appropriate empty container, materials to allow for booming or diking the area to minimize the size of the spill, and appropriate clean-up material (i.e. speedy dri) shall be available at each work site (more as needed).

- All hazardous commodities in use (i.e. fuels) shall be properly labeled.
- Containers shall only be lifted using equipment specifically manufactured for that purpose.
- Drums/containers will be secured and handled in a manner which minimizes spillage and reduces the risk of musculoskeletal injuries.

10.1.5 Safety Accident/Incident Reporting

All accidents and incidents that occur on-site during any field activity will be promptly reported to the SSO and the immediate supervisor.

If any AECOM employee is injured and requires medical treatment, the Site Supervisor will report the incident in accordance with AECOM's incident reporting procedures. A copy of the final Supervisor's Report of Incident will be provided to the SH&E Professional before the end of the following shift.

If any employee of a subcontractor is injured, documentation of the incident will be accomplished in accordance with the subcontractor's procedures; however, copies of all documentation (which at a minimum must include the OSHA Form 301 or equivalent) must be provided to the SSO within 24 hours after the accident has occurred.

All accidents/incidents will be investigated. Copies of all subcontractor accident investigations will be provided to the SSO within five (5) days of the accident/incident.

10.1.6 Environmental Spill/Release Reporting

All environmental spills or releases of hazardous materials (e.g., fuels, solvents, etc.), whether in excess of the Reportable Quantity or not, will be reported according to the sequence identified in the *Site-Specific Spill Reporting Card*. In determining whether a spill or release must be reported to a regulatory agency, the Site Supervisor will assess the quantity of the spill or release and evaluate the reporting criteria against the state-specific reporting requirements, your applicable regulatory permit, and/or client-specific reporting procedures. In order to support the Site Supervisor and expedite the decision to report to a state regulatory agency, a site-specific Spill Reporting Card will be developed (Attachment D). **If reporting to a US state or Federal regulatory agency is required, AECOM has 15 minutes from the time of the spill/release to officially report it.**

Chemical-specific Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Reportable Quantities for the known chemicals onsite are shown in Table 10.1.

Table 10.1: CERCLA Reportable Quantities

Hazardous Substance	Regulatory Synonyms	Final RQ (lbs)
Benzene	N/A	10
Trichloroethylene	Trichloroethene, TCE	100
Tetrachloroethylene	Perchloroethylene, PCE	100

Table 10.1: Emergency Contacts

Emergency Coordinators / Key Personnel			
<u>Name</u>	<u>Title/Workstation</u>	<u>Telephone Number</u>	<u>Mobile Phone</u>
Payson Long	Client Contact		
	Account/Client Manager		
Paul Kareth	Project Manager	(845) 425-4980	
To be determined	Site Supervisor		
To be determined	Site Safety Officer		
Pete Sullivan	Regional SH&E Manager	(978) 905-2417	
Rich Renzi	District SH&E Manager	(781) 224-6450	
Incident Reporting	Incident Reporting Line	(800) 348-5046	
Kevin Seise	Emergency Coordinator (EC)	201-923-7155	
Al Lopilato	Secondary EC	+1 845 425 4980	
Organization / Agency			
<u>Name</u>			<u>Telephone Number</u>
Police Department (local)			911
Fire Department (local)			911
Ambulance Service <i>(EMT will determine appropriate hospital for treatment)</i>			911
-Emergency Hospital <i>(Use by site personnel is only for non-emergency cases)</i>			
Southside Hospital			631-968-3000
301 East Main Street			
Bay Shore, New York, 11706			
Emergency Hospital Route: Depends on which well, check GPS or smart phone for directions			
Poison Control Center			(800) 222-1222
Pollution Emergency			(800) 292-4706
National Response Center			(800) 424-8802
INFOTRAC(insert account number)			(800) 355-5053
Title 3 Hotline			(800) 424-9346
Public Utilities			
<u>Name</u>			<u>Telephone Number</u>
Call Before You Dig			811

By signing below, the undersigned acknowledges that he/she has read and reviewed the AECOM Health and Safety Plan for the Liberty Industrial Finishing site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein.

[illegible]

Attachment A

Task Hazard Analyses

[attach THAs]

Attachment B

Material Safety Data Sheets

[attach MSDSs]

Attachment C

Client-Specific Health and Safety Guidelines

[attach guidelines]

Attachment D
Applicable SH&E SOPs

[attach SOPs]

Attachment E
Client Specific SH&E Guidelines and
Subcontractors SH&E Information

[attach information]

Appendix G

Community Air Monitoring Plan

APPENDIX G – COMMUNITY AIR MONITORING PLAN

G-1 Community Air Monitoring Plan

This CAMP is a companion document to the site-specific Health and Safety Plan (HASP). The HASP is directed primarily toward the protection of workers within the designated work zones. The CAMP is directed primarily toward the protection of the community downwind of site activities (i.e., off-site receptors including residences and businesses). This CAMP identifies action levels and subsequent responses to insure the safety of the downwind community. In addition, the CAMP aids in affirming that work activities do not spread constituents off site through the air.

The CAMP was established to address the following objectives:

- To ensure that concentrations of VOCs and total suspended particulates are minimized to protect human health and environment;
- To provide an early warning system so engineering controls can be enacted to prevent unnecessary exposure of emissions resulting from project activities; and
- To measure and document the concentrations of VOCs and total suspended particulates for determining compliance with the established air-monitoring limits.

The CAMP is intended to be a discrete program, which will be operated in conjunction with the Exclusion Zone air-monitoring program. The Exclusion Zone monitoring established to protect worker's health and safety during construction and materials handling. The CAMP will include real time air quality data, which will be collected throughout the duration of all excavation activities and will include upwind, downwind, and nearest receptor measurements. Wind direction will be determined using a weather station or equivalent device.

G-2 Air Monitoring

Real-time air monitoring for volatile compounds and particulates at the perimeter of the exclusion zone will be performed. Surficial soil samples collected in June 2013 indicate that several metals concentrations exceed the cleanup criteria in at least two areas of the Site as shown on Figure 6 of the SMP. Analytical results for the soil samples are shown on Table 3 of the SMP.

VOCs will be monitored upwind and at the downwind perimeter of the exclusion zone. Monitoring will be conducted with a PID equipped with a 10.2 or 10.6 eV lamp. If total organic vapor levels exceed 1 ppm above background at the perimeter, excavation activities must be halted and monitoring continued. All readings will be recorded on field logs and will be available for State (NYSDEC & NYSDOH) personnel to review. Particulates will be monitored upwind and at the

downwind perimeter of the exclusion zone with a portable particulate monitor. All readings will be recorded on field logs and will be available for review by the NYSDEC and/or NYSDOH. These action levels will be modified if particulates are better characterized and identified.

G-3 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored at the upwind and downwind perimeter of the site on a continuous basis or as otherwise specified. Upwind concentrations will be measured to establish site-specific background concentrations. In the event of minimal wind or frequent changes in wind direction, multiple locations will be monitored (i.e., three monitoring locations surrounding the work area).

Particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. Each particulate monitor will be calibrated daily with a filtered air sample. Each air monitoring instrument will be continuously downloaded and saved electronically to a dedicated computer located on-site.

The NYSDOH Generic CAMP recommended action level of 0.10 mg/m³ above background for particulate matter less than 10 micrometers in size (PM-10) will be used to determine whether modifications to given processes are required. If the downwind particulate measurement of particulates less than 10 micrometers in size (PM-10) is greater than 0.10 mg/m³ above the upwind background level, or if dust is observed leaving the project area, dust suppression techniques (i.e., misting surfaces with water, or covering open piles) will be implemented to reduce the generation of fugitive dust. If the action level of 0.15 mg/m³ (above background) is exceeded, work activities will be ceased and the contractor, the NYSDEC on-site representative, and the NYSDEC project manager will be notified.

The table below describes the action levels for perimeter particulate air monitoring and the associated responses to each level.

Table 1 Action Levels for Perimeter Particulate Air Monitoring

Action Level	Response
Downwind particulate concentrations 0.10 mg/m ³ greater than upwind particulate monitor sustained over 15 minute average	Dust suppression techniques are employed
Downwind particulate concentrations 0.15 mg/m ³ greater than upwind particulate monitor sustained over 15 minute average	Work halted and dust suppression techniques evaluated. Work continues once dust suppression techniques are proven successful

G-4 Vapor Emission Response Plan

The Vapor Emission Response Plan will be triggered by either an exceedance of the 15-minute average VOCs concentration of 5 ppm (above background) at the perimeter of the Exclusion Zone or odor complaint. If the Vapor Emission Response Plan is triggered all excavation activities will be stopped and the following actions will be taken:

- Continue total VOC monitoring at the perimeter of the work area. If the total VOC level drops below 5 ppm (above background) then excavation activities can resume with the addition of engineering controls or modifications to the excavation process to minimize VOC emissions. However, if the VOC level persists above 5 ppm, based on continual observance of the meter, then the construction supervisor will immediately implement engineering controls such as misting the area with a vapor suppression solution of BioSolve® covering, backfilling, etc., to reduce emissions and at the same time notify the site project manager, and the Project Health & Safety Coordinator.
- If the total VOC level drops below 5 ppm (above background), after the implementation of engineering controls at the perimeter of the Exclusion Zone, then the excavation activity can resume provided process and work activities were adjusted to reduce emission levels.
- If the total VOC level continues to be greater than 5 ppm (above background) at the perimeter of the Exclusion Zone after the implementation of engineering controls, then all the site activities must be discontinued. When the work is shut down, downwind air-monitoring as directed by the Project Health and Safety Coordinator will be implemented to ensure that the emission does not impact the nearest residential or commercial structure.
- If the total VOC levels are above 25 ppm at the perimeter of the Exclusion Zone, site activities must be shut down and corrective measures taken.

Primary engineering controls, which may be implemented to reduce emission levels if the site personnel detect a significant odor or when odor complaints are received, include:

- Adding a vapor suppression solution of BioSolve® to impacted media;
- Limiting excavation size and surface area of exposed impacted soil; and
- Covering impacted soil with polyethylene sheeting.

Appendix H

Site Inspection Forms



WELL NO.

[illegible]



Client: New York State Department of Environmental Conservation

Preparer's Name: _____ Date/Time: _____

Has the condition of the asphalt degraded since the last inspection?

☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA

Are there any breaks in the perimeter fence?

☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA

Is there any evidence of illegal disposal?

☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA☐ YES ☐ NO ☐ NA

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Appendix I

Sampling and Analysis Plan

**FINAL
SAMPLING AND ANALYSIS PLAN**

**Multi Site G
Operation, Maintenance & Monitoring**

***Liberty Industrial Finishing
550 Suffolk Avenue, Brentwood, NY
Site No. 1-52-108***

**Work Assignment No.
D004445-14.1**

Prepared for:



**SUPERFUND STANDBY PROGRAM
New York State
Department of Environmental Conservation
625 Broadway
Albany, New York 12233**

June 2007

Prepared by:

**Earth Tech Northeast, Inc.
300 Broadacres Drive
Bloomfield, New Jersey**

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1.0 INTRODUCTION

1.1 PURPOSE OF THE WORK ASSIGNMENT

The purpose of this Sampling and Analysis Plan (SAP) is to describe activities planned for the field sampling portions of the remedial action at the Liberty Industrial Finishing site (hereafter referred to as the “Site”). The Site is an Inactive New York State Superfund site (Site No. 1-52-108).

The work described in this SAP is being performed under the Earth Tech Northeast, Inc. (Earth Tech) New York State Department of Environmental Conservation (NYSDEC) Superfund Standby Contract Work Assignment No. D004445-14.1. The two major components of this SAP are the Field Sampling Plan (FSP) and the Quality Assurance Project Plan (QAPP). The FSP provides the detailed procedures for the collection of environmental samples. The FSP has been prepared in accordance with the United States Environmental Protection Agency’s (USEPA’s) “Compendium of Superfund Field Operation Methods”, where applicable.

The QAPP prescribes requirements for assuring that the work assignment is planned and executed in a manner consistent with the project’s quality assurance objectives. The objective of the QAPP is to ensure that the technical data generated during the work assignment are of sufficient quality for making informed decisions regarding Site environmental sample quality. The content and format of the QAPP are based on USEPA’s “Combined Work/Quality Assurance Project Plans For Environmental Monitoring”, May 1984, and the USEPA’s “Data Quality Objectives For Remedial Response Activities” March 1987.

The objective of the work assignment is to collect groundwater samples from monitoring wells on a semi-annual basis.

1.2 SITE DESCRIPTION

The Liberty Industrial Finishing Superfund site is located at 550 Suffolk Avenue, Brentwood, Suffolk County, New York (Figure 1). The Site is bounded to the north by Suffolk Avenue, by the Long Island Railroad to the south, and undeveloped land to the east and the west. The groundwater flow direction is to the southeast in the vicinity of the Site. The Site is approximately 3.9 acres in size. The Site was used for airplane parts manufacturing and associated metal finishing activities during World War II and the Korean War. In the late 1950's, the Site was converted to an industrial park and was used for a variety of industrial operations including metal plating and finishing and fiberglass product manufacturing. During the 1980s and possibly into the 1990s, the Site was used for light manufacturing and warehousing. The Site is currently vacant and the former buildings have been demolished. All that remains are foundation slabs and paved driveways and parking areas. A public water supply well field is located 220 feet downgradient of the Site. A groundwater plume contaminated with organic and inorganic substances underlies the Site and extends off-site to the southeast. Wastewater discharges from the Site were contaminated with manganese phosphate, zinc phosphate, chromic acid, and other compounds. Chromium was the primary site-related contaminant.

A Record of Decision (ROD) was issued in 1999 that called for the removal of contaminated sediment from four drywells and one leaching pool; the excavation of contaminated soil; and the construction of an asphalt cap above the on-site underground storage tanks. All the remedial work specified in the ROD was completed in September 2001.

A total of eight monitoring wells have been identified for long-term monitoring: MW-5, MW-6, MW-12, MW-14, MW-18, MW-19, MW-20 and MW-21 (Figure 2).

1.3 SITE ACCESS

Two of the eight monitoring wells (MW-18 and MW-19) are located on property owned by Suffolk County Water Authority. Earth Tech will contact Mr. Joe Pokorny, Chief Engineer Suffolk County Water Authority, at 631-563-0202 to get access to these two monitoring wells.

NYSDEC Regional and Central Office staff have reported vagrants living at this Site. All site visits and sampling events are to be made with an adequate number of staff (at least two) for personal safety using the buddy system.

A Site Contact List is provided in Appendix A.

2.0 FIELD SAMPLING PLAN

This section outlines the procedures that will be used in the collection of groundwater samples from the existing monitoring wells at the Site. A total of eight monitoring wells have been identified for long-term monitoring and are summarized in Table 1. Groundwater will be collected from all eight monitoring wells using the procedures described below. The subtasks described below are intended to generate the data necessary to accomplish the objective of long term monitoring at the Site.

2.1 GENERAL FIELD ACTIVITIES

General field activities include mobilization, implementing the safe work plan (included in Appendix B), and groundwater sampling.

2.1.1 Mobilization

Following authorization to proceed with the field investigation from NYSDEC, Earth Tech will mobilize necessary materials and equipment to the Site. A project kick-off meeting will be held prior to initiating field work to orient field team members and subcontractors with the Site and to familiarize Earth Tech personnel and our subcontractor personnel with site background, scope of work, potential dangers, health and safety requirements, emergency contingencies and other field procedures.

2.1.2 Health and Safety

It is anticipated that the work to be completed at the Site will be performed in Level D personal protection.

2.1.3 Decontamination and Handling of Investigation Derived Waste

Non-dedicated equipment and tools used to collect samples for chemical analysis will be decontaminated prior to and between each sample interval using an alconox wash, tap water rinse and distilled water rinse prior to reuse. Personal protective equipment and disposable sampling equipment will be placed in plastic garbage bags for disposal as solid waste.

Monitoring well purge water will be disposed on the ground surface adjacent to the well location from which the materials are derived.

2.2 GROUNDWATER SAMPLING (SUBTASK 5A)

Earth Tech will conduct two rounds of groundwater sampling at the Site on a five quarter basis.

2.2.1 Water Level Survey

Prior to the start of each semi-annual groundwater sampling event, water levels will be measured in each well to provide a synoptic event. The survey will include measuring the depth of water within the wells from a monitoring point of known elevation established at the top of the well riser. The water elevations will be calculated based on the known elevation and measured depth to water. Water level measurements will be recorded in the Field Notebook and on the Well Sampling Form included in Appendix C. In addition, Earth Tech will also complete a NYSDEC Monitoring Well Field Inspection Log during each sampling event. A copy of this log is in Appendix C.

2.2.2 Groundwater Sampling

Two rounds of groundwater samples will be collected from the eight monitoring wells identified at the Site. The first semi-annual groundwater sampling event will occur approximately one month after Notice to Proceed. The second groundwater sampling event will occur approximately five quarters after the first event is completed.

Groundwater samples will be collected using conventional sampling techniques. Initially, the volume of water within the well will be calculated by measuring the total depth of the well and measuring the depth to water. A minimum of three well volumes will be evacuated from the well. Purging will be accomplished using dedicated polyethylene tubing and a suitable pump (centrifugal pump for shallow groundwater or a submersible pump for deeper wells). Measurements of pH, specific conductance and temperature will be made after each well volume is removed. Once the minimum volume of water has been evacuated, a dedicated Teflon bailer will be used to collect a groundwater sample. The sample will be placed into laboratory supplied containers and transported to the analytical laboratory in accordance with the procedures and chain-of-custody requirements in the QAPP. In addition to measuring pH, specific conductance and temperature, turbidity will be measured to provide an indication of the amount of suspended sediment within the sample. These measurements will be recorded on the Well Sampling Form included in Appendix C.

2.2.3 Analyses of Groundwater Samples

Groundwater samples will be analyzed by Mitkem Laboratory, a New York State Department of Health (NYSDOH), Environmental Laboratory Accreditation Program (ELAP) certified laboratory for target analyte list (TAL) metals. Metals analysis will be performed on unfiltered samples.

2.3 MAINTENANCE (SUBTASK 5B)

Earth Tech has been tasked with fixing the Site perimeter fence and removal of debris at the Site. Earth Tech solicited bids from qualified contractors for fence repair and debris removal. The low bidder was S&A Container Service of Ronkonkoma, New York. Upon receiving approval from NYSDEC, Earth Tech completed the debris removal the week of March 12, 2007.

As the survey information for the Site wells could not be located, each well included in the sampling program was surveyed by YEC, Inc., a New York licensed surveyor. The survey work was authorized by NYSDEC and was completed in March 2007.

This subtask will also include any additional work authorized by NYSDEC that is currently not part of the approved scope of services.

2.4 GROUNDWATER INVESTIGATION REPORT (SUBTASK 5C)

Earth Tech will submit a letter report in portable document format (.pdf) summarizing the findings of each of the two rounds of groundwater sampling. Each report will include a groundwater contour map and contaminant isopleth maps for selected compounds. The standard size for all maps will be 11' x 17". Each report will include copies of the well sampling forms and the NYSDEC Well Inventory Log Sheets. In addition, each letter report will also provide an assessment whether the existing remedy at the site is performing effectively.

3.0 QUALITY ASSURANCE PROJECT PLAN

3.1 SAMPLE LABELING, HANDLING AND SHIPPING

Field notebooks will be used during all on-site work. A dedicated field notebook will be maintained by the field technician performing the site activities. In addition to the notebook, copies of sampling forms, purge forms and notebooks used during the field activities, will be submitted to the NYSDEC as part of the final sampling report. Groundwater sampling procedures will be photo-documented.

3.1.1 Sample Identification and Labeling

Samples will be assigned a unique identification using the sample location or other sample-specific identifier. The following general sample identification format will be used for the Site:

LIF-MW-XX (Where XX represents the monitoring well ID, e.g., MW-5)

Field duplicate samples will be submitted blind to the laboratory; a fictitious sample ID will be created using the same system as the original. The sample identifications (of the original sample and its field duplicate) will be marked in the field book and on the copy of the chain-of-custody kept by the sampler and copied to the project manager.

3.1.2 Labeling

Sample containers will be labeled in the field prior to the collection of samples. A non-removable label on which the following information is recorded will be affixed to each sample container for shipment to the laboratory:

- project name/location;
- sample identification code;
- date and time the sample was collected (except for field duplicates);
- type of sample, and
- analysis requested.

3.1.3 Containers, Preservation and Holding Times

Sample containers used will be of traceable quality, purchased and supplied by the laboratory. All samples will be collected and preserved when necessary, and all analytical holding times will conform to the USEPA SW-846 Protocols (December, 1996).

3.1.4 Chain-of-Custody Protocol and Shipping Requirements

Standard chain-of-custody protocol will be followed.

3.1.5 Cleaning of Field Sampling Equipment

Non-dedicated hand equipment and tools will be decontaminated using the following procedures:

- Scrub/wash with a laboratory grade detergent (e.g., alconox);
- Tap water rinse;
- Distilled/de-ionized water rinse.

If equipment is to be stored for future use, it will be allowed to air dry, and then wrapped in aluminum foil or sealed in plastic bags. Decontamination fluid will be discharged directly to the ground away from any surface water or containerized on-site if necessary

3.2 ANALYTICAL LABORATORY/ANALYTICAL METHODS

Mitkem Laboratory, a Minority Business Enterprise (MBE), has been selected to perform the sample analyses. Mitkem is a NYSDOH ELAP certified laboratory (ELAP certification number 11522). Mitkem is certified for the required Contract Laboratory Protocol (CLP) parameters.

Groundwater samples will be analyzed for TAL metals using USEPA Method 6000/7000. The laboratory will provide the required documentation, data reduction and reporting protocols as specified in NYSDEC ASP CLP Category B deliverable format.

3.3 DATA QUALITY REVIEW

Routine monitoring data will not be subject to formal data validation or data quality review. Results will be compared to previous data (if available), and a limited review of the laboratory-reported QC will be conducted. If obvious anomalies or other data quality problems are noted during this review, a recommendation will be made to NYSDEC for corrective action or additional formal review.

3.3.1 Duplicate Samples

Field duplicate samples are used to assess the variability of a matrix at a specific sampling point and to assess the reproducibility of the sampling method. Aqueous field duplicate samples are second samples collected from the same location, at the same time, in the same manner as the first, and placed into a separate container (technically, these are co-located samples). Each duplicate sample will be analyzed for the same parameters as the original sample. Field duplicates will be collected at a frequency of one per 20 environmental samples or one per event at this Site (eight wells).

3.3.2 Equipment Blanks

Equipment blanks are not required when dedicated sampling equipment (such as disposable Teflon bailers) is used.

3.3.3 Trip Blanks

No trip blanks will be collected as no aqueous volatile organics are being sampled and shipped.

3.4 LABORATORY QUALITY ASSURANCE SAMPLES

3.4.1 Method Blanks

Method blanks are used to assess the background variability of the method and to assess the introduction of contamination to the samples by the method, technique, or instrument as the sample is prepared and analyzed in the laboratory. A method blank is defined as an aliquot of laboratory deionized water on which every step of the method is performed and analyzed along with the samples. Method blanks are analyzed at a frequency of one for every 20 samples analyzed, or every analytical batch, whichever is more frequent.

3.4.2 Spiked Samples

Matrix spike and matrix spike duplicate (MS/MSD) (or matrix duplicate [MD] for inorganics) samples are analyzed to evaluate instrument and method performance and performance on samples of similar matrix. MS/MSD samples will be analyzed at a frequency of one (pair) for every 20 samples. MS/MSD/MD will be performed on additional samples as designated by Earth Tech's field staff.

3.5 EQUIPMENT CALIBRATION AND MAINTENANCE

3.5.1 Field Equipment

Field testing of groundwater will be performed during purging of wells prior to sampling for laboratory samples. Field QC checks of control limits for pH, specific conductance (conductivity), temperature and turbidity are detailed below. The calibration frequencies discussed below are the minimum. Field personnel can and should check calibration more frequently in adverse conditions, if anomalous readings are obtained, or subjective observations of instrument performance suggest the possibility of erroneous readings.

3.5.1.1 pH

The pH meter will be calibrated each morning prior to initial use, using two standards bracketing the range of interest (generally 4.0 and 7.0). If the pH QC control sample (a pH buffer, which may be the same or different than those used to initially calibrate the instrument) exceeds ± 0.1 pH units from the true value, the source of the error will be determined and the instrument recalibrated. If a continuing calibration check with pH 7.0 buffer is off by ± 0.1 pH units, the instrument will be recalibrated. Expired buffer solutions will not be used.

Note that gel-type probes take longer to equilibrate (up to 15 minutes at near-freezing temperatures); this must be taken into account in calibrating the instrument and reading samples and standards.

3.5.1.2 Specific Conductivity

A vendor-provided conductivity standard will be used to check the calibration of the conductivity meter each morning prior to initial use. Specific conductance QC samples will be on the order of 0.01 or 0.1 molar potassium chloride solutions in accordance with manufacturer's recommendations.

3.5.1.3 Turbidity

The turbidity meter will be calibrated using a standard as close as possible to 50 nephelometric turbidity units (NTU) (the critical value for determining effectiveness of well development and evacuation). The turbidity meter will be calibrated and checked daily prior to initial use. The turbidity QC sample will be a commercially prepared polymer standard (Advanced Polymer System, Inc., or similar).

3.5.1.4 Temperature

Temperature probes associated with instruments (such as the YSI SCT-33 conductivity and temperature meter) are not subject to field calibration, but the calibration should be checked to monitor instrument performance. It is recommended that the instrument's temperature reading be checked against a NBS-traceable thermometer concurrently with checking the conductivity calibration. The instrument manual will be referenced for corrective actions if accurate readings cannot be obtained.

3.5.2 Laboratory Equipment

Laboratory equipment is calibrated according to the requirements of SW-846, Test Methods for Evaluating Solid Waste and the Methods for the Chemical Analysis of Waters and Waste (USEPA, 1983) methods for each analysis and/or in accordance with the manufacturer's specifications.

In general, preventative maintenance of laboratory equipment follows the guidelines recommended by the manufacturer. A malfunctioning instrument is repaired immediately or through a service call to the manufacturer.

3.6 DATA DOCUMENTATION

3.6.1 Field Notebook

Field notebooks will be initiated at the start of on-site work. The field notebook will include the following daily information for all site activities:

- Date;
- Meteorological conditions (temperature, wind, precipitation);
- Site conditions (e.g., dry, damp, dusty, etc.);
- Identification of crew members (Earth Tech and subcontractor present) and other personnel (e.g., agency or site owner) present;
- Description of field activities;
- Location(s) where work is performed;
- Problems encountered and corrective actions taken;
- Records of field measurements or descriptions recorded; and
- Notice of modifications to the scope of work.

During sampling of wells, field samplers will add the following:

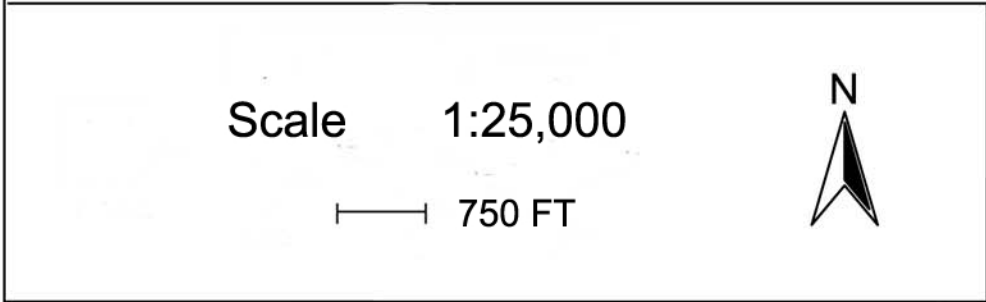
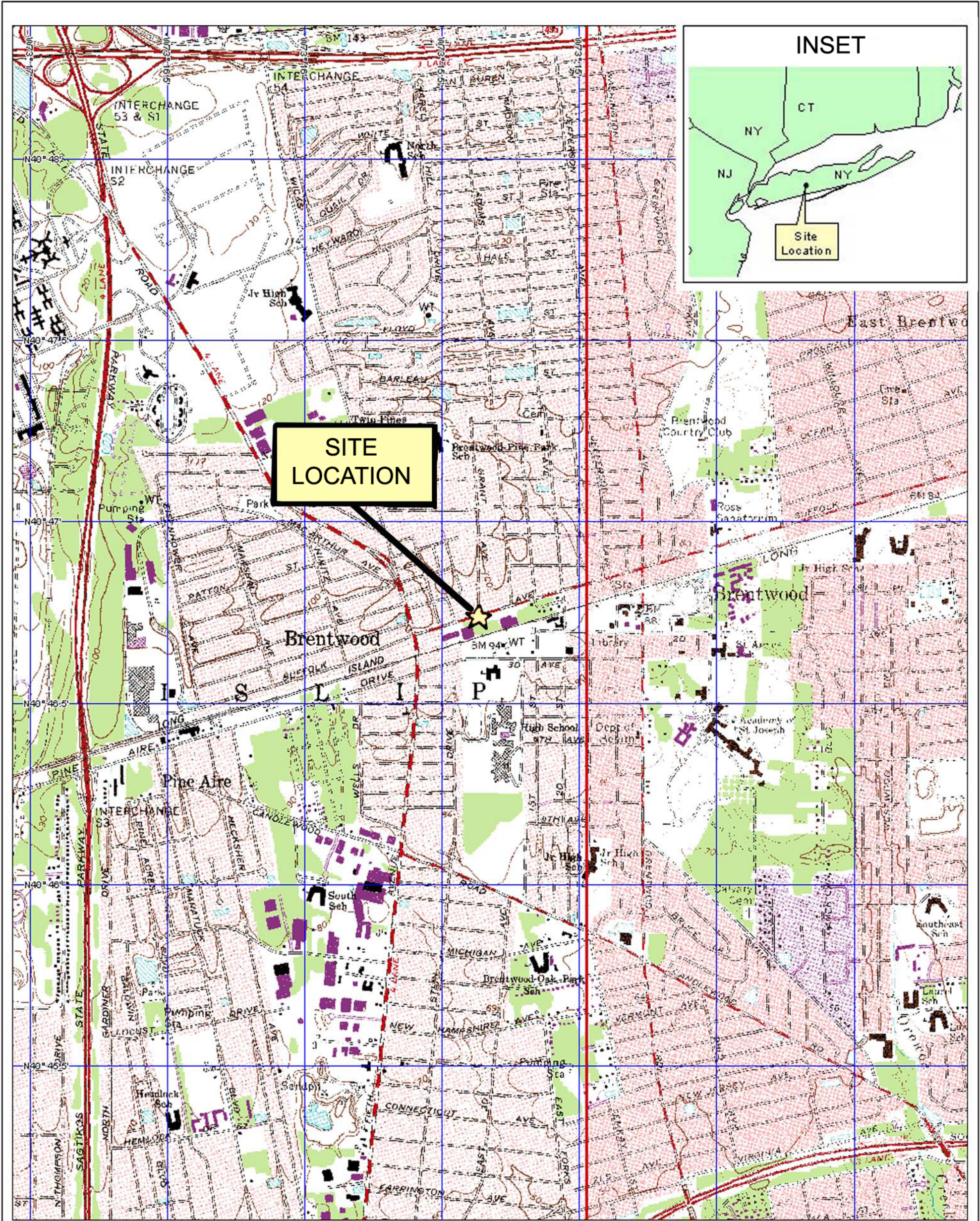
- Sampling point locations and test results such as pH, conductance, etc.;
- Information about sample collection (e.g., duplicate sample location);
- Chain of custody information; and
- Field equipment calibration.

TABLE 1**SUMMARY OF MONITORING WELLS****LIBERTY INDUSTRIAL FINISHING SITE (SITE No. 1-52-108)
550 SUFFOLK AVENUE, BRENTWOOD, NEW YORK**

Well ID	Well Diameter (Inch.)	Elevation Top of Casing	Elevation Top of PVC	Depth to Bottom of the Well (ft bgs)	Depth to Water Table (ft bgs)	Estimated Purge Volume (3 well volumes in gallons)	Location of the Wells
MW-5	4	94.70	94.42	50.00	47.20	5.60	To the south of the building; along LIRR
MW-6	4	93.90	93.82	265.00	47.07	436.90	To the south of the building; along LIRR
MW-12	2	91.08	90.81	50.00	43.91	3.04	Along First Street
MW-14	2	91.12	90.76	100.00	44.06	28.00	Along First Street
MW-18	2	93.14	92.69	150.00	45.65	26.00	To the west of the Recreational Fields
MW-19	4	93.32	93.11	248.00	46.60	402.80	To the west of the Recreational Fields
MW-20	2	90.27	89.80	148.00	43.13	52.40	Along 3 rd Ave.; west of the First St./ 3 rd Ave intersection
MW-21	2	90.33	89.87	110.00	43.12	38.40	Along 3 rd Ave.; west of the First St./ 3 rd Ave intersection

NOTES:

1. Information is based on Monitoring Well Log Sheets prepared by NYSDEC during the May 2003 sampling event.

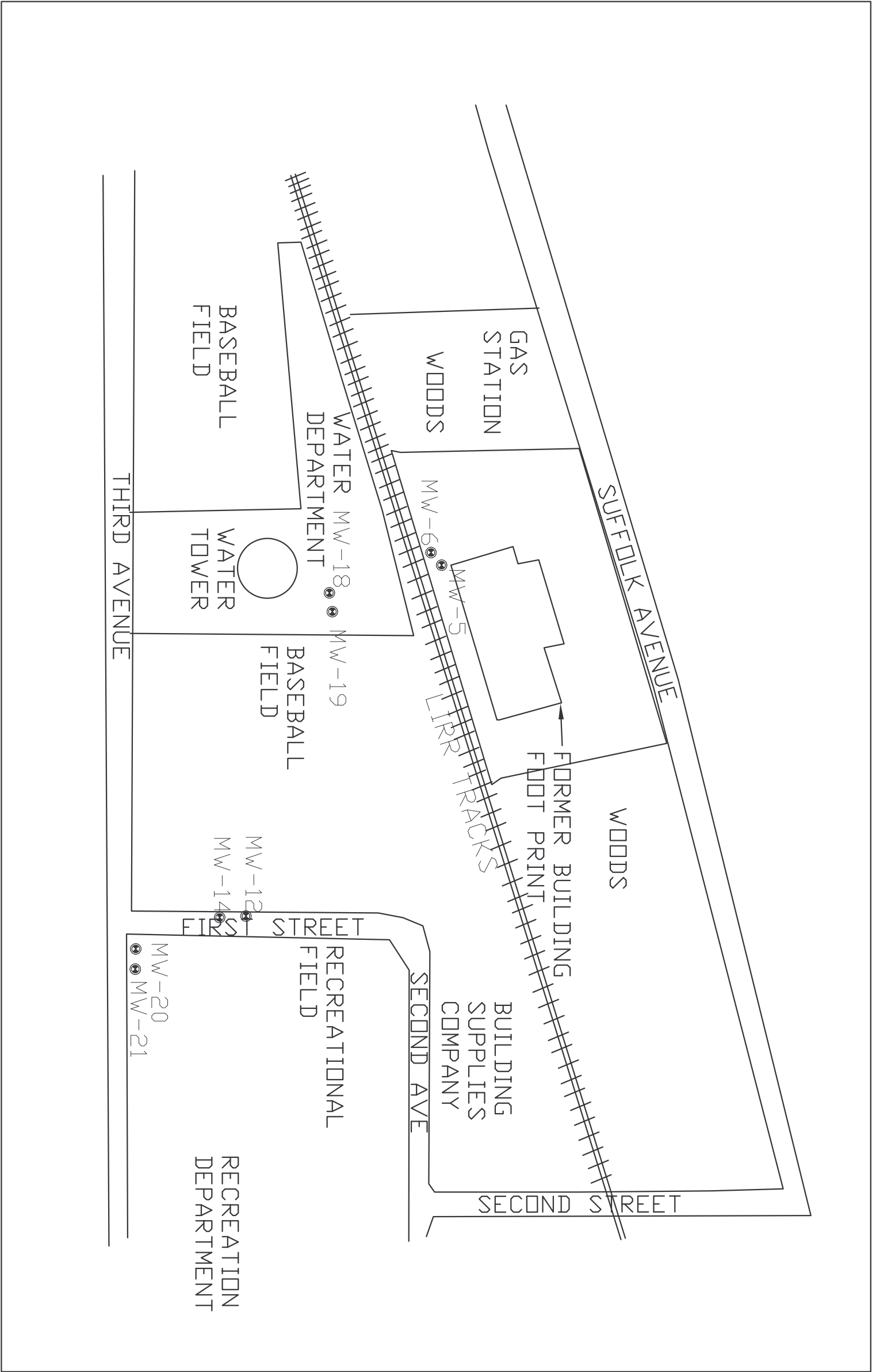


SOURCE:
Delorme 3-D TopoQuads
Greenlawn, NY
New York
7.5 Minute Series, 1979

Figure 1 - Site Location.

LIBERTY INDUSTRIAL FINISHING
SITE #1-52-108
MULTI SITE G
500 SUFFOLK AVE
BRENTWOOD, NY

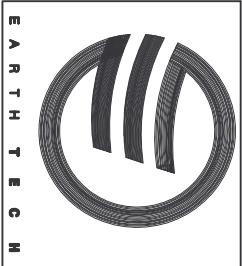
 **EarthTech**
A Tyco International Ltd. Company



LEGEND:

- FENCE LINE
- APPROXIMATE SITE LIMIT
- BUILDING
- SB-10 EXIST. SOIL BORING LOCATION
- SB-21/TW-6 EXIST. SOIL BORING/TEMPORARY WELL LOCATION
- MW-4 PROPOSED MONITORING WELL
- SB-25 PROPOSED TEMPORARY MONITORING WELL POINT

ENVIRONMENTAL / CONSULTING ENGINEERS



REVISIONS		
NO.	DATE	DESCRIPTION

PROJECT:
LIBERTY INDUSTRIAL FINISHINGS

BRENTWOOD, NEW YORK

CLIENT:
NYSDEC

ALBANY, NY

SITE TITLE:

SITE PLAN

DRAWN BY:

AUGUST 2006

CHECKED BY:

KDS

SCALE:

NTS

DATE:

8/25/06

PROJECT NO.:

87616.05

DRAWING NO.:

FIGURE 2

DOCUMENTS PREPARED BY EARTH TECH ARE INSTRUMENTS NOT INTENDED OR PORTAINED TO BE APPROPRIATE FOR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT OR FOR ANY OTHER PROJECT WITHOUT WRITTEN PERMISSION FROM EARTH TECH. REUSE OF ANY EARTH TECH DOCUMENT WITHOUT RECEIVING WRITTEN VALIDATION OR PERMISSION IS PROHIBITED.

ALL DIMENSIONS MUST BE FIELD VERIFIED BY CONTRACTOR AND NOTIFY OWNER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.

APPENDIX A

Site Contact List

SITE CONTACT LIST

Suffolk County Water Authority Mr. Joe Pokorny, Chief Engineer	631-563-0202
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APPENDIX B

Safe Work Plan

Note:

The Safe Work Plan included as Appendix B of this Sampling and Analysis Plan (Earth Tech Northeast, Inc, 2007) has been deleted from this document. The Safe Work plan is superseded by the revised Health and Safety Plan (HASP), prepared by AECOM, dated March 2013.

The current HASP for the Liberty Industrial Finishing Site (1-52-108) is included as Appendix F of the Site Management Plan (AECOM, 2014).

APPENDIX C

Well Sampling Form

NYSDEC Well Inventory Log Sheet

Note:

The two sampling forms (Well Sampling Form and Monitoring Well Field Inspection Form) included as Appendix C of this Sampling and Analysis Plan (Earth Tech Northeast, Inc, 2007) has been deleted from this document. The forms have been updated and are now in Appendix H of the Site Management Plan (AECOM, 2014).