Site Management Plan
Liberty Industrial Finishing Site
Site #1-52-108

Prepared by AECOM, October 2021

Revised by FPM Group, Ltd., February 2024

Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	NYSDEC Approval Date
1	October 2021	Climate change vulnerability assessment, update soil and groundwater data	
2	February 2024	Update onsite well information and cap location, add Environmental Easement and emerging contaminant monitoring	

Site Management Plan
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Engineering Certification for October 2021 Revision

I, Michael L. Spera, certify that I am currently a NYS registered professional engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Respectfully submitted,
AECOM USA, Inc.

10/7/2021

Michael L. Spera
Registered Professional Engineer
New York License No. 073731

Date

Site Management Plan
Liberty Industrial Finishing Site
Site #1-52-108

Engineering Certification for February 2024 Revision

I, Kevin F. Loyst, PE, certify that I am currently a NYS registered professional engineer and that this Site Management Plan revision was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Respectfully submitted,

2/21/24

Kevin F. Loyst, PE
Registered Professional Engineer
New York License No. 076321-1

Date

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Acronyms

AECOM	AECOM USA, 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
FPM	FPM Group, Ltd.
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
mg/kg	Milligrams per Kilogram
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
SCDHS	Suffolk County Department of Health and Services
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
Standards	NYSDEC Class GA Ambient Water Quality Standards
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
µg/L	Micrograms per Liter
$\mu g/m^3$	Micrograms per Cubic Meter
US EPA	United States Environmental Protection Agency
UST	Underground Storage Tank

Executive Summary

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

Liberty Industrial Finishing Site	Site Identification No. 152108 550 Suffolk Avenue, Brentwood, NY
Institutional Controls:	1. The Controlled Property may be used for commercial purposes as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and industrial purposes as described in 6 NYCRR Part 375-1.8(g)(2)(iv).
	2. All ECs must be operated and maintained as specified in the SMP.
	3. All ECs must be inspected at a frequency and in a manner defined in the SMP.
	4. The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Suffolk County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so form the Department.
	5. Groundwater and other environmental media or public health monitoring must be performed as defined in this SMP.
	6. Data and information pertinent to site management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP.
	7. All future activities that will disturb remaining contaminated material must be conducted in accordance with the SMP
	8. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP.
	9. Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in the SMP.

Liberty Industrial Finishing Site Site Identification No. 152108

550 Suffolk Avenue, Brentwood, NY

	10. Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions defined in the Environmental Easement.	
Engineering Controls:	1. Asphalt and concrete curbing Cap 2. Security Fence	
Inspections:		Frequency
1. Cap inspection 2. Security fence inspection		Annually
Monitoring:		
1. Groundwater Sampling (13 monitoring wells: MW-2A, MW-3A, MW-4A, MW-7A, MW-10, MW-12, MW-14, MW-16, MW-17A, MW-18, MW-19, MW-20, MW-21)		Once every five quarters
2. Monitoring Well Inspections		Once every five quarters
Maintenance:		
1. Monitoring wells		As needed
2. Cap		As needed
3. Fencing		As needed
Reporting:		
1. Groundwater Monitoring Reports		Once every five quarters
2. Periodic Review Reports		Every three years or as directed by the NYSDEC

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1.0 Introduction and Description of Remedial Program

1.1 Introduction

This Site Management Plan (SMP) is a required element of the remedial program for the Liberty Industrial Finishing Site (Site No. 152108) located in Brentwood, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is presently listed as a Class 4 site in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, which is administered by NYS Department of Environmental Conservation (NYSDEC).

1.1.1 General

This 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.

An October 2021 revision to the 2014 SMP was prepared by AECOM USA, Inc. (AECOM), on behalf of NYSDEC, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Remediation (NYSDEC, 2010), and the guidelines provided by NYSDEC. This January 2024 revision to the SMP was prepared by FPM Group, Ltd. (FPM) on behalf of the Site owner to address certain changes in Site conditions and NYSDEC requirements. 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

Residual contamination at the Site consists of contaminated soil left in place after completion of the remedial action. ECs 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, requires compliance with this SMP and all ECs and ICs placed on the Site. The ICs place restrictions on Site use, and mandate operation, maintenance monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the EE for contamination that remains at the Site. This plan has been approved by the NYSDEC and compliance with this plan is required by the 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 (PRRs); 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 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 the EE (Appendix D). 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 and Alterations

Revisions and alterations to this SMP will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. All approved alterations must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations. In accordance with the EE for the Site, the NYSDEC project manager will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.1.4 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

1. 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent, 6 NYCRR Part 375 and/or Environmental Conservation Law.

2. 7-day advance notice of any field activity associated with the remedial program.

3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.

4. Notice within 48 hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

5. Notice within 48 hours of any non-routine maintenance activities.

6. 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.

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

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

8. 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/Remedial Party has been provided with a copy of the Order on Consent, and all approved work plans and reports, including this SMP.

9. 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 to the NYSDEC.

Table 1.1.4.1 on the following page includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix J – Site Contact List.

Table 1.1.4.1: Notifications*

Name	**Contact Information**	**Required Notification****
NYSDEC Project Manager: Jasmine Stefansky	518-402-9575 jasmine.stefansky@dec.ny.gov	All Notifications
NYSDEC Section Chief: Jeffrey Dyber	518-402-9621 Jeffrey.dyber@dec.ny.gov	All Notifications
NYSDEC Site Control: Kelly Lewandowski	518-402-9553 Kelly.lewandowski@dec.ny.gov	Notifications 1 and 8
NYSDOH Project Manager: Mark Sergott	518-402-7860 Mark.sergott@health.ny.gov	Notifications 4, 6, and 7

* Note: Notifications are subject to change and will be updated as necessary.

** Note: Numbers in this column reference the numbered bullets in the notification list in this section.

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 and is identified as District 500, Section 136, Block 3, Lots 9 and 11.6 on the Suffolk County Tax Map. The boundaries of the Site are more fully described in the Environmental Easement (Appendix D). The owner of the Site at this time of issuance of this revised SMP is 550 Liberty Plaza, LLC.

A Site location map is included as Figure 1 and an aerial photograph of the Site (dated 2013) and surrounding area prior to recent redevelopment is included as Figure 2. The Site is located in an area that is primarily residential and light commercial. The Site is approximately 3.9 acres in total area of which 1.3 acres were historically undeveloped. Until 2022 the remainder of the Site consisted of previously developed areas with remnants of the former building (concrete floor slab), walkways, parking lots, and driveway areas. In 2022/2023 the eastern portion of the Site was redeveloped with a Taco Bell restaurant. Site features prior to redevelopment are shown on Figure 2. Figure 2 also depicts the current and former monitoring well locations. Figure 3 is a recent aerial photo showing the current Site development.

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 onsite leaching pools.

A ROD for the Site (Appendix A) 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 is provided 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 has generally varied between 44 and 48 feet below ground surface (ft bgs). The elevations of the shallow groundwater (water table) at the Site and downgradient are shown by the contours on Figure 4 and are based on the reported depth to water in August 2023, as documented in Table 1. Based on these contours, the groundwater flow direction in the Upper Glacial Aquifer is to the south-southeast.

Historic groundwater elevations measured at the Site between June 2006 and December 2019 are presented in Table 2 and hydrographs depicting the ranges in water table elevations and potentiometric surface elevations in the deeper wells during this time are shown in Figures 4A through 4C. These hydrographs demonstrate that water levels have varied at all levels of the monitored aquifers during this monitoring period. 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 vertical migration of impacted groundwater from the Site.

The horizontal hydraulic gradient was calculated between MW-7A and MW-12 using data from August 2023. This well pair was selected because the well depths are approximately the same and are screened across the water table. The horizontal hydraulic 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-7A	54.87	35 – 55	47.81	45.12	790	0.0016
MW-12	49.20	34 – 49	45.93	43.86		

As may be seen on Figure 4 with the August 2023 water level data, the gradient at the Site is very shallow with approximately 1.26 ft of elevation change between the most upgradient well, MW-7A, and the southernmost shallow well, MW-12. The calculated horizontal hydraulic gradient between these wells in August 2023 was 0.0016, which is somewhat higher than the gradient previously calculated using the December 2019 data (0.0007 ft/ft).

Using the August 2023 calculated gradient and an assumed hydraulic conductivity value of 9×10^{-2} cm/sec, typical for an unconsolidated sandy/gravely aquifer in Suffolk County, the lateral flow in the Upper Glacial Aquifer is expected to average approximately 496 feet per year. For comparison, the lateral groundwater flow in the Upper Glacial Aquifer was calculated to be approximately 217 feet per year based on the December 2019 data.

Well ID	Water Table (ft AMSL) (H Aug. 2023	Δ H (ft)	Depth of Well (ft)	Screened interval (ft bgs)	Vertical Distance Between Wells	Vertical Hydraulic Gradient (ft/ft)
MW-12	43.86	0.08	49.20	34 – 49	50.0	0.0016
MW-14	43.94		100.00	89 – 99		
MW-21	44.12	0.02	110.50	100 – 110	37.0	-0.0005
MW-20	44.10		149.50	137 – 147		

The vertical hydraulic gradients in the Upper Glacial Aquifer were calculated using the August 2023 data from well pairs MW-12/MW-14 and MW-20/MW-21, as shown above. 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 was upward (0.0016 ft/ft) at the MW-12/MW-14 well pair and slightly downward (-0.005 ft/ft) at the MW-20/MW-21 well pair.

The vertical hydraulic gradients in the Upper Glacial Aquifer were previously calculated using the December 2019 data from the same well pairs. At that time the vertical gradient was downward at both well pairs (-0.0030 ft/ft at well pair MW-12/MW-14 and -0.0015 ft/ft at well pair MW-20/MW-21.

Well ID	Water Table or Potentiometric Surface (ft AMSL) (H) Aug. 2023	Δ H (ft)	Depth of Well (ft)	Screened interval (ft bgs)	Vertical Distance Between Wells	Vertical Hydraulic Gradient (ft/ft)
MW-18	44.65	0.06	150	138 – 148	117.0	0.0005
MW -19	44.71		265.0	255 – 265		

The vertical hydraulic gradients between the Upper Glacial Aquifer and the underlying Magothy Aquifer were calculated using the August 2023 data from well pair MW-18/MW-19, as shown above. The vertical gradient was calculated by dividing the difference between the water table and potentiometric surface elevations by the vertical distance between the base of the wells. Based on these calculations, the vertical gradient was upward (0.0005 ft/ft) at the MW-18/MW-19 well pair.

The vertical hydraulic gradients between the Upper Glacial Aquifer and the underlying Magothy Aquifer were previously calculated using the December 2019 data from the same well pair and from the MW-5/MW-6 well pair. At that time the vertical gradient was downward at both well pairs (-0.0018 ft/ft at well pair MW-5/MW-6 and -0.0044 ft/ft at well pair MW-18/MW-19.

The hydraulic conductivity 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, and with a negative vertical hydraulic gradient, groundwater from the Upper Glacial Aquifer would move downward only very slowly across this confining layer. The recent data indicate that the vertical hydraulic gradient is now upward, indicating that groundwater would not move downward from the Upper Glacial Aquifer into the Magothy Aquifer.

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 wastewater 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 (11.5 mg/kg). 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 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. The excavation and removal of impacted soil and sediments reduced concentrations below applicable cleanup criteria or prevented the infiltration of precipitation through impacted media where excavation was deemed impractical.

NYSDEC issued a public notice in March 2017 stating that the Site was reclassified on the Registry as a Class 4 site as it no longer presents a significant threat to public health and/or the environment (Appendix C).

1.4.2 Remaining Soil Characterization

Soil Sampling – June 2013

In June 2013, NYSDEC personnel collected 25 soil samples from 15 locations on and near the Site. The locations are shown on Figure 5 (yellow triangles). The samples were analyzed for Target Analyte List (TAL) metals, with the results compared to the NYSDEC Part 375 Soil Cleanup Objectives (SCOs) restricted use categories, as discussed in the December 11, 2020 AECOM report documenting this investigation. The sample results (see Table 3) documented that none of the soils exceeded the SCOs for commercial or industrial use with the exceptions of soil at the SS-10, SS-11, SS-12, and SS-14 locations, all of which were onsite near the former building foundation.

Samples from SS-10, SS-11 and SS-12 had cadmium concentrations above the commercial use SCO but below the industrial use SCO. The surficial soil sample at SS-11 exceeded the industrial SCO and the cadmium concentration at SS/HA-14 was above the commercial use SCO. The areas where these exceedances were noted were proposed for excavation (Areas A and B, Figure 5).

Surface Soil Sampling - September and October 2020

The areas proposed for excavation were subject to additional surface soil sampling in September 2020, as shown on Figure 6. During the sampling event it was noted that the former building slab had been removed. Consequently, additional soil sampling was conducted to evaluate soil conditions beneath the former concrete building slab. The 2020 sample locations are indicated by the green and blue dots on Figure 6 and all samples were analyzed for TAL metals. The results were compared to the commercial SOCs (see Table 4) as future plans for the Site included commercial uses.

Of these, 12 locations had exceedances of the commercial use SCO for cadmium and one location also exceeded the commercial SCO for chromium. No other TAL metals exceeded the commercial use SCOs. The areas where exceedances of the commercial use SCOs were identified are shown by the pink hatching on Figure 6A.

1.4.3 Redevelopment Activities

The NYSDEC requested a supplemental remedial action plan as redevelopment of the Site for commercial use was contemplated and five areas of the Site were identified with cadmium and/or chromium in surface soil above its SCO for commercial use (see discussion above). A Supplemental Work Plan (February 26, 2021) was prepared and received NYSDEC approval. This work plan included removal and offsite disposal of the affected soil followed by confirmatory sampling and was implemented in April 2021. The results were presented in a July 6, 2021 Remedial Report, which documented that all of the targeted soil exceeding the SCOs for commercial use (with one exception) had been properly removed and disposed from the Site. Soil in the area represented by the Area 1-west sidewall sample continued to exhibit cadmium above its SCO for commercial use; this area was

temporarily capped with soil meeting the SCO for commercial use, as shown in Figure 7. A permanent cap was to be installed during the planned redevelopment.

In 2021 the Site owner proposed to redevelop the eastern portion of the Site with a Taco Bell restaurant. The NYSDEC Project Manager was notified and requested an Excavation Work Plan (EWP) specific to redevelopment activities that were expected to encounter remaining contamination and/or the asphalt cap. An EWP was submitted in October 2021, the key aspects of which included replacement of portions of the existing asphalt cap with pavement and concrete curbing for the new use, capping the area of the Area 1-west sidewall sample, and proper management of any contaminated materials that were encountered. The EWP was approved by the NYSDEC in November 18, 2021.

The EWP was implemented in 2022 in conjunction with redevelopment. A Notification of the intent to start work was provided to the NYSDEC on May 10, 2022. The work included removal and proper offsite disposal of soil and other materials from the capped area of the Site to the extent that construction activities would disturb the materials, replacement of the demarcation barrier as needed, and reconstruction of the cap. The soil remediation work and demarcation barrier placement were documented in a September 12, 2022 Excavation Report. Cap restoration was completed in late 2022 during property redevelopment. The configuration of the reconstructed cap is presented in Figure 8.

A perimeter security fence was formerly present around the entirety of this Site, as specified in the ROD. The security fence remained in place around the Site while it remained undeveloped and throughout the redevelopment process. Once redevelopment was complete, the security fence was modified by removal from the north side of the Site, adjoining Suffolk Avenue, to allow for the permitted Site use. Security fencing remains in place on the east, south and west sides of the Site to reduce the potential for uncontrolled access.

Onsite monitoring wells MW-1R, MW-2,MW-3, MW-5, MW-6, MW-7, and MW-17 were inadvertently destroyed during site preparation for redevelopment. The NYSDEC was notified and new wells were required to be installed at the MW-2, MW-3, MW-4, MW-7, and MW-17 locations. The new wells were installed in April 2023, as documented in FPM's June 26, 2023 Well Installation Report submitted to the NYSDEC. These new wells, which are shown on Figures 2 and 4, have been added to the groundwater monitoring program, as discussed in Section 3.3.1.

1.4.4 Remaining Contamination

Soil

Contaminated soil remains present at the Site in proximity to the former USTs (as referenced in the ROD), which could not be removed due to their proximity to the LIRR tracks. Soil exceeding the cadmium SCO for commercial use also remains present in the area of the Area 1-west sidewall sample. These USTs and soil have been isolated with the construction of a cap consisting of asphalt

and concrete curbing that prevents the infiltration of water and potential leaching of contaminants into the groundwater. The locations of the abandoned in place USTs are shown on Figure 2, the Area 1-west sidewall sample location is shown on Figure 7, and the cap location is shown on Figure 8.

Groundwater

Results from the most recent groundwater monitoring event (August 2023) indicate that COCs are still present in groundwater at the Site and downgradient, as shown in Figure 9 and documented on Tables 5 and 6. Site-related metals, including cadmium and chromium, remain present onsite above NYSDEC Standards in shallow (water table) groundwater at the MW-4A location and, to a lesser extent (below Standards), at the MW-3A location. The PFAS compounds PFOS and PFOA are present in the onsite groundwater at levels above current NYSDEC Guidance on both the upgradient and downgradient sides of the Site. The concentrations of PFOS, PFOA, and other PFAS compounds are similar at both the upgradient and downgradient wells, except for PFOS at MW-3A and MW-4A where somewhat higher concentrations (between 207 and 392 ng/l) were noted. The metals beryllium, iron, manganese, and/or sodium were detected above NYSDEC Standards in several of the onsite wells. Based on the distribution of these detections, they appear to be related to ambient groundwater conditions in the Site vicinity. 1,4-dioxane was not detected in any of the onsite monitoring wells.

Site-related metals, including cadmium and chromium, remain present above NYSDEC Standards offsite in shallow (water table) groundwater at MW-10 and in deeper (100 feet bgs) groundwater at MW-14, but do not extend further southeast to MW-20 (150 feet bgs) or MW-21 (100 feet bgs). Site-related metals impacts were not detected crossgradient at either MW-18 (150 feet bgs) or MW-19 (Magothy Aquifer). The PFAS compounds PFOS and/or PFOA are present in the offsite groundwater at levels above current NYSDEC Guidance at the MW-10, MW-12, MW-14, MW-16, MW-20, and MW-21 locations, with concentrations generally decreasing from MW-10 to the southeast. Neither PFOS nor PFOA were detected above current NYSDEC Guidance at crossgradient wells MW-18 or MW-19. The metals iron, manganese and/or sodium were detected above NYSDEC Standards in several of the offsite wells. These detections appear to be related to ambient groundwater conditions in the Site vicinity. 1,4-dioxane was not detected in any of the offsite monitoring wells except for crossgradient wells MW-18 and MW-19, where it was found at concentrations below current NYSDEC Guidance.

The remaining source area has been capped since 2001 (over 20 years). The cap was recently removed for redevelopment, additional source soil was removed and disposed, and the cap was re-established during construction. These activities do not appear to have resulted in any significant changes to groundwater conditions.

2.0 Engineering and Institutional Control Plan

2.1 Introduction

2.1.1 General

Since remaining contaminated soil and groundwater exist beneath the Site, Engineering Controls and Institutional Controls (EC and 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 the NYSDEC project manager.

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 key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as implementation of the Excavation Work Plan (EWP) as provided in Appendix E, for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site;
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC project manager.

2.2 Institutional Controls

A series of ICs is required to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the site to commercial and industrial uses only. Adherence to these ICs at the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries (Site boundary) are shown on Figure 3. These ICs are:

- The Controlled Property may be used for: Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv);

- All ECs must be operated and maintained as specified in the SMP;

- All ECs must be inspected at a frequency and in a manner defined in the SMP;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Suffolk County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management of the Controlled Property must be reported at the frequency and in a manner as defined in the SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with the SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in the SMP; and
- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.

2.3 Engineering Controls

2.3.1 Cap

Exposure to remaining soil contamination is prevented by an asphalt and concrete curbing cap placed in 2022 over the USTs that were abandoned in place and over the soil in the area of the Area 1-west sidewall sample, as shown in Figure 8. This cap inhibits infiltration of rainwater into the shallow soils, preventing leaching of contaminants into groundwater that can migrate offsite. A demarcation barrier consisting of orange plastic construction fencing was placed over the areas to be capped prior to cap construction. The asphalt portion of the cap is comprised of a minimum 2-inch-thick surface course overlying a 2- to 4-inch-thick binder course. In the roadway area a 6-inch-thick recycled concrete aggregate (RCA) layer was placed under the binder course. In the areas to the east of the roadway a layer of clean soil suitable to support vegetation was placed over the asphalt cap. This soil layer varies in thickness across the vegetated area and is up to one foot thick above the cap. The concrete curb was constructed at the perimeter of the roadway area of the cap; this curb has an underlying concrete footing.

The Excavation Work Plan (EWP) provided in Appendix E outlines the procedures required to be implemented in the event the cap is breached, penetrated, or temporarily removed. Procedures for the inspection and maintenance of the cap are provided in the Monitoring and Sampling Plan included in Section 3.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and provided, respectively, in Appendices F and G. Any breach of the Site's cap must be overseen by a Professional Engineer (PE) who is licensed and registered in New York State or a qualified person who directly reports to a PE who is licensed and registered in New York State.

2.3.2 Security Fence

A five-foot high chain link security fence was formerly in place around the entire perimeter of the Site to deter unauthorized persons from entering the Site while it remained vacant. Signs were posted on the gate and on the fence at regular intervals identifying the Site as an inactive hazardous waste disposal site. The main access to the Site was through a pad-locked gate on Suffolk Avenue. This fence remained in place prior to and during redevelopment activities.

Redevelopment activities were complete in 2023 and the portion of the security fence adjoining Suffolk Avenue in the area of the new Taco Bell restaurant was removed at that time to allow for the permitted Site Use. Security fencing remains in place on the east, south, and west sides of the Site to reduce the potential for uncontrolled access.

Procedures for the inspection and maintenance of the security fence are provided in the Monitoring Plan included in Section 3.0 of this SMP.

2.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when 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 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the Site. Confirmation samples require Category B deliverables and a Data Usability Summary Report (DUSR).

As discussed below, the NYSDEC may approve termination of a groundwater monitoring program. When a remedial party receives this approval, the remedial party will decommission all site-related monitoring wells as per the NYSDEC CP-43 policy.

The remedial party will also conduct any needed site restoration activities, such as asphalt patching and decommissioning of related equipment. In addition, the remedial party will conduct any necessary restoration of vegetation coverage and trees, and will comply with NYSDEC and United States Army Corps of Engineers regulations and guidance. The remedial party will ensure that no ongoing erosion is occurring on the Site.

2.3.3.1 Cap

The cap is a permanent control and the quality and integrity of the cap will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

2.3.3.2 Security Fence

The security fence is a permanent control and the quality and integrity of the fence will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

2.3.3.3 Natural Attenuation

As stated in the ROD (NYSDEC, March 1999), groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC project manager in consultation with the NYSDOH project manager, until residual groundwater concentrations are found to be consistently below Class GA Ambient Water Quality Standards, the Site's SCGs, or have become asymptotic at an acceptable level over an extended period of time. In the event that monitoring data indicates that monitoring for natural attenuation may no longer be required, a proposal to discontinue the monitoring will be submitted to the NYSDEC by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager. 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.

3.0 Monitoring and Sampling Plan

3.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance Project Plan (QAPP) in Appendix I.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (groundwater and soil);
- Assessing compliance with applicable NYSDEC standards, criteria, and guidance (SCGs), particularly the groundwater standards and Part 375 SCOs for soil; and
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

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

- Sampling locations, protocols and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

3.2 Site-wide Inspections

Site-wide inspections will be performed at a minimum of once per year. These periodic inspections must be conducted when the ground surface is visible (i.e. no snow cover). Site-wide inspections will be performed by a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix H – Site Management Forms. 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;

- Whether stormwater management systems, such as basins and outfalls, are working as designed;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that Site records are up to date.

Inspections of all remedial components installed at the Site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in Section 5.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public. The remedial party will submit follow-up status reports to the NYSDEC within 45 days of the event on actions taken to respond to any emergency event requiring ongoing responsive action describing and documenting actions taken to restore the effectiveness of the ECs.

3.3 Engineering Control Inspections

Inspections of the ECs (cap and security fence) will be performed on a routine basis, as identified in Table 3.3.1 Engineering Control Inspection Requirements and Schedule. The inspection of the ECs must be conducted by a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or inspection requirements will require approval from the NYSDEC project manager. A visual inspection of the complete ECs will be conducted during each inspection event. Unscheduled inspections may take place when a suspected failure of the cap or

security fence has been reported or an emergency occurs that is deemed likely to affect the integrity of the ECs.

A complete list of components to be inspected is provided in the Inspection Checklist, provided in Appendix H - Site Management Forms. If any condition is noted that might affect the integrity of the EC, then maintenance and repair is required immediately.

3.3.1 Cap Inspection

Inspection of the condition of the cap will be performed on an annual basis and in the event of an emergency, as described in Section 3.2. Areas over the cap will be visually inspected for evidence of 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 cap, as well as all subsequent repairs to the cap.

3.3.2 Security Fence Inspection

Inspection of the condition of the perimeter security fence in the areas where the fence remains present will be performed on an annual basis and in the event of an emergency, as described in Section 3.2. The fence will be visually inspected for evidence of damage, holes, missing sections, or other indications of non-continuity. Where conditions are noted that might affect the function of the fence, repairs shall be made to ensure the continuity and function of the fence. Records shall be kept of all inspections and repairs to the security fence.

3.4 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from the groundwater monitoring wells on a routine basis. Soil samples will be collected as needed to further assess soil conditions and/or confirm post-remedial soil conditions. Sampling locations, required analytical parameters, and schedule are provided in Table 3.4.1 – Post-Remediation Monitoring and Sampling Requirements and Schedule. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Table 3.4.1 – Post Remediation Monitoring and Sampling Requirements and Schedule

Sampling Location	Analytical Parameters		Schedule
	TAL Metals (EPA Method 6010B)	PFAS (EPA Method 1633)	
Monitoring Well Network	X	X	Once per five Quarters
Soil	X		As needed

Detailed sample collection and analytical procedures and protocols are provided in Appendix I – Field Sampling Plan and Quality Assurance Project Plan. Monitoring programs are summarized in Sections 3.4.1 and 3.4.2.

3.4.1 Groundwater Monitoring

Groundwater monitoring will be performed on a once-per-five-quarter basis to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager. The network of monitoring wells has been installed to monitor upgradient, onsite, and downgradient groundwater conditions. The current and former monitoring well locations are shown on Figure 4; selected current wells are included in the monitoring program. The wells presently included in the long-term monitoring program are MW-2A, MW-3A, MW-4A, MW-7A, MW-10, MW-12, MW-14, MW-16, MW-17A, MW-18, MW-19, MW-20, and MW-21. These wells are screened at four different intervals as detailed on Table 1, including across the water table in the Upper Glacial Aquifer (approximately 50 feet bgs), at about 100 feet bgs, at about 150 feet bgs, and in the Magothy Aquifer. Wells MW-1R, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-17 are no longer present. Table 1 (included in Tables Section) summarizes the well identification numbers and the well locations, depths, diameters, and screened intervals. The available monitoring well construction logs are included in Appendix B.

Figure 4 shows groundwater elevations for the sampling event conducted in August 2023. The groundwater flow direction for the water table is shown by the contours and was towards the southeast, similar to the conditions described during the Remedial Investigations conducted in the late 1990s and more recent monitoring events.

Periodic sampling for TAL metals has been conducted at the Site since 2006 and monitoring for emerging contaminants PFAS and 1,4-dioxane was conducted in August 2023. During recent sampling events, both filtered and unfiltered metals samples were collected. Groundwater sampling

conducted under this revised SMP will be performed in accordance with the detailed procedures and Field Sampling Plan and Quality Assurance Project Plan included in Appendix I.

If biofouling or silt accumulation occurs in the monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced if an event renders the wells unusable. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC project manager will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC project manager. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC project manager.

The sampling frequency may only be modified with the approval of the NYSDEC project manager. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC project manager. Deliverables for the groundwater monitoring program are specified in Section 5.0 – Reporting Requirements.

3.4.2 Soil Sampling

Soil sampling will be performed as needed to assess soil quality following any disturbance of the cap. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

If necessary, a work plan will be submitted to the NYSDEC project manager to describe the purpose of the sampling, the proposed soil sample locations and depths, the proposed analytical parameters, and other details as needed to fully describe the proposed sampling. The work plan will include a figure showing the soil sample locations and depths, a table of sample locations and analytical parameters to be analyzed along with the detection limits and minimum reporting limits to be achieved by the Environmental Laboratory Approval Program (ELAP)-certified laboratory.

Following NYSDEC approval of the work plan, the sampling frequency may only be modified with the approval of the NYSDEC project manager. If applicable, this SMP will be modified to reflect changes in soil conditions and or sampling plans approved by the NYSDEC project manager.

3.4.3 Monitoring and Sampling Protocol

All monitoring and sampling activities will be recorded in a field book and associated sampling log as provided in Appendix H - Site Management Forms. Other observations (e.g., groundwater monitoring well integrity) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional details regarding monitoring and sampling protocols are provided in the site-specific Field Sampling Plan and Quality Assurance Project Plan included in Appendix I of this SMP.

Schedule of Monitoring and Inspection Events

Task	**Event Frequency***
Groundwater Sampling	Five-quarter basis
Site Inspection	Annually, reported in the PRR
Cap and Security Fence Inspections	Annually, reported in the PRR

4.0 Operation and Maintenance Plan

The remedy for the Liberty Industrial Finishing Site does not rely on any mechanical systems to protect public health and the environment. Therefore, operation and maintenance of such systems or components is not included in this SMP.

5.0 Reporting Requirements

5.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in Appendix H. These forms are subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State, depending on the need to evaluate engineering controls.

All applicable inspection forms and other records, including media sampling data and maintenance reports, generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 5.1.1 and summarized in the Periodic Review Report.

Table 5.1.1: Schedule of Interim Monitoring Inspections and Reports

Task/Report	Reporting Frequency*
Site Inspection Report	Completed annually, reported in PRR
Cap and Security Fence Inspection Report	Completed annually, reported in PRR
Groundwater Sampling Report	Completed and reported once per five quarters
Periodic Review Report	Every three years, or as otherwise determined by the NYSDEC

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC project manager.

All interim monitoring/inspection reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);

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

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the EC;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and
- Other documentation such as copies of invoices for maintenance work (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html

5.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the NYSDEC project manager in accordance with the schedule noted in Table 5.1.1. PRRs shall be submitted every third year to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix D - Environmental Easement. The PRR will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment, and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual site inspections, fire inspections and severe condition inspections, if applicable.
- Description of any change of use, import of materials, or excavation that occurred during the certifying period.
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation.
- 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, etc.), that include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including but not limited to:
  - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data;
  - Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis;
  - A current plume map for sites with remaining groundwater contamination; and
  - A groundwater elevation contour map for each gauging event.
- 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 in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html

- A site evaluation that 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 and Sampling Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan;
  - An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the ROD; and
  - The overall performance and effectiveness of the remedy.

5.3 Certification of Engineering and Institutional Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice and registered in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:*

- *The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the Environmental Easement;*
- *The engineering control systems are performing as designed and are effective;*

- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and*

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

"I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative], and I have been authorized and designated by the site owners/remedial parties to sign this certification for the Site."

"I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

5.4 Corrective Measures Work 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 or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

5.5 Remedial System Optimization Report

If Remedial System Optimization (RSO) is to be performed (see Section 6.3), upon completion of an RSO, an RSO report must be submitted to the NYSDEC project manager for approval. A general outline for the RSO report is provided in Appendix K. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager.

6.0 Periodic Assessments/Evaluations

6.1 Climate Change Vulnerability Assessment

Increases in both severity and frequency of storms/weather events, sea level elevations and accompanying flooding impacts, shifting precipitation patterns and temperature fluctuation resulting from global climate change have the potential to significantly impact the performance, effectiveness, and protectiveness of remedial components at the Site. Vulnerability assessments provide information so that the Site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding. Vulnerability assessments are an essential component for remedial system resiliency in the face of global climate change and its associated impacts.

At this time the Site is not subject to any potential vulnerabilities. The Site is not in a flood plain, and site drainage is not an issue. There are no systems onsite that rely on electricity or might be the source of a spill or release as the result of an extreme weather event. There are no remedial or monitoring components that might become damaged by high winds. There are no significant forested, grassy, or otherwise vegetated areas in proximity to the Site that might present a risk of wildfires.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation Program Policy requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the site during site management, and as reported in the Periodic Review Report (PRR).

Green remediation techniques will be incorporated, to the extent practical, during implementation, operation, and maintenance of the selected remedy. The following techniques are anticipated to be employed:

- Waste Generation: Where feasible, sampling equipment will be decontaminated and reused, thus conserving resources and reducing waste associated with disposable equipment.

- Documents will be provided electronically, thus reducing waste associated with printed documents.

- Energy usage: energy will be conserved by carpooling when traveling to the site for inspections or other site management activities. Site management activities will be conducted concurrently, whenever possible, to avoid multiple trips to the site.

- Emissions: emissions will be reduced by carpooling and consolidating onsite activities, where feasible and limiting vehicle idling when applicable.

- Water usage: Decontamination water will be transported to the Site in clean reusable containers. This practice reduces water consumption when compared to using a running hose to provide decontamination water.

- Land and/or ecosystems: As the eastern portion of the cap is present in an area designated to be vegetated in the site plan for redevelopment, this portion of the cap was installed at an elevation that allowed for placement of a soil layer above the cap of a sufficient thickness to support vegetation.

Methods proposed to further reduce energy consumption, resource usage, waste generation, and water usage will be included in the PRR, as applicable.

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the NYSDEC project manager feels appropriate (e.g. during significant maintenance events or in conjunction with storm recovery activities).

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.2. Frequency of Sampling and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site to conduct inspections and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities has been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

Consideration shall be given to:

- Reduced sampling frequencies;
- Reduced site visits;
- Coordination/consolidation of activities to minimize labor time; and
- Use of mass transit for site visits, where available, and carpooling.

6.2.3 Metrics and Reporting

As discussed in Section 5.0 and as shown in Appendix H – Site Management Forms, information on energy usage, solid waste generation, transportation and shipping, water usage and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits. A set of metrics has been developed.

6.3 Remedial System Optimization

A Remedial System Optimization (RSO) study will be conducted any time that the NYSDEC project manager or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information, and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focus on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principles are to be considered when performing the RSO.

The RSO is not a PRR but is complementary to the PRR. While the PRR focuses on the protectiveness of the remedy and compliance with the SMP, and reports on the remedial progress, the RSO focuses on optimization of and improvements to the remedy. An RSO is a

thorough evaluation of and implementation of actions that will move the site to closure in a shorter time frame and/or provide cost savings in the long term. Some recommendations developed in the RSO process may address concepts such as:

- Improvements that will make the system more efficient, decrease maintenance costs and downtime, and effectively target the contamination;
- Modification or optimization of a treatment system process;
- Determining whether an in-situ remedy or monitored natural attenuation can replace an active ex-situ treatment remedy;
- Determining the effectiveness of the system versus system shutdown;
- Application of a new technology or remedial approach;
- Improvements that will reduce energy cost or frequency of site visits;
- Evaluation of vendors and disposal arrangements for cost savings;
- Consideration of alternate site management techniques; and
- Implementation of green remediation concepts.

The phases of an RSO include:

- Work plan development;
- Work plan implementation (usually includes data gathering and conceptual site model verification);
- RSO Report; and
- Implementation of recommended actions and final report.

7.0 References

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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.

NYSDEC, 2006. 6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC, 2010. DER-10 – “Technical Guidance for Site Investigation and Remediation”. May 2010.

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Tables

Table 1
Well Construction and Depth to Water Data
Liberty Industrial Finishing Site, #152108
500-550 Suffolk Avenue, Brentwood, NY

Well No.	Latitude	Longitude	Top of Manhole Elevation	Top of Casing Elevation	Total Well Depth (feet below TOC)	Well Screen Interval (feet below TOC)	Approximte Interval Monitored	Well Diameter (inches)	Screen Slot Size (inches)	Depth to Water (feet below TOC) August 28 & 29, 2023	Water Table Elevation*** (feet) August 28 & 29, 2023
MW-1R	40° 46' 33.31" N	73° 15' 12.48" W	91.57	92.92	42.5	45 - 55	Water Table	2	0.01	*	*
MW-2	40° 46' 43.22" N	73° 15' 12.86" W	91.27	92.87	54.2	-	Water Table	-	-	*	*
MW-2A	40° 46' 43.44" N	73° 15' 13.15" W	92.53	92.26	55.12	35 to 55	Water Table	2	0.02	47.41	44.85
MW-3	40° 46' 43.14" N	73° 15' 13.25" W	91.25	93.08	53.90	-	Water Table	-	-	*	*
MW-3A	40° 46' 43.33" N	73° 15' 13.46" W	92.62	92.29	55.20	35 to 55	Water Table	2	0.02	47.45	44.84
MW-4	40° 46' 43.02" N	73° 15' 13.89" W	91.4	93.09	53.40	-	Water Table	-	-	*	*
MW-4A	40° 46' 43.24" N	73° 15' 13.73" W	92.31	91.98	54.51	35 to 55	Water Table	2	0.02	47.11	44.87
MW-5	40° 46' 42.14" N	73° 15' 17.94" W	93.32	93.6	50.00	-	Water Table	-	-	*	*
MW-6	40° 46' 42.04" N	73° 15' 18.17" W	92.71	92.79	265.00	-	Magothy	-	-	*	*
MW-7	40° 46' 44.88" N	73° 15' 17.31" W	92.18	92.36	54.70	-	Water Table	-	-	*	*
MW-7A	40° 46' 44.95" N	73° 15' 16.27" W	93.21	92.93	54.87	35 to 55	Water Table	2	0.02	47.81	45.12
MW-10	40° 46' 41.87" N	73° 15' 12.35" W	90.4	91.84	50.00	40 to 50	Water Table	-	-	46.32	45.52
MW-12	40° 46' 39.16" N	73° 15' 09.57" W	89.59	89.79	49.20	34 to 49	Water Table	-	-	45.93	43.86
MW-14	40° 46' 38.87" N	73° 15' 09.59" W	89.55	89.77	100.00	89 to 99	100 **	-	-	45.83	43.94
MW-16	40° 46' 41.75" N	73° 15' 12.21" W	90.48	91.97	99.20	90 to 100	100 **	-	-	46.5	45.47
MW-17	40° 46' 44.79" N	73° 15' 17.39" W	91.91	92.22	100.00	-	100 **	-	-	*	*
MW-17A	40° 46' 44.91" N	73° 15' 16.42" W	93.26	93.01	99.21	90 to 100	100 **	2	0.02	47.96	45.05
MW-18	40° 46' 40.44" N	73° 15' 16.19" W	91.55	92.03	150.00	-	150 **	-	-	47.38	44.65
MW-19	40° 46' 40.42" N	73° 15' 16.46" W	91.98	92.19	248.00	-	Magothy	-	-	47.48	44.71
MW-20	40° 46' 37.60" N	73° 15' 08.79" W	88.59	89.08	149.50	-	150 **	-	-	44.98	44.1
MW-21	40° 46' 37.55" N	73° 15' 08.36" W	88.66	89.15	110.50	-	100 **	-	-	45.03	44.12

Notes:

TOC = Top of casing

Elevations based on NAVD 1988

* Well no longer present.

- = Information not available.

** - Depth in feet below grade.

***=Potentiometric surface elevation for non-water table wells

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	91.57	42.5	5/24/11	dry	NA	No water was observed in the well
(shallow)			8/21/12	dry	NA	No water was observed in the well
			11/5/13	dry	NA	No water was observed in the well
(MW-1 replaced in October 2019)			3/18/15	dry	NA	No water was observed in the well
			5/9/16	dry	NA	No water was observed in the well
			9/13/17	dry	NA	No water was observed in the well
MW-1R			11/12/18	dry	NA	No water was observed in the well
(shallow)			12/9/19	43.64	47.93	
MW-2	91.27	54.2	5/24/11	42.91	48.36	
(shallow)			8/21/12	44.05	47.22	
			11/5/13	43.21	48.06	
			3/18/15	43.84	47.43	
			5/9/16	45.30	45.97	
			9/13/17	47.30	43.97	
			11/14/18	45.10	46.17	
			12/9/19	43.60	47.67	
MW-3	91.25	53.9	5/24/11	42.90	48.35	
(shallow)			8/21/12	44.00	47.25	
			11/5/13	45.21	46.04	
			3/18/15	44.10	47.15	
			5/9/16	45.31	45.94	
			9/13/17	47.26	43.99	
			11/14/18	45.14	46.11	
			12/9/19	43.61	47.64	
MW-4	91.61	53.4	5/24/11	43.25	48.36	
(shallow)			8/21/12	44.36	47.25	
			11/5/13	46.60	45.01	
			3/18/15	44.18	47.43	
			5/9/16	45.65	45.96	
			9/13/17	47.61	44.00	
			11/14/18	45.48	46.13	
			12/9/19	44.05	47.56	

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-5 (shallow)	93.23	50.0	6/12/06	42.24	50.99	
			8/21/07	43.11	50.12	
			11/13/08	45.40	47.83	
			3/10/10	43.37	49.86	
			5/23/11	44.92	48.31	
			8/21/12	45.99	47.24	
			11/5/13	47.19	46.04	
			3/18/15	45.85	47.38	
			5/9/16	47.35	45.88	
			9/13/17	49.30	43.93	
			11/14/18	47.19	46.04	
			12/9/19	45.60	47.63	
MW-6 (Magothy)	92.71	265.0	6/12/06	42.19	50.52	
			8/21/07	43.15	49.56	
			11/13/08	45.23	47.48	
			3/10/10	43.12	49.59	
			5/23/11	44.76	47.95	
			8/21/12	45.70	47.01	
			11/5/13	45.95	46.76	
			3/18/15	48.30	44.41	
			5/9/16	47.15	45.56	
			9/13/17	49.16	43.55	
			11/14/18	45.98	46.73	
			12/9/19	45.45	47.26	
MW-7 (shallow)	92.18	54.7	11/12/18	45.99	46.19	
			12/9/19	44.27	47.91	
MW-10 (shallow)	90.40	50.0	5/24/11	42.12	48.28	
			8/21/12	43.18	47.22	
			11/5/13	43.10	47.30	
			3/18/15	43.30	47.10	
			5/9/16	44.50	45.90	
			9/14/17	46.49	43.91	
			11/12/18	44.40	46.00	
			12/10/19	42.67	47.73	

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-12 (shallow)	89.59	49.3	6/14/06	39.09	50.50	
			8/24/07	39.95	49.64	
			11/13/08	42.25	47.34	
			12/23/08	41.81	47.78	
			3/10/10	40.07	49.52	
			5/24/11	41.69	47.90	
			8/21/12	42.75	46.84	
			11/5/13	43.00	46.59	
			3/18/15	42.52	47.07	
			5/9/16	43.82	45.77	
			9/14/17	46.08	43.51	
			11/12/18	44.98	44.61	
			12/10/19	42.25	47.34	
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	
			3/18/15	42.77	46.78	
			5/9/16	44.21	45.34	
			9/14/17	46.21	43.34	
			11/12/18	44.14	45.41	
			12/10/19	42.33	47.22	
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	
			3/18/15	43.21	47.27	
			5/9/16	44.74	45.74	
			9/14/17	46.72	43.76	
			11/12/18	44.62	45.86	
			12/10/19	42.85	47.63	
MW-17 (deep)	91.91	100.0	11/12/18	45.49	46.42	
			12/11/19	44.55	47.36	

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-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	
			3/18/15	44.46	47.09	
			5/9/16	47.50	44.05	
			9/14/17	47.74	43.81	
			11/13/18	45.70	45.85	
			12/10/19	43.98	47.57	
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	
			3/18/15	45.20	46.78	
			5/9/16	46.61	45.37	
			9/14/17	48.71	43.27	
			11/13/18	46.55	45.43	
			12/10/19	44.92	47.06	
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	
			3/18/15	41.81	46.78	
			5/9/16	43.35	45.24	
			9/13/17	45.24	43.35	
			11/12/18	43.22	45.37	
			12/11/19	41.55	47.04	

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	
			3/18/15	41.79	46.87	
			5/9/16	43.30	45.36	
			9/13/17	45.16	43.50	
			11/12/18	43.20	45.46	
			12/11/19	41.57	47.09	

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)

TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location Laboratory ID Sample ID Sample Date	NYSDEC Restricted Use Soil Cleanup Objectives Commercial	SS-01 Jun-13 conc. Q	HA-01 Jun-13 conc. Q	SS-02 Jun-13 conc. Q	HA-02 Jun-13 conc. Q	SS-03 Jun-13 conc. Q	HA-03 Jun-13 conc. Q	SS-04 Jun-13 conc. Q	HA-04 Jun-13 conc. Q	SS-05 Jun-13 conc. Q	HA-05 Jun-13 conc. Q
Aluminum	NC	--	--	--	--	--	--	--	--	--	--
Antimony	NC	--	--	--	--	--	--	--	--	--	--
Arsenic	16	**3.6**	**1.3**	**4.1**	**3.9**	**5.9**	**4.6**	**8.8**	**3.3**	**5.3**	**2.9**
Barium	400	--	--	--	--	--	--	--	--	--	--
Beryllium	590	--	--	--	--	--	--	--	--	--	--
Cadmium	9.3	**0.36**	ND	**0.19**	**0.052**	**0.64**	**0.098**	**2.9**	**0.14**	**1.5**	**0.23**
Calcium	NC	--	--	--	--	--	--	--	--	--	--
Chromium, total	1,500	**12.6**	**3.9**	**11.0**	**12.0**	**20.7**	**19.7**	**26.1**	**11.9**	**23.8**	**9.5**
Cobalt	NC	--	--	--	--	--	--	--	--	--	--
Copper	270	**18.4**	**1.3**	**8.7**	**2.6**	**20.0**	**8.6**	**45.1**	**4.0**	**24.4**	**7.6**
Iron	NC	--	--	--	--	--	--	--	--	--	--
Lead	1,000	**102**	**2.9**	**66.2**	**7.4**	**81.5**	**12.6**	**290**	**14.7**	**126**	**36.1**
Magnesium	NC	--	--	--	--	--	--	--	--	--	--
Manganese	10,000	--	--	--	--	--	--	--	--	--	--
Mercury	3	**0.16**	**0.0092**	**0.11**	**0.013**	**0.098**	**0.034**	**0.15**	**0.015**	**0.11**	**0.027**
Nickel	310	**6.6**	**1.9**	**4.9**	**6.1**	**8.1**	**10.9**	**18.9**	**5.2**	**7.8**	**3.9**
Potassium	NC	--	--	--	--	--	--	--	--	--	--
Selenium	1,500	--	--	--	--	--	--	--	--	--	--
Silver	1,500	--	--	--	--	--	--	--	--	--	--
Sodium	NC	--	--	--	--	--	--	--	--	--	--
Thallium	NC	--	--	--	--	--	--	--	--	--	--
Vanadium	NC	--	--	--	--	--	--	--	--	--	--
Zinc	10,000	**60.9**	**6.2**	**20.0**	**18.2**	**43.1**	**31.1**	**228**	**18.2**	**143**	**31.5**

Notes:
All values in mg/kg
NC - No NYSDEC criterion
ND - Not Detected
B - Estimated value
D - Dilution
BOLD Exceeds criterion

June 2013 samples
SS - Surface Soil (0-2 in)
HA - Hand Auger (2-6 in)
-- No data

TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location Laboratory ID Sample ID Sample Date	NYSDEC Restricted Use Soil Cleanup Objectives Commercial	SS-06 Jun-13 conc. Q	HA-06 Jun-13 conc. Q	SS-07 Jun-13 conc. Q	HA-07 Jun-13 conc. Q	SS-08 Jun-13 conc. Q	HA-08 Jun-13 conc. Q	SS-09 Jun-13 conc. Q	HA-09 Jun-13 conc. Q	SS-10 Jun-13 conc. Q	HA-10 Jun-13 conc. Q
Aluminum	NC	--	--	--	--	--	--		--	--	
Antimony	NC	--	--	--	--	--	--		--	--	
Arsenic	16	**5.5**	**4.1**	**3.6**	**4.2**	**5.1**	**14.2**		**1.3**	**2.9**	
Barium	400	--	--	--	--	--	--		--	--	
Beryllium	590	--	--	--	--	--	--		--	--	
Cadmium	9.3	**0.37**	**0.075**	**0.53**	**0.16**	**2.5**	**0.35**		**0.49**	**32.8**	
Calcium	NC	--	--	--	--	--	--		--	--	
Chromium, total	1,500	**10.7**	**12.6**	**8.3**	**12.9**	**31.8**	**19.2**		**5.7**	**67.9**	
Cobalt	NC	--	--	--	--	--	--		--	--	
Copper	270	**22.1**	**13.9**	**14.3**	**6.0**	**26.7**	**15.6**		**3.7**	**30.2**	
Iron	NC	--	--	--	--	--	--		--	--	
Lead	1,000	**35.9**	**9.1**	**35.5**	**19.5**	**62.2**	**15.4**		**7.8**	**52.8**	
Magnesium	NC	--	--	--	--	--	--		--	--	
Manganese	10,000	--	--	--	--	--	--		--	--	
Mercury	3	**0.057**	**0.018**	**0.039**	**0.026**	**0.062**	**0.11**		**0.017**	**0.065**	
Nickel	310	**5.5**	**5.3**	**5.5**	**6.4**	**10.8**	**16.3**		**2.3**	**24.0**	
Potassium	NC	--	--	--	--	--	--		--	--	
Selenium	1,500	--	--	--	--	--	--		--	--	
Silver	1,500	--	--	--	--	--	--		--	--	
Sodium	NC	--	--	--	--	--	--		--	--	
Thallium	NC	--	--	--	--	--	--		--	--	
Vanadium	NC	--	--	--	--	--	--		--	--	
Zinc	10,000	**47.2**	**18.4**	**48.6**	**24.5**	**81.6**	**36.8**		**18.0**	**157**	

Notes:
All values in mg/kg
NC - No NYSDEC criterion
ND - Not Detected
B - Estimated value
D - Dilution
BOLD Exceeds criterion

June 2013 samples
SS - Surface Soil (0-2 in)
HA - Hand Auger (2-6 in)
-- No data

TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location Laboratory ID Sample ID Sample Date	NYSDEC Restricted Use Soil Cleanup Objectives Commercial	SS-11 Jun-13 conc. Q	HA-11 Jun-13 conc. Q	SS-12 Jun-13 conc. Q	HA-12 Jun-13 conc. Q	SS-13 Jun-13 conc. Q	HA-13 Jun-13 conc. Q	SS-14 Jun-13 conc. Q	SS-15 Jun-13 conc. Q	HA-15 Jun-13 conc. Q
Aluminum	NC	--	--	--	--	--	--	--		
Antimony	NC	--	--	--	--	--	--	--		
Arsenic	16	**3.4**	**2.8**	-	**3.5**	**1.9**	**1.3**	**3.0**		
Barium	400	--	--	--	--	--	--	--		
Beryllium	590	--	--	--	--	--	--	--		
Cadmium	9.3	**125**	**1.7**	**28.4**	**5.0**	**1.3**	**0.063**	**20.2**		
Calcium	NC	--	--	--	--	--	--	--		
Chromium, total	1,500	**83.9**	**11.0**	**164**	**45.5**	**7.9**	**5.9**	**31.1**		
Cobalt	NC	--	--	--	--	--	--	--		
Copper	270	**65.6**	**5.5**	**32.7**	**9.2**	**3.9**	**2.0**	**37.1**		
Iron	NC	--	--	--	--	--	--	--		
Lead	1,000	**47.7**	**10.5**	**38.0**	**18.9**	**9.3**	**2.8**	**27.0**		
Magnesium	NC	--	--	--	--	--	--	--		
Manganese	10,000	--	--	--	--	--	--	--		
Mercury	3	**0.037**	**0.018**	**0.025**	**0.026**	**0.012**	-	**0.033**		
Nickel	310	**31.9**	**5.9**	**23.9**	**9.1**	**3.2**	**2.5**	**15.7**		
Potassium	NC	--	--	--	--	--	--	--		
Selenium	1,500	--	--	--	--	--	--	--		
Silver	1,500	--	--	--	--	--	--	--		
Sodium	NC	--	--	--	--	--	--	--		
Thallium	NC	--	--	--	--	--	--	--		
Vanadium	NC	--	--	--	--	--	--	--		
Zinc	10,000	**619**	**25.6**	**232**	**118**	**24.1**	**7.8**	**95.1**		

Notes:
All values in mg/kg
NC - No NYSDEC criterion
ND - Not Detected
B - Estimated value
D - Dilution
BOLD Exceeds criterion

June 2013 samples
SS - Surface Soil (0-2 in)
HA - Hand Auger (2-6 in)
-- No data

TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location	NYSDEC	SS-16	SS-17	SS-18	SS-19	SS-20	SS-21	SS-22	SS-23	SS-24	SS-25
Laboratory ID	Restricted	L4191-22	L4191-21	L4191-20	L4191-19	L4191-18	L4191-17	L4191-16	L4191-15	L4191-14	L4191-13
Sample ID	Use Soil Cleanup	SS-16-20200929	SS-17-20200929	SS-18-20200929	SS-19-20200929	SS-20-20200929	SS-21-20200929	SS-22-20200929	SS-23-20200929	SS-24-20200929	SS-25-20200929
Sample Date	Objectives Commercial	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q
Aluminum	NC	**4,380**	**4,520**	**8,160**	**2,180**	**3,950**	**4,080**	**6,630**	**8,940**	**5,410**	**5,030**
Antimony	NC	2.25 U	4.05 U	2.18 U	6.76 U	2.64 U	3.73 U	2.19 U	2.28 U	2.25 U	2.18 U
Arsenic	16	**2.69**	**4.35**	**3.15**	**3.26**	**3.06**	**4.16**	**2.69**	**3.39**	**4.11**	**2.84**
Barium	400	**13.1**	**54.3**	**24.7**	**48.7**	**18.9**	**36.1**	**12.7**	**22.2**	**11.3**	**13.4**
Beryllium	590	**0.245 J**	**0.251 J**	**0.347**	0.81 U	**0.197 J**	**0.202 J**	**0.322**	**0.375**	**0.26 J**	**0.229 J**
Cadmium	9.3	**0.607**	**5.43**	**3.63**	**0.681 J**	**1.84**	**2.42**	**0.259 J**	**3.61**	**7.79**	**5.89**
Calcium	NC	**599**	**9,260**	**2,890**	**14,400**	**3,440**	**6,400**	**413**	**953**	**940**	**1,520**
Chromium, total	1,500	**8.36**	**30.4**	**21.4**	**4.95**	**10.6**	**29.5**	**9.52**	**55.1**	**245 D**	**53.3**
Cobalt	NC	**2.82**	**3.16**	**3.8**	**1.64 J**	**2.08**	**2.3**	**3.88**	**3.79**	**2.78**	**2.27**
Copper	270	**6.71**	**18.2**	**14.9**	**13**	**9.18**	**14.6**	**3.72**	**9.12**	**11.4**	**5.82**
Iron	NC	**6,330**	**7,120**	**9,750**	**3,840**	**5,300**	**5,550**	**8,510**	**10,500**	**7,010**	**6,390**
Lead	1,000	**8.13**	**29.4**	**21.3**	**16.4**	**13.2**	**27.1**	**7.96**	**34.3**	**7.87**	**9.69**
Magnesium	NC	**658**	**1,310**	**1,050**	**1,070**	**1,290**	**904**	**834**	**841**	**707**	**711**
Manganese	10,000	**108**	**155**	**86.3**	**176**	**91.0**	**134**	**81.3**	**73.4**	**64.4**	**59.0**
Mercury	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	310	**4.3**	**6.8**	**6.74**	**2.73 J**	**4.02**	**5.33**	**4.3**	**8.23**	**9.61**	**5.37**
Potassium	NC	**167**	**515**	**331**	**471**	**237**	**359**	**323**	**527**	**297**	**346**
Selenium	1,500	0.90 U	1.62 U	0.87 U	**1.31 J**	1.05 U	1.49 U	0.88 U	0.91 U	0.90 U	0.87 U
Silver	1,500	0.45 U	0.81 U	0.44 U	1.35 U	0.53 U	0.75 U	0.44 U	0.46 U	0.45 U	0.44 U
Sodium	NC	90.2 U	**49.4 J**	**25.3 J**	271 U	**22.2 J**	**31.3 J**	87.7 U	19.5 J	23.6 J	30.9 J
Thallium	NC	1.80 U	3.24 U	**0.893 J**	5.41 U	2.11 U	2.98 U	**0.627 J**	**0.796 J**	**0.575 J**	**0.538 J**
Vanadium	NC	**9.57**	**13.2**	**15.1**	**5.37 J**	**8.72**	**9.52**	**12.5**	**17.0**	**10.79**	**9.81**
Zinc	10,000	**19.2**	**87.5**	**77.6**	**69.7**	**36.7**	**76.0**	**18.3**	**85.7**	**59.4**	**24.8**

Notes:
All values in mg/kg
NC - No NYSDEC criterion
ND - Not Detected
B - Estimated value
D - Dilution
BOLD Exceeds criterion
N - Spiked sample recovery outside control limits
J - Estimated concentration
U - Not detected
NA - Not analyzed

TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location	NYSDEC	SS-26	SS-27	SS-28	SS-29	SS-30	SS-31	SS-32	SS-33	SS-83 (Dup)	SS-34
Laboratory ID	Restricted	L4191-12	L4191-11	L4191-10	L4191-09	L4191-08	L4191-07	L4191-04	L4191-02	L4191-03	L4191-01
Sample ID	Use Soil Cleanup	SS-26-20200929	SS-27-20200929	SS-28-20200929	SS-29-20200929	SS-30-20200929	SS-31-20200929	SS-32-20200929	SS-33-20200929	SS-83-20200929	SS-34-20200929
Sample Date	Objectives Commercial	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q	9/29/20 conc. Q
Aluminum	NC	**2,260**	**6,720**	**10,700**	**4,360**	**5,000**	**4,790**	**5,180**	**3,860**	**3,540**	**4,510**
Antimony	NC	7.27 U	2.15 U	2.39 U	2.2 U	2.22 U	2.37 U	2.22 U	2.27 U	2.32 U	2.30 U
Arsenic	16	**3.81**	**2.46**	**3.66**	**1.9**	**2.56**	**2.38**	**4.39**	**6.76**	**7.83**	**4.65**
Barium	400	**72.4**	**11.9**	**18.5**	**25.7**	**28.5**	**231**	**57.7**	**30.9**	**29.3**	**18.8**
Beryllium	590	0.87 U	**0.294**	**0.404**	**0.409**	**0.337**	**0.388**	**0.292**	**0.246 J**	**0.232 J**	**0.231 J**
Cadmium	9.3	**0.792 J**	**0.386**	**0.653**	**8.06**	**14.8**	**202**	**13.2**	**6.18**	**6.12**	**4.89**
Calcium	NC	**16,000**	**404**	**544**	**1,070**	**1,950**	**7,930**	**3,750**	**13,500**	**10,800**	**2,090**
Chromium, total	1,500	**4.59**	**12.2**	**14.4**	**51.1**	**126 D**	**2,010 D**	**25.1**	**28.5**	**28.2**	**15.8**
Cobalt	NC	**1.42 J**	**2.88**	**3.08**	**6.93**	**4.11**	**7.19**	**4.01**	**2.96**	**2.93**	**2.57**
Copper	270	**12.8**	**8.59**	**7.92**	**37.1**	**27.9**	**205**	**25.7**	**23.0**	**25.2**	**11.8**
Iron	NC	**3,390**	**8,110**	**11,500**	**7,140**	**7,780**	**14,900**	**7,810**	**5,850**	**5,730**	**6,440**
Lead	1,000	**19.0**	**13.0**	**18.4**	**45.9**	**38.1**	**79.9**	**42.9**	**31.7**	**28.1**	**15.1**
Magnesium	NC	**2,660**	**579**	**857**	**615**	**665**	**2,000**	**1,360**	**1,240**	**1360**	**913**
Manganese	10,000	**350**	**66.2**	**49.6**	**78.2**	**74.8**	**198**	**116**	**101**	**93.1**	**84.9**
Mercury	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	310	**3.91 J**	**4.5**	**6.21**	**22.6**	**19.8**	**89.8**	**12.1**	**11.3**	**13.1**	**7.26**
Potassium	NC	**379**	**244**	**291**	**206**	**270**	**640**	**317**	**224**	**216**	**282**
Selenium	1,500	2.91 U	0.86 U	0.96 U	0.88 U	0.89 U	0.95 U	0.89 U	0.91 U	0.34 U	0.92 U
Silver	1,500	1.45 U	0.43 U	0.48 U	0.44 U	**0.352 J**	**1.52**	0.44 U	0.45 U	0.15 U	0.46 U
Sodium	NC	291 U	86.0 U	**23.8 J**	**33.5 J**	**26.7 J**	**85.8 J**	**28.9 J**	**33.4 J**	**34.3 J**	**28.1 J**
Thallium	NC	5.82 U	**0.697 J**	**0.928 J**	**0.535 J**	**0.561 J**	**1.66 J**	**0.43 J**	1.82 U	0.45 U	1.84 U
Vanadium	NC	**6.16**	**12.4**	**18.6**	**9.51**	**11.2**	**18.3**	**13.3**	**14.4**	**12.9**	**12.0**
Zinc	10,000	**113**	**72.3**	**29.9**	**151**	**150**	**495**	**101**	**115**	**113**	**52.7**

Notes:
All values in mg/kg
NC - No NYSDEC criterion
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BOLD Exceeds criterion
N - Spiked sample recovery outside control limits
J - Estimated concentration
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TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location	NYSDEC	SS-35		SS-36		SS-37		SS-38		SS-39		SS-40		SS-41		SS-42		SS-43	
Laboratory ID	Restricted	L4579-01		L4579-02		L4579-03		L4579-04		L4579-05		L4579-06		L4579-07		L4579-08		L4579-09	
Sample ID	Use Soil Cleanup	SS-35-20201029		SS-36-20201029		SS-37-20201029		SS-38-20201029		SS-39-20201029		SS-40-20201029		SS-41-20201029		SS-42-20201029		SS-43-20201029	
Sample Date	Objectives	10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20	
	Commercial	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q
Aluminum	NC	**3,590**		**3,840**		**4,250**		**7,340**		**7,550**		**2,600**		**3,520**		**5,030**		**6,630**	
Antimony	NC	2.31	UN	2.48	UN	2.25	UN	2.29	UN	2.45	UN	2.30	UN	2.37	UN	2.36	UN	2.31	UN
Arsenic	16	**2.49**		**2.17**		**2.77**		**3.57**		**4.64**		**1.16**		**2.17**		**1.53**		**2.17**	
Barium	400	**8.11**		**6.52**		**7.29**		**11.1**		**12.0**		**7.02**		**10.33**		**7.92**		**15.6**	
Beryllium	590	**0.18**	**J**	**0.201**	**J**	**0.209**	**J**	**0.306**		**0.308**		**0.139**	**J**	**0.18**	**J**	**0.242**	**J**	**0.26**	**J**
Cadmium	9.3	**0.756**		**0.487**		**1.43**		**1.47**		**7.38**		**364**	**D**	**107**		**3.63**		**263**	**D**
Calcium	NC	**575**		**438**		**798**		**1,280**		**492**		**431**		**25,200**		**213**		**555**	
Chromium, total	1,500	**7.74**		**5.97**		**57.9**		**29.7**		**202**	**D**	**12.6**		**34.8**		**8.45**		**123**	**D**
Cobalt	NC	**1.47**		**1.53**		**1.66**		**2.67**		**2.76**		**0.705**	**J**	**1.21**	**J**	**1.7**		**1.37**	**J**
Copper	270	**4.06**		**3.5**		**5.12**		**5.5**		**16.1**		**7.1**		**22.2**		**9.55**		**55.4**	
Iron	NC	**4,190**		**4,650**		**5,100**		**7,220**		**6,930**		**3,080**		**4,340**		**5,270**		**6,100**	
Lead	1,000	**10.47**		**6.14**		**6.93**		**6.72**		**9.17**		**3.83**		**9.62**		**5.19**		**29.9**	
Magnesium	NC	**430**		**435**		**579**		**847**		**795**		**483**		**15,200**		**556**		**626**	
Manganese	10,000	**57.3**		**46.9**		**53**		**69.6**		**82.3**		**39.9**		**61.6**		**43.8**		**40**	
Mercury	3	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nickel	310	**2.4**		**2.26**		**3.8**		**4.95**		**5.9**		**4.04**		**11.5**		**3.9**		**32.7**	
Potassium	NC	**162**		**211**		**180**		**254**		**230**		**215**		**220**		**193**		**301**	
Selenium	1,500	0.92	U	0.99	U	0.90	U	0.92	U	0.98	U	0.92	U	0.95	U	0.95	U	0.92	U
Silver	1,500	0.46	U	0.50	U	0.45	U	**0.191**	**J**	**0.187**	**J**	**0.46**	U	**0.177**	**J**	0.47	U	**0.7**	
Sodium	NC	92	U	99.0	U	**18.7**	**J**	**23.2**	**J**	**35.7**	**J**	**33.4**	**J**	**56.9**	**J**	94.5	U	**104**	
Thallium	NC	1.85	U	1.98	U	1.80	U	1.83	U	**0.552**	**J**	1.84	U	1.90	U	1.89	U	1.84	U
Vanadium	NC	**7.14**		**7.16**		**7.31**		**11.6**		**11.4**		**5.01**		**7.67**		**8.45**		**10.12**	
Zinc	10,000	**27.8**		**14.2**		**17.8**		**18.7**		**19.8**		**12.4**		**24.8**		**17.1**		**28.7**	

Notes:

All values in mg/kg
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BOLD Exceeds criterion
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TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location	NYSDEC	SS-44		SS-45		SS-46		SS-47		SS-48		SS-98 (Dup)		SS-49		SS-50		SS-51	
Laboratory ID	Restricted	L4579-10		L4579-11		L4579-12		L4579-13		L4579-16		L4579-17		L4579-18		L4579-19		L4579-20	
Sample ID	Use Soil Cleanup	SS-44-20201029		SS-45-20201029		SS-46-20201029		SS-47-20201029		SS-48-20201029		SS-98-20201029		SS-49-20201029		SS-50-20201029		SS-51-20201029	
Sample Date	Objectives	10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20	
	Commercial	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q
Aluminum	NC	**5,810**		**3,580**		**7,060**		**4,810**		**5,780**		**5,810**		**5,550**		**7,960**		**3,240**	
Antimony	NC	2.3	UN	2.34	UN	2.42	UN	2.37	UNJ	2.38	UN	2.38	UN	2.32	UN	2.32	UN	2.36	UN
Arsenic	16	**1.84**		**1.59**		**2.11**		**3.34**		**3.15**		**3.84**		**2.49**		**2.46**		**1.6**	
Barium	400	**16.0**		**8.73**		**9.89**		**12.1**		**13.7**		**15.5**		**11.7**		**13.8**		**9.68**	
Beryllium	590	**0.257**	**J**	**0.167**	**J**	**0.268**	**J**	**0.233**	**J**	**0.272**	**J**	**0.27**	**J**	**0.254**	**J**	**0.306**		**0.185**	**J**
Cadmium	9.3	**443**	**D**	**62.7**		**4.9**		**3.3**		**2.6**	**J**	**13.0**	**J**	**1.79**		**2.34**		**0.618**	
Calcium	NC	**524**		**576**		**387**		**1,940**		**1,720**	**J**	**4,300**	**J**	**1,600**		**732**		**699**	
Chromium, total	1,500	**173**	**D**	**24.7**		**44.1**		**87.9**		**52.9**	**J**	**133**	**DJ**	**50.6**		**17.1**		**13.7**	
Cobalt	NC	**1.05**	**J**	**0.9**	**J**	**2.27**		**1.8**		**2.16**		**2.26**		**1.96**		**2.12**		**1.28**	**J**
Copper	270	**63.2**		**12.5**		**5.06**		**6.18**		**6.34**		**7.7**		**5.7**		**5.2**		**4.85**	
Iron	NC	**5,690**		**3,660**		**6,760**		**5,550**		**6,370**		**6,270**		**6,060**		**7,280**		**4,110**	
Lead	1,000	**48.7**		**9.75**		**8.33**		**10.6**		**15.3**		**13.9**		**15.6**		**17.9**		**15.4**	
Magnesium	NC	**590**		**475**		**654**		**660**		**749**		**845**		**1,090**		**714**		**495**	
Manganese	10,000	**39.4**		**37.3**		**57.8**		**67.2**		**73.5**		**77**		**66.3**		**69.6**		**53.4**	
Mercury	3	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nickel	310	**28.8**		**12.4**		**4.39**		**8.39**		**7.16**	**J**	**13.9**	**J**	**5.04**		**6.16**		**2.5**	
Potassium	NC	**272**		**173**		**202**		**247**		**235**		**269**		**220**		**243**		**134**	
Selenium	1,500	0.93	U	0.94	U	0.97	U	0.95	U	0.95	U	0.95	U	0.93	U	0.93	U	0.94	U
Silver	1,500	**0.715**		**0.382**	**J**	**0.166**	**J**	**0.162**	**J**	**0.164**	**J**	**0.155**	**J**	**0.15**	**J**	**0.174**	**J**	0.47	U
Sodium	NC	**116**		**29.0**	**J**	**21.2**	**J**	**35.3**	**J**	**38.3**	**J**	**40.5**	**J**	**23.3**	**J**	**20.4**	**J**	94	U
Thallium	NC	1.86	U	1.87	U	**0.495**	**J**	1.89	U	**0.565**	**J**	**0.489**	**J**	1.85	U	**0.552**	**J**	1.88	U
Vanadium	NC	**8.89**		**6.54**		**10.41**		**8.41**		**9.84**		**9.92**		**9.51**		**12.9**		**6.72**	
Zinc	10,000	**28.7**		**20.2**		**18.5**		**21.1**		**27.1**		**29.1**		**19.1**		**24.5**		**19.9**	

Notes:

All values in mg/kg
NC - No NYSDEC criterion
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TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location	NYSDEC	SS-52		SS-53		SS-54		SS-104 (Dup)		SS-55		SS-56		SS-57		SS-58		SS-59	
Laboratory ID	Restricted	L4579-21		L4579-22		L4580-01		L4580-02		L4580-03		L4580-06		L4580-07		L4580-08		L4580-09	
Sample ID	Use Soil Cleanup	SS-52-20201029		SS-53-20201029		SS-54-20201029		SS-104-20201029		SS-55-20201029		SS-56-20201029		SS-57-20201029		SS-58-20201029		SS-59-20201029	
Sample Date	Objectives	10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20	
	Commercial	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q
Aluminum	NC	**4,540**		**6,280**		**4,750**		**6,200**		**5,740**		**4,870**		**4,520**		**5,300**		**2,340**	
Antimony	NC	2.24	UN	2.54	UN	2.4	UN	2.51	UN	2.41	UNJ	2.39	UN	2.36	UN	2.52	UN	2.38	UN
Arsenic	16	**2.33**		**3.67**		**2.64**	**N**	**2.88**		**2.58**	**NJ**	**2.00**	**N**	**2.75**	**N**	**3.57**	**N**	**1.37**	**N**
Barium	400	**13.6**		**13.9**		**12.6**	**N**	**13.2**	**N**	**13.6**	**NJ**	**9.1**	**N**	**12.0**	**N**	**14**	**N**	**7.81**	**N**
Beryllium	590	**0.218**	**J**	**0.276**	**J**	**0.245**	**J**	**0.27**	**N**	**0.263**	**J**	**0.247**	**J**	**0.217**	**J**	**0.237**	**J**	**0.143**	**J**
Cadmium	9.3	**2.3**		**0.628**		**2.43**	**J**	**0.57**	**J**	**1.48**		**0.4**		**48.5**		**5.72**		**0.855**	
Calcium	NC	**1,030**		**1,150**		**2,570**	**J**	**755**	**J**	**1,450**		**2,300**		**1,610**		**871**		**223**	
Chromium, total	1,500	**11.3**		**8.03**		**14.4**	**J**	**7.84**	**J**	**9.85**		**6.39**		**14.5**		**25.7**		**5.65**	
Cobalt	NC	**1.72**		**2.11**		**1.94**	**N**	**2.12**	**N**	**2.0**	**NJ**	**1.72**	**N**	**1.38**	**JN**	**1.4**	**JN**	**0.931**	**JN**
Copper	270	**6.14**		**4.77**		**5.4**		**4.19**		**5.21**		**3.9**		**13.0**		**13.7**		**3.22**	
Iron	NC	**5,170**		**6,420**		**6,380**		**6,240**		**5,990**		**5,930**		**5,370**		**6,610**		**2,970**	
Lead	1,000	**22.3**		**14.9**		**14.3**	**N**	**9.47**	**N**	**13.2**	**NJ**	**7.71**	**N**	**15.8**	**N**	**18.3**	**N**	**4.58**	**N**
Magnesium	NC	**571**		**766**		**711**		**689**		**687**		**954**		**561**		**550**		**366**	
Manganese	10,000	**68.4**		**70.5**		**63.6**		**57.0**		**54.8**		**48.7**		**48.6**		**43**		**29.4**	
Mercury	3	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nickel	310	**3.32**		**3.94**		**4.36**		**3.87**		**4.32**		**3.43**		**43.6**		**34**		**3.07**	
Potassium	NC	**191**		**247**		**215**	**N**	**216**	**N**	**225**	**NJ**	**245**	**N**	**203**	**N**	**186**	**N**	**114**	**N**
Selenium	1,500	0.90	U	1.02	U	0.95	UN	1.00	UN	0.96	UNJ	0.96	UN	0.95	UN	1.01	UN	0.95	UN
Silver	1,500	0.45	U	0.51	U	0.48	U	0.5	U	0.48	U	0.48	U	**0.216**	**J**	**0.168**	**J**	0.48	U
Sodium	NC	89.6	U	**23.4**	**J**	**28.6**	**J**	**24.5**	**J**	**25**	**J**	**22.4**	**J**	**27.7**	**J**	**25.5**	**J**	95	U
Thallium	NC	1.79	U	2.04	U	1.90	U	2.01	U	**0.496**	**J**	1.91	U	1.89	U	2.01	U	1.91	U
Vanadium	NC	**8.25**		**10.07**		**8.63**	**N**	**10.0**	**N**	**9.8**	**NJ**	**8.73**	**N**	**8.39**	**N**	**9.78**	**N**	**5.26**	**N**
Zinc	10,000	**28.3**		**21.6**		**23.8**		**30.8**		**24.4**		**19.5**		**24.1**		**32.2**		**14.3**	

Notes:

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TABLE 4
LIBERTY INDUSTRIAL FINISHING SITE (1-52-108)
SOIL SAMPLE RESULTS, JUNE 2013, SEPTEMBER 2020 AND OCTOBER 2020

Sample Location	NYSDEC	SS-60		SS-61		SS-62		SS-63		SS-64		SS-65		SS-66		SS-67		SS-68	
Laboratory ID	Restricted	L4580-10		L4580-11		L4580-12		L4580-13		L4580-14		L4580-15		L4580-16		L4580-17		L4580-18	
Sample ID	Use Soil Cleanup	SS-60-20201029		SS-61-20201029		SS-62-20201029		SS-63-20201029		SS-64-20201029		SS-65-20201029		SS-66-20201029		SS-67-20201029		SS-68-20201029	
Sample Date	Objectives	10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20		10/29/20	
	Commercial	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q	conc.	Q
Aluminum	NC	**5,310**		**4,520**		**7,400**		**6,380**		**5,970**		**4,970**		**6,360**		**1,360**		**6,280**	
Antimony	NC	2.49	UN	2.44	UN	2.72	UN	2.54	UN	2.3	UN	29.3	N	2.55	UN	2.13	UN	2.43	UN
Arsenic	16	**2.12**	**N**	**2.41**	**N**	**7.66**	**N**	**6.67**	**N**	**2.22**	**N**	**2.91**	**N**	**3.81**	**N**	**1.14**	**N**	**6.91**	**N**
Barium	400	**11.6**	**N**	**11.2**	**N**	**23.6**	**N**	**20.7**	**N**	**10.93**	**N**	**11.8**	**N**	**16.4**	**N**	**4.05**	**JN**	**21.2**	**N**
Beryllium	590	**0.242**	**J**	**0.222**	**J**	**0.329**		**0.287**	**J**	**0.29**		**0.253**	**J**	**0.324**		**0.15**	**J**	**0.311**	
Cadmium	9.3	**1.32**		**7.35**		**1.42**		**1.15**		**0.303**		**0.64**		**1.2**		0.26	U	**1.43**	
Calcium	NC	**1,620**		**867**		**1,960**		**845**		**298**		**711**		**1,280**		**52**	**J**	**2,330**	
Chromium, total	1,500	**196**	**D**	**53.9**		**15.1**		**11.6**		**7.1**		**9.83**		**11.2**		**3.25**		**11.9**	
Cobalt	NC	**1.59**	**N**	**1.54**	**N**	**1.96**	**N**	**1.62**	**N**	**1.76**	**N**	**1.9**	**N**	**2.21**	**N**	**1.55**	**N**	**1.7**	**N**
Copper	270	**11.9**		**11.1**		**23.2**		**20.1**		**6.7**		0.99	U	**9.99**		**2.87**		**21.8**	
Iron	NC	**6,350**		**6,540**		**8,890**		**7,620**		**6,570**		**6,210**		**7,810**		**3,310**		**8,360**	
Lead	1,000	**13.1**	**N**	**15.1**	**N**	**40.5**	**N**	**35.5**	**N**	**14.4**	**N**	**6440**	**N**	**22.6**	**N**	**2.06**	**N**	**34.5**	**N**
Magnesium	NC	**742**		**641**		**1,360**		**663**		**584**		**712**		**1,050**		**196**		**949**	
Manganese	10,000	**48.9**		**45.5**		**61.6**		**50.7**		**46.7**		**69.9**		**73.3**		**131**		**75.3**	
Mercury	3	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nickel	310	**6.64**		**28.9**		**5.3**		**4.41**		**3.17**		**4.21**		**4.51**		**2.26**		**4.45**	
Potassium	NC	**277**	**N**	**201**	**N**	**258**	**N**	**211**	**N**	**174**	**N**	**200**	**N**	**231**	**N**	**86.7**	**N**	**216**	**N**
Selenium	1,500	1.00	UN	0.98	UN	1.09	UN	1.01	UN	0.94	UN	0.99	UN	1.02	UN	0.85	UN	0.97	UN
Silver	1,500	0.50	U	**0.179**	**J**	0.54	U	0.5	U	0.47	U	**0.411**	J	0.51	U	0.43	U	0.49	U
Sodium	NC	**75.6**	**J**	**230**		109	U	101	U	93.5	U	98.5	U	102	U	85	U	97.2	U
Thallium	NC	1.99	U	1.95	U	2.18	U	2.03	U	1.87	U	1.97	U	2.04	U	1.71	U	1.94	U
Vanadium	NC	**10.13**	**N**	**8.64**	**N**	**14.1**	**N**	**11.9**	**N**	**10.19**	**N**	**10.48**	**N**	**12.4**	**N**	**5.13**	**N**	**13.0**	**N**
Zinc	10,000	**33.5**		**80.8**		**42.0**		**36.3**		**17.1**		**33.1**		**34.6**		**6.91**		**37.5**	

Notes:

All values in mg/kg
NC - No NYSDEC criterion
ND - Not Detected
B - Estimated value
D - Dilution
BOLD Exceeds criterion
N - Spiked sample recovery outside control limits
J - Estimated concentration
U - Not detected
NA - Not analyzed

TABLE 5
GROUNDWATER CHEMICAL ANALYTICAL RESULTS
LIBERTY INDUSTRIAL FINISHING SITE - ONSITE WELLS
AUGUST 28, 2023

Client ID	MW-2A		MW-3A		MW-4A		MW-44A (Duplicate)		MW-7A		MW-17A		EB0828 (Equipment Blank)		NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Lab Sample ID	460-287163-1		460-287163-2		460-287163-3		460-287163-4		460-287163-5		460-287163-6		460-287163-7		
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
Target Analyte List Metals in micrograms per liter (ug/l)															
Aluminum	**37.8**	J	11.7	U	**35.9**	J	**32.3**	J	**123**		**1,420**		11.7	U	NS
Antimony	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	3
Arsenic	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	25
Barium	**34.6**		**45.7**		**40.7**		**39.7**		**69.5**		**263**		0.93	U	1,000
Beryllium	0.12	U	0.12	U	0.12	U	0.12	U	**0.28**	J	**5.3**		0.12	U	3
Cadmium	**1.5**	J	**1.6**	J	**90.6**		**89.7**		**0.77**	J	**1.5**	J	0.38	U	5
Calcium	**31,900**		**34,000**		**37,100**		**37,400**		**16,700**		**19,800**		31.7	U	NS
Chromium	**17.2**		**48.4**		**99.5**		**100**		1.7	U	**2.6**	J	1.7	U	50
Cobalt	**1.0**	J	**0.81**	J	**1.1**	J	**1.1**	J	**0.64**	J	**2.3**	J	0.41	U	NS
Copper	**4.9**		2.0	U	**4.7**		**4.8**		**2.2**	J	**8.3**		**26.7**		200
Iron	**864**		**275**		**263**		**264**		**28.5**	J	**437**		18.4	U	300
Lead	0.42	U	0.42	U	0.42	U	0.42	U	0.42	U	**0.63**	J	**1.2**		25
Magnesium	**4,210**		**5,480**		**4,360**		**4,350**		**3,130**		**2,980**		21.8	U	35,000
Manganese	**26.4**		**14.2**		**19.7**		**19.9**		**67.4**		**622**		0.84	U	300
Mercury	0.091	U	0.091	U	0.091	U	0.091	U	0.091	U	0.091	U	0.091	U	0.7
Nickel	**7.7**		**4.6**		**38.1**		**38.2**		**2.3**	J	**9.9**		1.4	U	100
Potassium	**2,600**		**3,130**		**6,150**		**6,230**		**2,960**		**5,280**		83.3	U	NS
Selenium	0.43	U	0.43	U	**0.52**	J	**0.57**	J	0.43	U	0.43	U	0.43	U	10
Silver	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	50
Sodium	**19,900**		**32,700**		**29,400**		**29,800**		**24,400**		**26,400**		180	U	20,000
Thallium	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.5
Vanadium	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NS
Zinc	**48.1**		**24.8**		**15.6**	J	**13.9**	J	**15.7**	J	**61.4**		**21.0**		2,000
1,4-Dioxane by Method 8270E SIM ID in ug/l															
1,4-Dioxane	0.072	U	0.072	U	0.072	U	0.072	U	0.072	U	0.072	U	0.072	U	0.35
Per and Polyfluoroalkyl Substances (PFAS) in nanograms per liter (ng/l) by Method 1633															
11Cl-PF3OUdS	1.76	U	1.73	U	1.69	U	1.68	U	1.69	U F1 F2	1.70	U	1.71	U	-
3:3 FTCA	1.32	U	1.30	U	1.27	U	1.26	U	1.27	U	1.28	U	1.28	U	-
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.32	U	1.30	U	1.27	U	1.26	U	1.27	U	1.28	U	1.28	U	-
4:2 FTS	1.49	U	1.47	U	1.44	U	1.43	U	1.44	U	1.45	U	1.45	U	-
5:3 FTCA	8.78	U	8.65	U	8.47	U	8.39	U	8.46	U	8.52	U	8.56	U	-
6:2 FTS	4.56	J	2.16	U	**3.32**	J	2.43	J	2.12	U	2.13	U	2.14	U	-
7:3 FTCA	8.78	U	8.65	U	8.47	U	8.39	U	8.46	U	8.52	U	8.56	U	-
8:2 FTS	2.28	U	2.25	U	2.20	U	2.18	U	2.20	U	2.22	U	2.22	U	-
9Cl-PF3ONS	0.88	U	0.87	U	0.85	U	0.84	U	0.85	U F1 F2	0.85	U	0.86	U	-
HFPO-DA (GenX)	1.76	U	1.73	U	1.69	U	1.68	U	1.69	U	1.70	U	1.71	U	-
NEtFOSA	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-
NEtFOSAA	0.61	U	0.61	U	0.59	U	0.59	U	0.59	U	0.60	U	0.60	U	-
NEtFOSE	4.39	U	4.33	U	4.24	U	4.20	U	4.23	U	4.26	U	4.28	U	-
NFDHA	0.88	U	0.87	U	0.85	U	0.84	U	0.85	U	0.85	U	0.86	U	-
NMeFOSA	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-
NMeFOSAA	1.05	U	1.04	U	1.02	U	1.01	U	1.02	U	1.02	U	1.03	U	-
NMeFOSE	4.39	U	4.33	U	4.24	U	4.20	U	4.23	U	4.26	U	4.28	U	-
Perfluorobutanesulfonic acid (PFBS)	**3.28**		**4.66**		**3.58**		**3.94**		**24.5**		**4.84**		0.26	U	-
Perfluorobutanoic acid (PFBA)	**6.20**	J	**8.37**		**15.2**		**15.5**		**19.6**		**6.05**	J	1.71	U	-
Perfluorodecanesulfonic acid (PFDS)	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U F1 F2	0.43	U	0.43	U	-
Perfluorodecanoic acid (PFDA)	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-
Perfluorododecanesulfonic acid (PFDoS)	0.79	U	0.78	U	0.76	U	0.76	U	0.76	U F1 F2	0.77	U	0.77	U	-
Perfluorododecanoic acid (PFDoA)	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-
Perfluoroheptanesulfonic acid (PFHpS)	**0.40**	J	**0.35**	J	**1.05**	J	**0.96**	J	0.34	U F1	0.34	U	0.34	U	-
Perfluoroheptanoic acid (PFHpA)	**3.65**		**3.05**		**5.52**		**5.36**		**5.53**		**8.98**		0.44	U	-
Perfluorohexanesulfonic acid (PFHxS)	**1.47**	J	**1.33**	J	**3.77**		**3.35**		**31.1**		**1.32**	J	0.49	U	-
Perfluorohexanoic acid (PFHxA)	**6.62**		**4.77**		**14.7**		**13.9**		**10.8**		**18.8**		0.43	U	-
Perfluorononanesulfonic acid (PFNS)	0.35	U	0.35	U	0.34	U	0.34	U	0.34	U F1 F2	0.34	U	0.34	U	-
Perfluorononanoic acid (PFNA)	**0.82**	J	**0.83**	J	**1.15**	J	**1.12**	J	0.42	U	**0.50**	J	0.43	U	-
Perfluorooctanesulfonamide (PFOSA)	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-
Perfluorooctanesulfonic acid (PFOS)	**30.4**		**207**		**389**		**392**		**7.27**		**4.54**	I	0.43	U	2.7
Perfluorooctanoic acid (PFOA)	**10.6**		**6.48**		**9.78**		**10.5**		**10.7**		**17.7**		0.55	U	6.7
Perfluoropentanesulfonic acid (PFPeS)	0.44	U	0.43	U	**0.66**	J	**0.74**	J	**0.75**	J	0.43	U	0.43	U	-
Perfluoropentanoic acid (PFPeA)	**5.65**		**4.63**	I	**14.9**		**14.5**		**13.7**		**12.7**		0.86	U	-
Perfluorotetradecanoic acid (PFTeDA)	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-
Perfluorotridecanoic acid (PFTriA)	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U F2	0.43	U	0.43	U	-
Perfluoroundecanoic acid (PFUnA)	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-
PFEESA	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-
PFMBA	0.88	U	0.87	U	0.85	U	0.84	U	0.85	U	0.85	U	0.86	U	-
PFMPA	0.44	U	0.43	U	0.42	U	0.42	U	0.42	U	0.43	U	0.43	U	-

Notes:

All samples collected August 28, 2023.

Bolded concentrations denote detections.

Bolded yellow highlighted concentrations exceed NYSDEC Class GA Ambient Water Quality Standards or Guidelines.

Red text denotes contaminants of concern for this Site.

J : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U : Indicates the analyte was analyzed for but not detected.

F1 : MS and/or MSD recovery exceeds control limits.

F2 : MS/MSD RPD exceeds control limits

- : Not established or not analyzed.

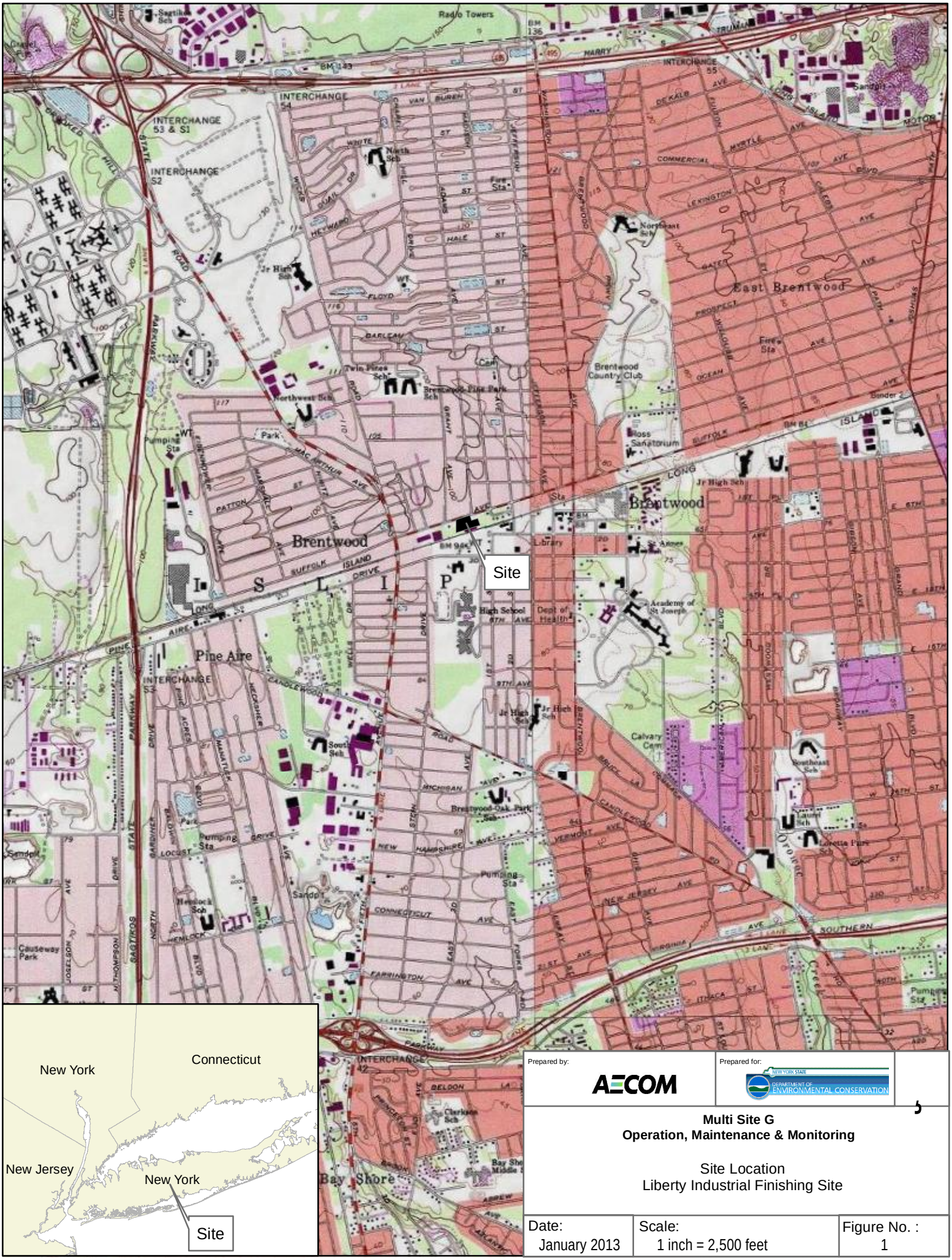
I : Value is EMPC (estimated maximum possible concentratior

TABLE 6
GROUNDWATER CHEMICAL ANALYTICAL RESULTS
LIBERTY INDUSTRIAL FINISHING SITE - OFFSITE WELLS
AUGUST 28 AND 29, 2023

Sample Location	MW-10	MW-12	MW-14	MW-14 (duplicate)	MW-16	MW-18	MW-19	MW-20	MW-21	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/29/2023**	**8/29/2023**	**8/28/2023**	**8/28/2023**	**8/29/2023**	**8/28/2023**	**8/28/2023**	**8/29/2023**	**8/29/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)										
Aluminum	**81.2**	**158**	**225**	**261**	**1,430**	**80.5**	< 50 U	**316**	**54.1**	-
Antimony	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	3
Arsenic	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**1.3**	< 1.0 U	25
Barium	**30.8**	**21.8**	**78.1**	**80.6**	**194**	**40.9**	**9.3**	**16.3**	**105**	1,000
Beryllium	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**1.4**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	3
Cadmium	**96**	**1.9**	**8.6**	**9.4**	**4.4**	< 1.0 U	**1.9**	< 1.0 U	< 1.0 U	5
Calcium	**23,800**	**24,200**	**18,500**	**17,000**	**12,200**	**10,300**	**10,000**	**6,490**	**16,800**	-
Chromium, Total	**55.2**	< 2.0 U	**60.2**	**59.1**	**8.2**	< 2.0 U	< 2.0 U	**6.9**	**23.3**	50
Cobalt	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**1.9**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	-
Copper	< 4.0 U	< 4.0 U	< 4.0 U	**6.8**	**42.1**	< 4.0 U	< 4.0 U	**7.1**	< 4.0 U	200
Iron	**380**	**224**	**336**	**398**	**1,800**	**69.5**	< 50 U	**1,200**	**81.7**	300
Lead	**2.8**	**2.6**	**3.1**	**4.1**	**1.5**	< 1.0 U	< 1.0 U	**4**	< 1.0 U	25
Magnesium	**3,820**	**4,970**	**3,760**	**3,440**	**3,080**	**1,990**	**3,990**	**2,980**	**3,930**	35,000
Manganese	**28**	**6.3**	**298**	**288**	**931**	**2,320**	**3.3**	**12.8**	**292**	300
Mercury	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	0.7
Nickel	**7.4**	< 2.0 U	**15.7**	**15.2**	**14.6**	< 2.0 U	< 2.0 U	< 2.0 U	**2.7**	100
Potassium	**4,480**	**2,400**	**3,790**	**3,570**	**4,510**	**5,320**	**1,470**	**4,170**	**5,780**	-
Selenium	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**2.5**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	10
Silver	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	50
Sodium	**10,100**	**15,200**	**32,900**	**33,000**	**24,600**	**11,200**	**13,200**	**26,000**	**61,700**	20,000
Thallium	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.5
Vanadium	< 2.0 U	< 2.0 U	< 2.0 U	**2.3**	**2.7**	< 2.0 U	< 2.0 U	**4.3**	< 2.0 U	-
Zinc	< 10 U	**26.4**	< 10 U	**12.2**	**35.3**	< 10 U	**29.1**	< 10 U	< 10 U	2,000
1,4-Dioxane by SW8270 in ug/l										
1,4-Dioxane (P-Dioxane)	< 0.050 U	< 0.050 U	< 0.050 U	< 0.050 U	< 0.050 U	**0.0925 J**	**0.305**	< 0.050 U	< 0.050 U	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ug/l										
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	-
1H,1H, 2H, 2H-Perfluorodecane sulfonic acid	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	-
1H,1H, 2H, 2H-Perfluorohexane sulfonic acid	< 0.0020 U	< 0.0020 U	< 0.0020 U	< 0.0020 U	< 0.0020 U	< 0.0020 U	< 0.0020 U	< 0.0020 U	< 0.0020 U	-
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid	< 0.00080 U	< 0.00080 U	< 0.00080 U	< 0.00080 U	< 0.00083 U	< 0.00083 U	< 0.00080 U	< 0.00080 U	< 0.00081 U	-
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	< 0.0062 U	< 0.0062 U	< 0.0062 U	< 0.0062 U	< 0.0065 U	< 0.0065 U	< 0.0062 U	< 0.0062 U	< 0.0064 U	-
3-Perfluoroheptyl propanoic acid (7:3FTCA)	< 0.0054 U	< 0.0054 U	< 0.0054 U	< 0.0054 U	< 0.0056 U	< 0.0056 U	< 0.0054 U	< 0.0054 U	< 0.0055 U	-
3-Perfluoropropyl propanoic acid (3:3 FTCA)	< 0.0021 U	< 0.0021 U	< 0.0021 U	< 0.0021 U	< 0.0022 U	< 0.0022 U	< 0.0021 U	< 0.0021 U	< 0.0022 U	-
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	< 0.0011 U	< 0.0011 U	< 0.0011 U	< 0.0011 U	< 0.0011 U	< 0.0011 U	< 0.0011 U	< 0.0011 U	< 0.0011 U	-
9-Chlorohexadecafluoro-3-Oxanonane-1-Sulfonic Acid (9Cl-PF3ONS)	< 0.0021 U	< 0.0021 U	< 0.0021 U	< 0.0021 U	< 0.0022 U	< 0.0022 U	< 0.0021 U	< 0.0021 U	< 0.0022 U	-
Hexafluoropropylene oxide dimer acid (HFPO-DA)	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	< 0.0016 U	-
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	< 0.00046 U	< 0.00046 U	< 0.00046 U	< 0.00046 U	< 0.00048 U	< 0.00048 U	< 0.00046 U	< 0.00046 U	< 0.00047 U	-
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	< 0.00080 U	< 0.00080 U	< 0.00080 U	< 0.00080 U	< 0.00083 U	< 0.00083 U	< 0.00080 U	< 0.00080 U	< 0.00081 U	-
N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	< 0.0033 U	< 0.0033 U	< 0.0033 U	< 0.0033 U	< 0.0034 U	< 0.0034 U	< 0.0033 U	< 0.0033 U	< 0.0033 U	-
N-methyl perfluorooctanesulfonamide (NMeFOSA)	< 0.00056 U	< 0.00056 U	< 0.00056 U	< 0.00056 U	< 0.00058 U	< 0.00058 U	< 0.00056 U	< 0.00056 U	< 0.00057 U	-
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	< 0.00045 U	< 0.00045 U	< 0.00045 U	< 0.00045 U	< 0.00046 U	< 0.00046 U	< 0.00045 U	< 0.00045 U	< 0.00046 U	-
N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	< 0.0024 U	< 0.0024 U	< 0.0024 U	< 0.0024 U	< 0.0025 U	< 0.0025 U	< 0.0024 U	< 0.0024 U	< 0.0025 U	-
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	< 0.0011 U	< 0.0011 U	< 0.0011 U	< 0.0011 U	< 0.0012 U	< 0.0012 U	< 0.0011 U	< 0.0011 U	< 0.0011 U	-
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	< 0.00024 U	< 0.00024 U	< 0.00024 U	< 0.00024 U	< 0.00025 U	< 0.00025 U	< 0.00024 U	< 0.00024 U	< 0.00024 U	-
Perfluoro-3-methoxypropanoic acid (PFMPA)	< 0.00026 U	< 0.00026 U	< 0.00026 U	< 0.00026 U	< 0.00027 U	< 0.00027 U	< 0.00026 U	< 0.00026 U	< 0.00027 U	-
Perfluoro-4-methoxybutanoic acid (PFMBA)	< 0.00049 U	< 0.00049 U	< 0.00049 U	< 0.00049 U	< 0.00051 U	< 0.00051 U	< 0.00049 U	< 0.00049 U	< 0.00050 U	-
Perfluorobutanesulfonic acid (PFBS)	**0.0137**	**0.0015 J**	**0.0105**	**0.0124**	**0.0057**	**0.00065 J**	**0.00071 J**	**0.0013 J**	**0.0075**	-
Perfluorobutanoic Acid	**0.0066 J**	**0.0079**	**0.0069 J**	**0.0073**	**0.0049 J**	< 0.00085 U	< 0.00082 U	**0.0069 J**	**0.0592**	-
Perfluorodecanesulfonic acid (PFDS)	< 0.00096 U	< 0.00096 U	< 0.00096 U	< 0.00096 U	< 0.00099 U	< 0.00099 U	< 0.00096 U	**0.0018**	< 0.00097 U	-
Perfluorodecanoic acid (PFDA)	< 0.00054 U	< 0.00054 U	< 0.00054 U	< 0.00054 U	< 0.00056 U	< 0.00056 U	< 0.00054 U	**0.0019**	< 0.00055 U	-
Perfluorododecanesulfonic acid (PFDoS)	< 0.00035 U	< 0.00035 U	< 0.00035 U	< 0.00035 U	< 0.00036 U	< 0.00036 U	< 0.00035 U	< 0.00035 U	< 0.00036 U	-
Perfluorododecanoic acid (PFDoA)	< 0.00068 U	< 0.00068 U	< 0.00068 U	< 0.00068 U	< 0.00070 U	< 0.00070 U	< 0.00068 U	< 0.00068 U	< 0.00069 U	-
Perfluoroheptanesulfonic acid (PFHpS)	< 0.00086 U	< 0.00086 U	**0.0028**	**0.0022**	< 0.00089 U	< 0.00089 U	< 0.00086 U	< 0.00086 U	< 0.00087 U	-
Perfluoroheptanoic acid (PFHpA)	**0.0067**	**0.0039**	**0.0063**	**0.0057**	**0.0051**	< 0.00045 U	< 0.00044 U	**0.0019**	**0.0083**	-
Perfluorohexanesulfonic acid (PFHxS)	**0.0012 J**	**0.0013 J**	**0.0091**	**0.0092**	**0.0242**	< 0.0010 U	< 0.00097 U	**0.0074**	**0.0055**	-
Perfluorohexanoic acid (PFHxA)	**0.0044**	**0.0144**	< 0.00025 U	**0.0095**	**0.0089**	**0.0013 J**	**0.0012 J**	**0.0065**	**0.0255**	-
Perfluorononanesulfonic Acid (PFNS)	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	< 0.0013 U	-
Perfluorononanoic acid (PFNA)	**0.00072 J**	**0.002**	**0.00062 J**	**0.00076 J**	**0.00053 J**	< 0.00036 U	< 0.00035 U	**0.0015 J**	**0.0012 J**	-
Perfluorooctane Sulfonamide (PFOSA)	< 0.00061 U	< 0.00061 U	< 0.00061 U	< 0.00061 U	< 0.00063 U	< 0.00063 U	< 0.00061 U	< 0.00061 U	< 0.00062 U	-
Perfluorooctanesulfonic acid (PFOS)	**0.112**	**0.0368**	**0.0991**	**0.0989**	**0.0085**	**0.0011 J**	**0.00090 J**	**0.0059**	**0.0145**	0.0027
Perfluorooctanoic acid (PFOA)	**0.0058**	**0.0076**	**0.0109**	**0.0101**	**0.0138**	**0.0013 J**	**0.00075 J**	**0.0059**	**0.018**	0.0067
Perfluoropentanesulfonic Acid (PFPeS)	< 0.00089 U	< 0.00089 U	**0.0015 J**	**0.0019**	**0.0019**	< 0.00092 U	< 0.00089 U	< 0.00089 U	< 0.00090 U	-
Perfluoropentanoic Acid (PFPeA)	**0.0030 J**	**0.0208**	**0.0094**	**0.0099**	**0.0097**	**0.0015 J**	**0.0011 J**	**0.0066**	**0.0347**	-
Perfluorotetradecanoic acid (PFTeDA)	< 0.00067 U	< 0.00067 U	< 0.00067 U	< 0.00067 U	< 0.00069 U	< 0.00069 U	< 0.00067 U	< 0.00067 U	< 0.00068 U	-
Perfluorotridecanoic Acid (PFTriA/PFTrDA)	< 0.00069 U	< 0.00069 U	< 0.00069 U	< 0.00069 U	< 0.00072 U	< 0.00072 U	< 0.00069 U	< 0.00069 U	< 0.00071 U	-
Perfluoroundecanoic Acid (PFUnA)	< 0.00048 U	< 0.00048 U	< 0.00048 U	< 0.00048 U	< 0.00050 U	< 0.00050 U	< 0.00048 U	**0.00055 J**	< 0.00049 U	-

Notes:
µg/L = Micrograms per liter.
Detections are noted in **BOLD** type.
J = Concentration is estimated.
Red text denotes contaminants of concern for this Site.
- = No NYSDEC Guidance Value or Standard established
PFAS = Per- and Polyfluoroalkyl Substances.
U = Analyte not detected.
Concentrations exceeding NYSDEC Standards or Guidance are shaded yellow.

Figures



Prepared by: AECOM

Prepared for: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Multi Site G
Operation, Maintenance & Monitoring

Site Location
Liberty Industrial Finishing Site

Date:	Scale:	Figure No. :
January 2013	1 inch = 2,500 feet	1

Legend:

- Wells Sampled for Long Term Monitoring
- Site-Boundary
- X Removed Wells

0 50 100 200 300 400 Feet

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

Prepared by: AECOM

Prepared for: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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

Liberty Industrial Finishing Site

Date:	Scale:	Figure No. :
August 2023	1 inch = 167 feet	2

Approximate Scale: 100 feet

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FIGURE 3

CURRENT DEVELOPMENT
LIBERTY INDUSTIRAL FINISHING SITE
550 SUFFOLK AVENUE
BRENTWOOD, NEW YORK

Drawn by: SOD Checked By: SOD Date: 1-4-2024

SUFFOLK AVENUE

QUINN PLACE

MW-7

MW-7A (45.12)

MW-17A (45.05*)

MW-17

LIBERTY INDUSTRIAL FINISHING SITE

45.0

(DEMOLISHED BUILDING)

MW-3A (44.84)

MW-2A (44.85)

UNDERGROUND PLATING WASTE TANKS (ABANDONED IN PLACE)

MW-4A (44.87)

LONG ISLAND RAILROAD TRACKS

MW-01R

MW-02

MW-03

MW-04

MW-5

MW-6

MW-10 (45.52?)

MW-09

MW-16 (45.47*)

44.5

MW-01A

MW-08

MW-02A

MW-15

GROUNDWATER FLOW DIRECTION

MW-03A

MW-19 (44.71*)

MW-18 (44.65*)

BASEBALL FIELD

WATER TOWER

BASEBALL FIELD

MW-13

44.0

FIRST STREET

MW-12 (43.86)

MW-11

MW-14 (43.94*)

MW-21 (44.12*)

MW-20 (44.10*)

MW-22

MW-04A

THIRD AVENUE

BASE MAP SOURCE: AECOM

N

LEGEND:

- ① Plating Waste UST
- **MW-20** — Well Utilized For Long Term Monitoring
- **MW-02A** — Well Not Utilized For Long Term Monitoring
- **MW-7** — Removed Well
- Approximate Site Boundary
- Cap
- (45.12) Water Table Elevation (Feet MSL)
- (45.05*) Potentiometric Surface Elevation (Feet MSL)
- —44.0— Groundwater Elevation Contour (Feet MSL)

0’ 50’ 100’ 200’

APPROXIMATE SCALE

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FIGURE 4
LIBERTY INDUSTRIAL FINISHING SITE
GROUNDWATER MONITORING WELLS & FLOW DIRECTION – AUGUST 2023
550 SUFFOLK AVENUE, BRENTWOOD NY

Drawn By: B.F. | Checked By: S.D. | Date: 1/8/24

H:\EAST HAMPTON AIRPORT\RI_FS\SITE FEATURES.dwg, 2/21/2024 11:53:26 AM, AutoCAD PDF (High Quality Print).pc3

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

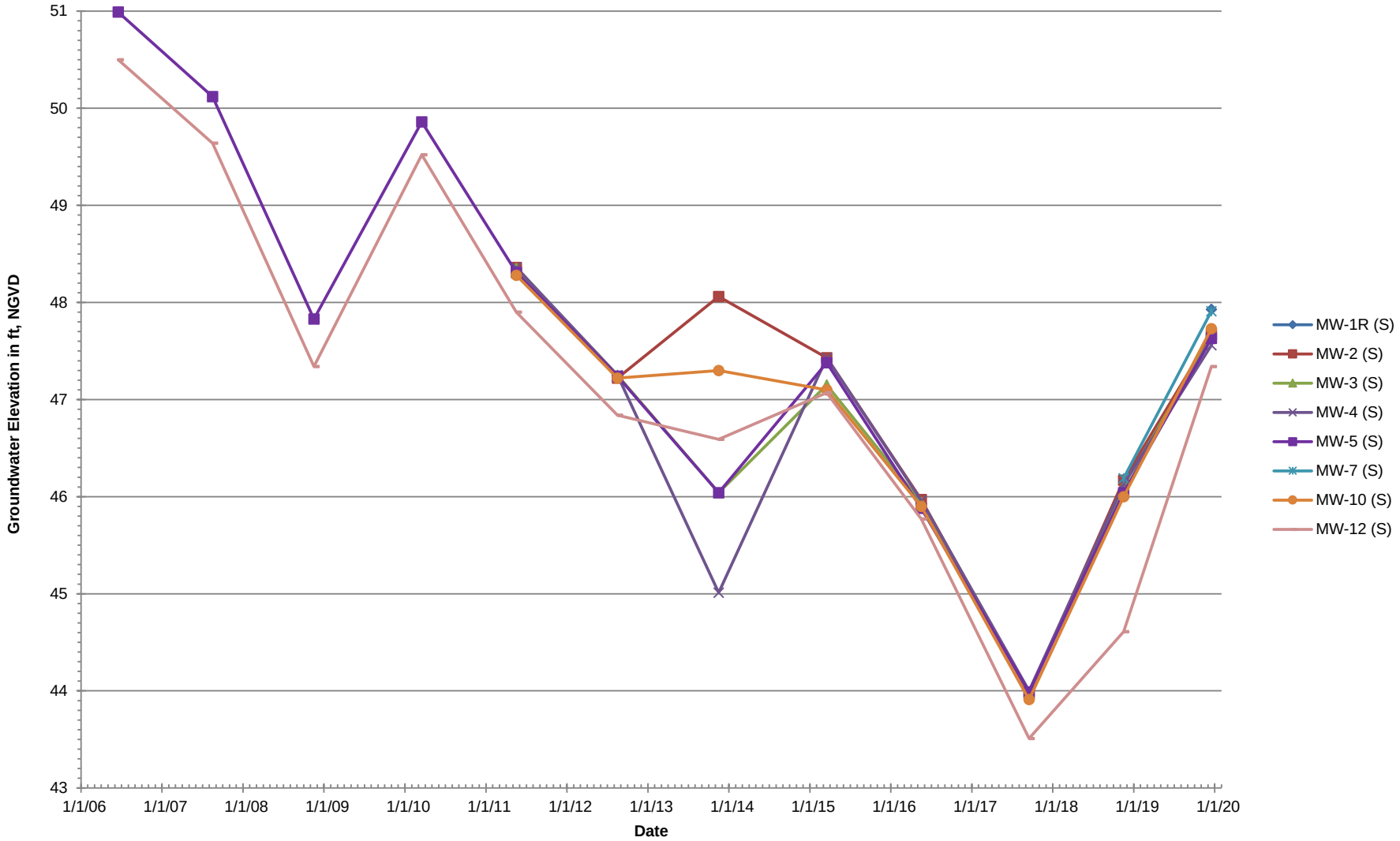


Figure 4B
LIberty Industrial Finishing Site (1-52-108)
Groundwater Hydrograph - Deep Wells

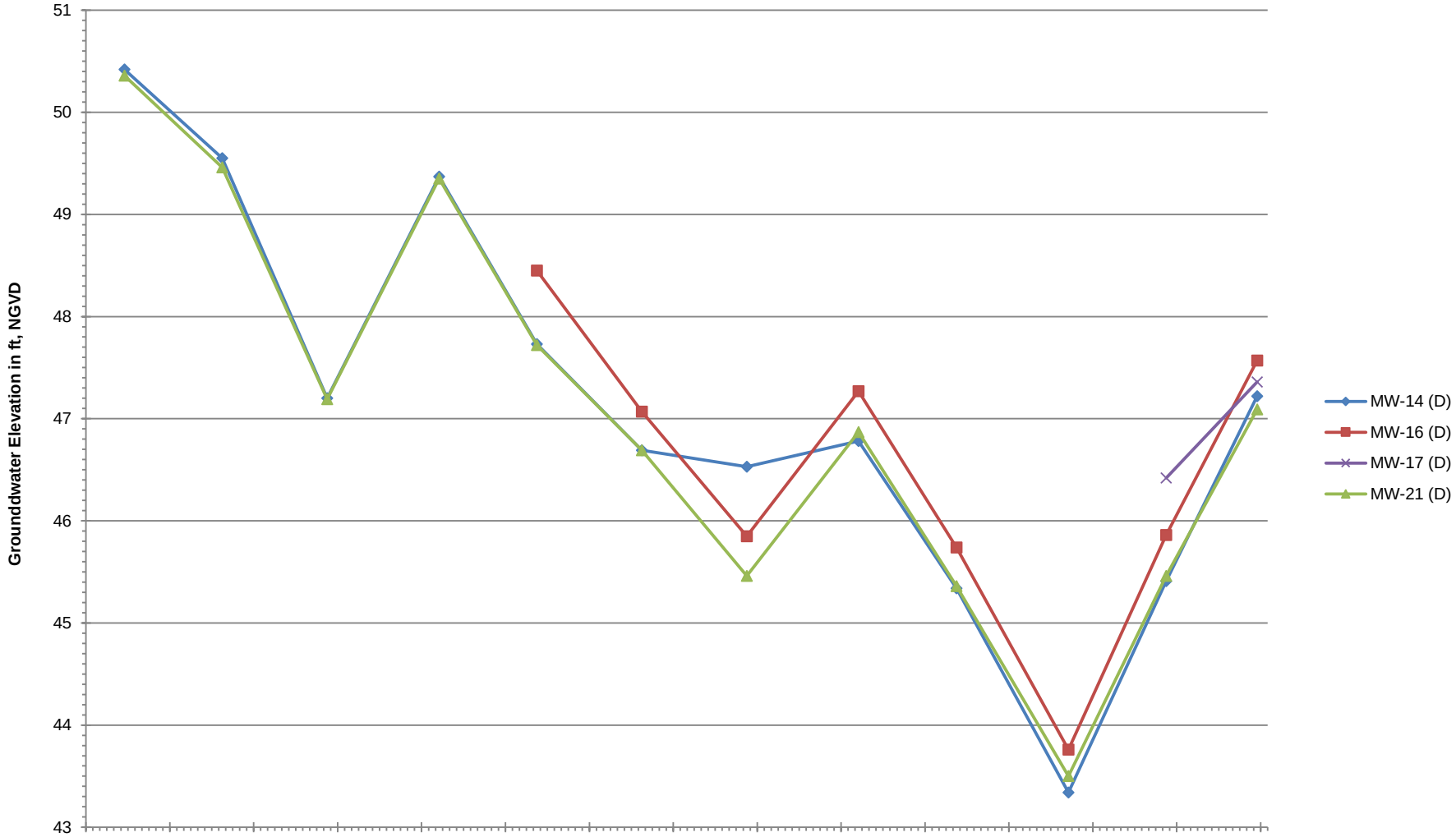
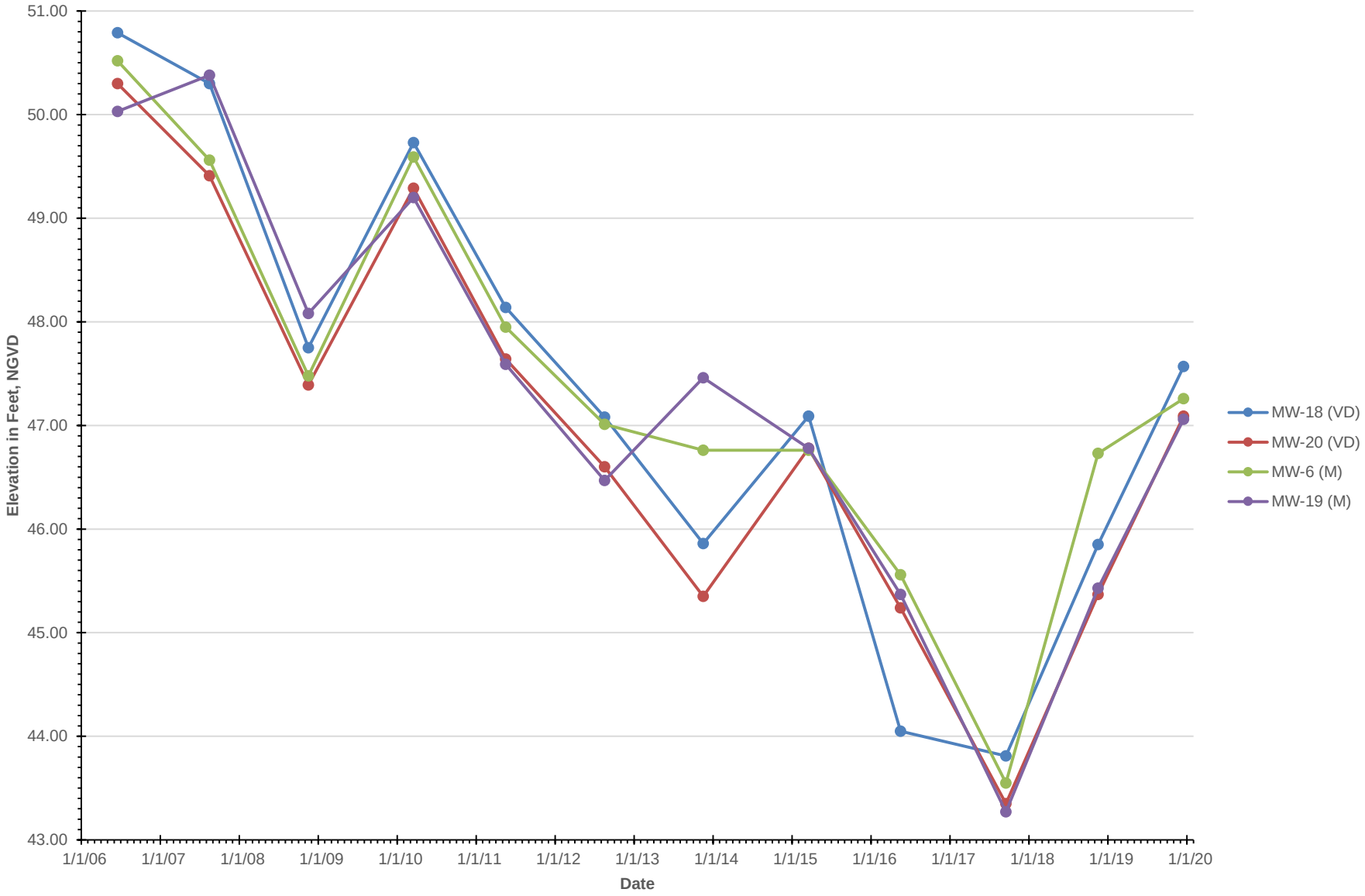


Figure 4C
Liberty Industrial Finishing Site (1-52-1008)
Groundwater Hydrograph, Very Deep and Magothy Wells



Legend:

- SoilSamples2013
- Site-Boundary
- Proposed Excavation Areas
- TaxParcels

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

0 37.5 75 150 225 300
Feet

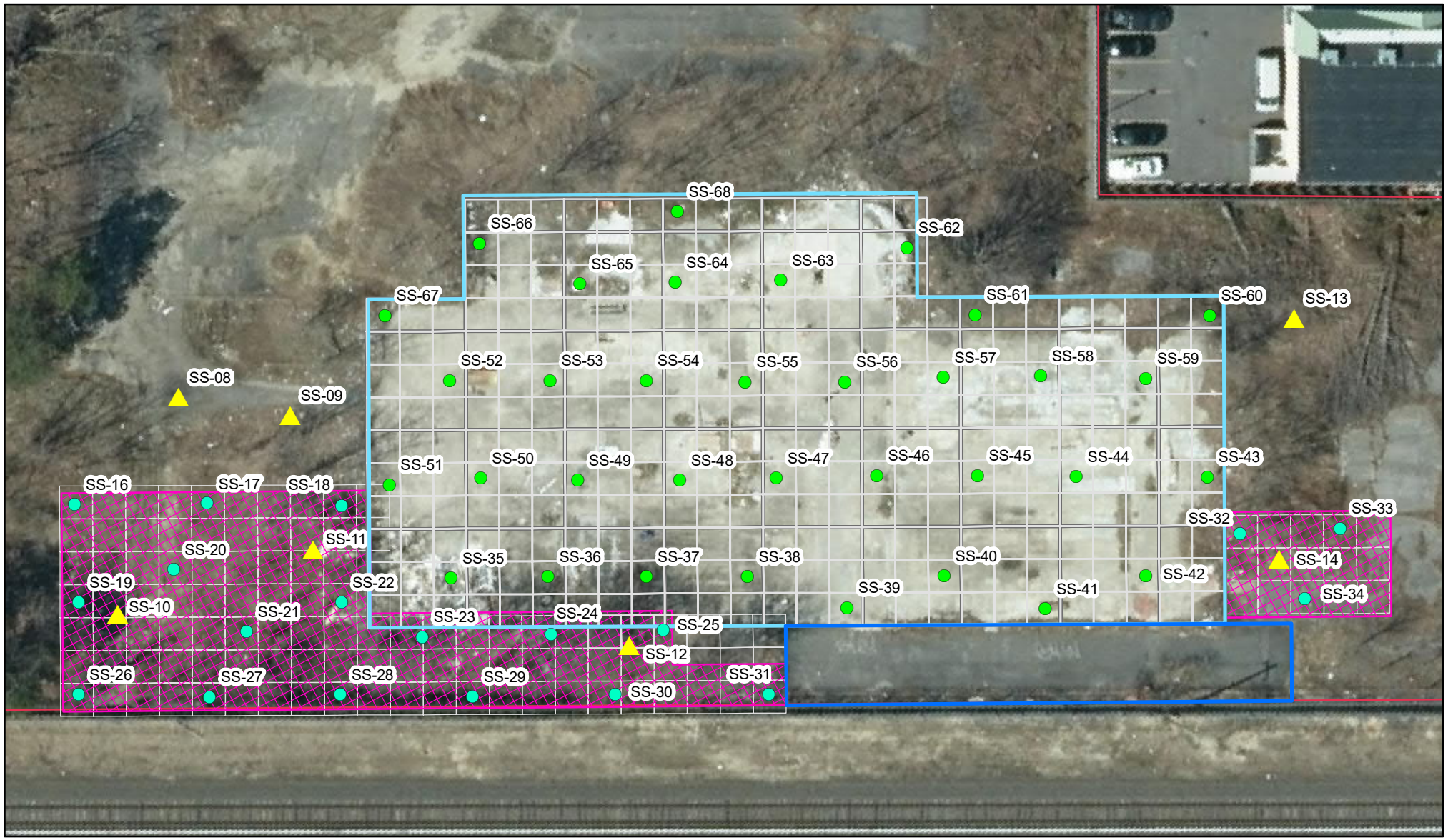
Prepared by: AECOM

Prepared for: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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

Soil Sample Location Map - June 2013

Date:	Scale:	Figure No. :
February 2014	1 inch = 125 feet	5



Legend:

- October 2020 Surface Soil Samples
- September 2020 Surface Soil Samples
- 2013 Surface Soil Samples
- Approximate Location of Asphalt
- Approximate Location of Concrete
- Original Proposed Excavation Area
- Grid - 10 feet
- Grid - 30 feet
- Site-Boundary

0 10 20 40 60 80 Feet

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

Prepared by: AECOM

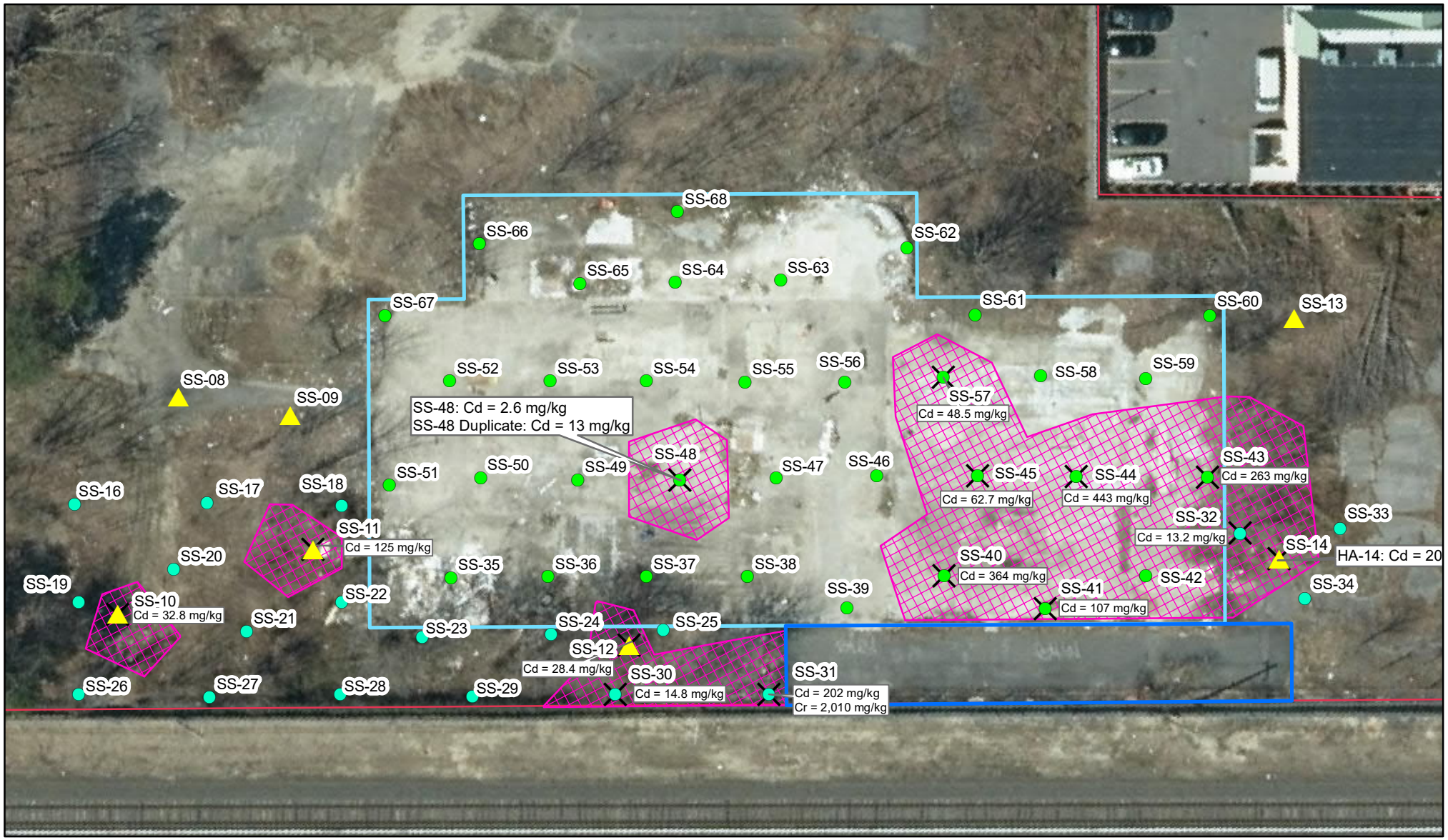
Prepared for: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

N

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

Soil Sample Locations

Date:	Scale:	Figure No. :
November 2020	1 inch = 42 feet	6



Legend:

- October 2020 Surface Soil Samples
- September 2020 Surface Soil Samples
- 2013 Surface Soil Samples
- Exceedance of SCO
- Approximate Location of Asphalt
- Approximate Location of Concrete
- Proposed Excavation Area
- Site-Boundary

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

0 10 20 40 60 80 Feet

Prepared by: AECOM

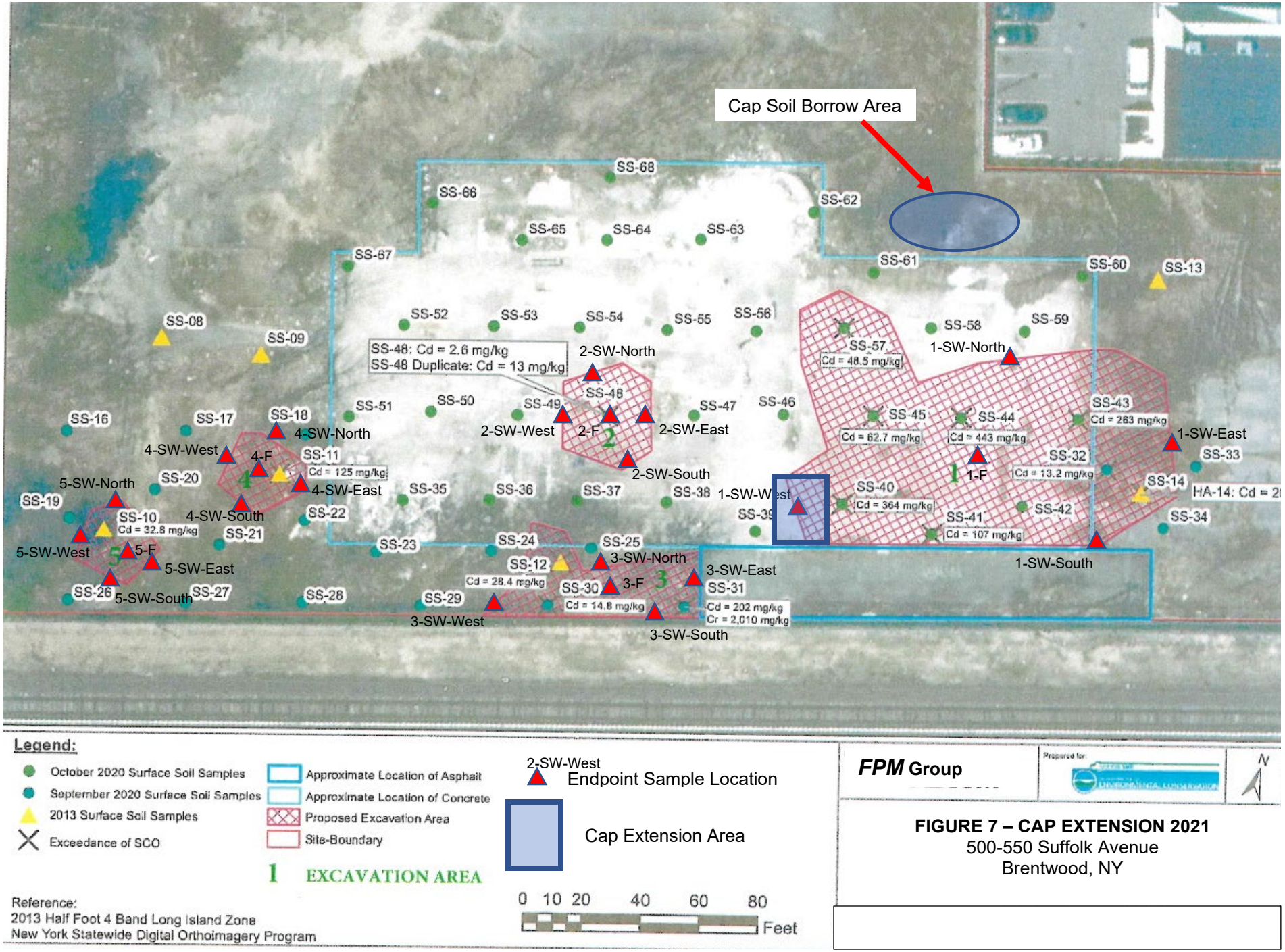
Prepared for: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

N

Liberty Industrial Finishing Site

Summary of Soil Exceedances and Proposed Excavation Areas

Date:	Scale:	Figure No. :
December 2020	1 inch = 42 feet	6A



Legend:

- October 2020 Surface Soil Samples
- September 2020 Surface Soil Samples
- 2013 Surface Soil Samples
- Exceedance of SCO
- Approximate Location of Asphalt
- Approximate Location of Concrete
- Proposed Excavation Area
- Site-Boundary
- 1 EXCAVATION AREA
- 2-SW-West Endpoint Sample Location
- Cap Extension Area

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

0 10 20 40 60 80 Feet

FPM Group

Prepared for:

N

FIGURE 7 – CAP EXTENSION 2021
500-550 Suffolk Avenue
Brentwood, NY

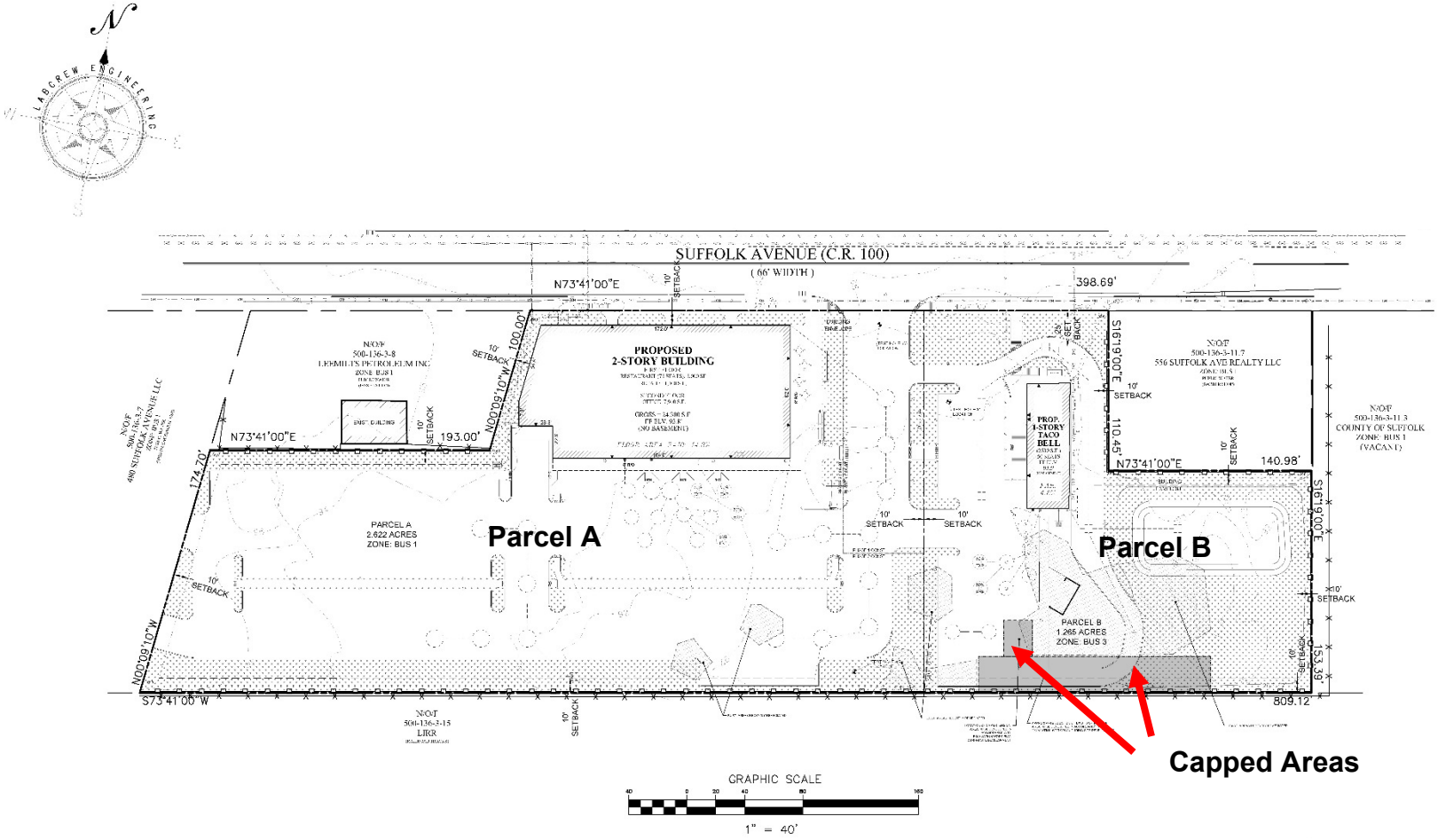


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FIGURE 8
CAPPED AREAS - 2022
550 Suffolk Avenue
Brentwood, New York

Drawn by: SOD Checked By: SOD Date: 7/6/2023

Well No.	MW-17A	
	Result	Q
Target Analyte List Metals in micrograms per liter (ug/l)		
Beryllium	5.3	
Cadmium	1.5	J
Chromium	2.6	J
Copper	8.3	
Iron	437	
Manganese	622	
Nickel	9.9	
Sodium	26,400	
Zinc	61.4	
1,4-Dioxane in ug/l		
1,4-Dioxane	0.072	U
Per and Polyfluoroalkyl Substances (PFAS) in nanograms per liter (ng/l)		
Perfluorobutanesulfonic acid (PFBS)	4.84	
Perfluorobutanoic acid (PFBA)	6.05	J
Perfluoroheptanoic acid (PFHpA)	8.98	
Perfluorohexanesulfonic acid (PFHxS)	1.32	J
Perfluorohexanoic acid (PFHxA)	18.8	
Perfluorononanoic acid (PFNA)	0.50	J
Perfluorooctanesulfonic acid (PFOS)	4.54	I
Perfluorooctanoic acid (PFOA)	17.7	
Perfluoropentanoic acid (PFPeA)	12.7	

Well No.	MW-7A		NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
	Result	Q	
Target Analyte List Metals in micrograms per liter (ug/l)			
Cadmium	0.77	J	5
Chromium	1.7	U	50
Copper	2.2	J	200
Nickel	2.3	J	100
Sodium	24,400		20,000
Zinc	15.7	J	2,000
1,4-Dioxane in ug/l			
1,4-Dioxane	0.072	U	0.35
Per and Polyfluoroalkyl Substances (PFAS) in nanograms per liter (ng/l)			
Perfluorobutanesulfonic acid (PFBS)	24.5		-
Perfluorobutanoic acid (PFBA)	19.6		-
Perfluoroheptanoic acid (PFHpA)	5.53		-
Perfluorohexanesulfonic acid (PFHxS)	31.1		-
Perfluorohexanoic acid (PFHxA)	10.8		-
Perfluorooctanesulfonic acid (PFOS)	7.27		2.7
Perfluorooctanoic acid (PFOA)	10.7		6.7
Perfluoropentanesulfonic acid (PFPeS)	0.75	J	-
Perfluoropentanoic acid (PFPeA)	13.7		-

Well No.	MW-3A		NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
	Result	Q	
Target Analyte List Metals in micrograms per liter (ug/l)			
Cadmium	1.6	J	5
Chromium	48.4		50
Copper	2.0	U	200
Nickel	4.6		100
Sodium	32,700		20,000
Zinc	24.8		2,000
1,4-Dioxane in ug/l			
1,4-Dioxane	0.072	U	0.35
Per and Polyfluoroalkyl Substances (PFAS) in nanograms per liter (ng/l)			
Perfluorobutanesulfonic acid (PFBS)	4.66		-
Perfluorobutanoic acid (PFBA)	8.37		-
Perfluoroheptanesulfonic acid (PFHpS)	0.35	J	-
Perfluoroheptanoic acid (PFHpA)	3.05		-
Perfluorohexanesulfonic acid (PFHxS)	1.33	J	-
Perfluorohexanoic acid (PFHxA)	4.77		-
Perfluorononanoic acid (PFNA)	0.83	J	-
Perfluorooctanesulfonic acid (PFOS)	207		2.7
Perfluorooctanoic acid (PFOA)	6.48		6.7
Perfluoropentanoic acid (PFPeA)	4.63	I	-

Well No.	MW-2A		NYSDEC Class GA Ambient Water Quality Standards & Guidance Values
	Result	Q	
Target Analyte List Metals in micrograms per liter (ug/l)			
Cadmium	1.5	J	5
Chromium	17.2		50
Copper	4.9		200
Iron	864		300
Nickel	7.7		100
Zinc	48.1		2,000
1,4-Dioxane in ug/l			
1,4-Dioxane	0.072	U	0.35
Per and Polyfluoroalkyl Substances (PFAS) in nanograms per liter (ng/l)			
6:2 FTS	4.56	J	-
Perfluorobutanesulfonic acid (PFBS)	3.28		-
Perfluorobutanoic acid (PFBA)	6.20	J	-
Perfluoroheptanesulfonic acid (PFHpS)	0.40	J	-
Perfluoroheptanoic acid (PFHpA)	3.65		-
Perfluorohexanesulfonic acid (PFHxS)	1.47	J	-
Perfluorohexanoic acid (PFHxA)	6.62		-
Perfluorononanoic acid (PFNA)	0.82	J	-
Perfluorooctanesulfonic acid (PFOS)	30.4		2.7
Perfluorooctanoic acid (PFOA)	10.6		6.7
Perfluoropentanoic acid (PFPeA)	5.65		-

Well No.	MW-4A		MW-44A (Duplicate)		NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
	Result	Q	Result	Q	
Target Analyte List Metals in micrograms per liter (ug/l)					
Cadmium	90.6		89.7		5
Chromium	99.5		100		50
Copper	4.7		4.8		200
Nickel	38.1		38.2		100
Sodium	29,400		29,800		20,000
Zinc	15.6	J	13.9	J	2,000
1,4-Dioxane in ug/l					
1,4-Dioxane	0.072	U	0.072	U	0.35
Per and Polyfluoroalkyl Substances (PFAS) in nanograms per liter (ng/l)					
6:2 FTS	3.32	J	2.43	J	-
Perfluorobutanesulfonic acid (PFBS)	3.58		3.94		-
Perfluorobutanoic acid (PFBA)	15.2		15.5		-
Perfluoroheptanesulfonic acid (PFHpS)	1.05	J	0.96	J	-
Perfluoroheptanoic acid (PFHpA)	5.52		5.36		-
Perfluorohexanesulfonic acid (PFHxS)	3.77		3.35		-
Perfluorohexanoic acid (PFHxA)	14.7		13.9		-
Perfluorononanoic acid (PFNA)	1.15	J	1.12	J	-
Perfluorooctanesulfonic acid (PFOS)	389		392		2.7
Perfluorooctanoic acid (PFOA)	9.78		10.5		6.7
Perfluoropentanesulfonic acid (PFPeS)	0.66	J	0.74	J	-
Perfluoropentanoic acid (PFPeA)	14.9		14.5		-

Sample Location	MW-10	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/29/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)		
Cadmium	96	5
Chromium, Total	55.2	50
Copper	< 4.0 U	200
Iron	380	300
Nickel	7.4	100
Zinc	< 10 U	2,000
1,4-Dioxane by SW8270 in ug/l		
1,4-Dioxane (P-Dioxane)	< 0.050 U	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ug/l		
Perfluorobutanesulfonic acid (PFBS)	13.7	-
Perfluorobutanoic Acid	6.6 J	-
Perfluoroheptanoic acid (PFHpA)	6.7	-
Perfluorohexanesulfonic acid (PFHxS)	1.2 J	-
Perfluorohexanoic acid (PFHxA)	4.4	-
Perfluorononanoic acid (PFNA)	0.72 J	-
Perfluorooctanesulfonic acid (PFOS)	112.0	2.7
Perfluorooctanoic acid (PFOA)	5.8	6.7
Perfluoropentanoic Acid (PFPeA)	3.0 J	-

Sample Location	MW-12	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/29/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)		
Cadmium	1.9	5
Chromium, Total	< 2.0 U	50
Copper	< 4.0 U	200
Nickel	< 2.0 U	100
Zinc	26.4	2,000
1,4-Dioxane by SW8270 in ug/l		
1,4-Dioxane (P-Dioxane)	< 0.050 U	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ng/l		
Perfluorobutanesulfonic acid (PFBS)	1.5 J	-
Perfluorobutanoic Acid	7.9	-
Perfluoroheptanoic acid (PFHpA)	3.9	-
Perfluorohexanesulfonic acid (PFHxS)	1.3 J	-
Perfluorohexanoic acid (PFHxA)	14.4	-
Perfluorononanoic acid (PFNA)	2.0	-
Perfluorooctanesulfonic acid (PFOS)	36.8	2.7
Perfluorooctanoic acid (PFOA)	7.6	6.7
Perfluoropentanoic Acid (PFPeA)	20.8	-

Sample Location	MW-14	MW-14 (duplicate)	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/28/2023**	**8/28/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)			
Cadmium	8.6	9.4	5
Chromium, Total	60.2	59.1	50
Copper	< 4.0 U	6.8	200
Iron	336	398	300
Nickel	15.7	15.2	100
Sodium	32,900	33,000	20,000
Zinc	< 10 U	12.2	2,000
1,4-Dioxane by SW8270 in ug/l			
1,4-Dioxane (P-Dioxane)	< 0.050 U	< 0.050 U	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ng/l			
Perfluorobutanesulfonic acid (PFBS)	10.5	12.4	-
Perfluorobutanoic Acid	6.9 J	7.3	-
Perfluoroheptanesulfonic acid (PFHpS)	2.8	2.2	-
Perfluoroheptanoic acid (PFHpA)	6.3	5.7	-
Perfluorohexanesulfonic acid (PFHxS)	9.1	9.2	-
Perfluorohexanoic acid (PFHxA)	< 0.25 U	9.5	-
Perfluorononanoic acid (PFNA)	0.62 J	0.76 J	-
Perfluorooctanesulfonic acid (PFOS)	99.1	98.9	2.7
Perfluorooctanoic acid (PFOA)	10.9	10.1	6.7
Perfluoropentanesulfonic Acid (PFPeS)	1.5 J	1.9	-
Perfluoropentanoic Acid (PFPeA)	9.4	9.9	-

Sample Location	MW-16	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/29/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)		
Cadmium	4.4	5
Chromium, Total	8.2	50
Copper	42.1	200
Iron	1,800	300
Manganese	931	300
Nickel	14.6	100
Sodium	24,600	20,000
Zinc	35.3	2,000
1,4-Dioxane by SW8270 in ug/l		
1,4-Dioxane (P-Dioxane)	< 0.050 U	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ng/l		
Perfluorobutanesulfonic acid (PFBS)	5.7	-
Perfluorobutanoic Acid	4.9 J	-
Perfluoroheptanoic acid (PFHpA)	5.1	-
Perfluorohexanesulfonic acid (PFHxS)	24.2	-
Perfluorohexanoic acid (PFHxA)	8.9	-
Perfluorononanoic acid (PFNA)	0.53 J	-
Perfluorooctanesulfonic acid (PFOS)	8.5	2.7
Perfluorooctanoic acid (PFOA)	13.8	6.7
Perfluoropentanesulfonic Acid (PFPeS)	1.9	-
Perfluoropentanoic Acid (PFPeA)	9.7	-

Sample Location	MW-19	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/28/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)		
Cadmium	1.9	5
Chromium, Total	< 2.0 U	50
Copper	< 4.0 U	200
Nickel	< 2.0 U	100
Zinc	29.1	2,000
1,4-Dioxane by SW8270 in ug/l		
1,4-Dioxane (P-Dioxane)	0.305	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ng/l		
Perfluorobutanesulfonic acid (PFBS)	0.71 J	-
Perfluorohexanoic acid (PFHxA)	1.2 J	-
Perfluorooctanesulfonic acid (PFOS)	0.9 J	2.7
Perfluorooctanoic acid (PFOA)	0.75 J	6.7
Perfluoropentanoic Acid (PFPeA)	1.1 J	-

Sample Location	MW-18	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/28/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)		
Cadmium	< 1.0 U	5
Chromium, Total	< 2.0 U	50
Copper	< 4.0 U	200
Manganese	2,320	300
Nickel	< 2.0 U	100
Zinc	< 10 U	2,000
1,4-Dioxane by SW8270 in ug/l		
1,4-Dioxane (P-Dioxane)	0.0925 J	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ng/l		
Perfluorobutanesulfonic acid (PFBS)	0.65 J	-
Perfluorohexanoic acid (PFHxA)	1.3 J	-
Perfluorooctanesulfonic acid (PFOS)	1.1 J	2.7
Perfluorooctanoic acid (PFOA)	1.3 J	6.7
Perfluoropentanoic Acid (PFPeA)	1.5 J	-

Sample Location	MW-20	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/29/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)		
Cadmium	< 1.0 U	5
Chromium, Total	6.9	50
Copper	7.1	200
Iron	1,200	300
Nickel	< 2.0 U	100
Sodium	26,000	20,000
Zinc	< 10 U	2,000
1,4-Dioxane by SW8270 in ug/l		
1,4-Dioxane (P-Dioxane)	< 0.050 U	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ng/l		
Perfluorobutanesulfonic acid (PFBS)	1.3 J	-
Perfluorobutanoic Acid	6.9 J	-
Perfluorodecanesulfonic acid (PFDS)	1.8	-
Perfluorodecanoic acid (PFDA)	1.9	-
Perfluoroheptanoic acid (PFHpA)	1.9	-
Perfluorohexanesulfonic acid (PFHxS)	7.4	-
Perfluorohexanoic acid (PFHxA)	6.5	-
Perfluorononanoic acid (PFNA)	1.5 J	-
Perfluorooctanesulfonic acid (PFOS)	5.9	2.7
Perfluorooctanoic acid (PFOA)	5.9	6.7
Perfluoropentanoic Acid (PFPeA)	6.6	-
Perfluoroundecanoic Acid (PFUnA)	0.55 J	-

Sample Location	MW-21	NYSDEC Class GA Ambient Water Quality Standards and Guidance Values
Sample Date	**8/29/2023**	
Target Analyte List Metals in micrograms per liter (ug/l)		
Cadmium	< 1.0 U	5
Chromium, Total	23.3	50
Copper	< 4.0 U	200
Nickel	2.7	100
Sodium	61,700	20,000
Zinc	< 10 U	2,000
1,4-Dioxane by SW8270 in ug/l		
1,4-Dioxane (P-Dioxane)	< 0.050 U	0.35
Per and Polyfluoroalkyl Substances (PFAS) by EPA 1633 in ng/l		
Perfluorobutanesulfonic acid (PFBS)	7.5	-
Perfluorobutanoic Acid	59.2	-
Perfluoroheptanoic acid (PFHpA)	8.3	-
Perfluorohexanesulfonic acid (PFHxS)	5.5	-
Perfluorohexanoic acid (PFHxA)	25.5	-
Perfluorononanoic acid (PFNA)	1.2 J	-
Perfluorooctanesulfonic acid (PFOS)	14.5	2.7
Perfluorooctanoic acid (PFOA)	18.0	6.7
Perfluoropentanoic Acid (PFPeA)	34.7	-

SUFFOLK AVENUE

LIBERTY INDUSTRIAL FINISHING SITE

(DEMOLISHED BUILDING)

UNDERGROUND PLATING WASTE TANKS (ABANDONED IN PLACE)

LONG ISLAND R

MW-17

MW-7A (45.12)

MW-17A (45.05*)

45.0

MW-3A (44.84)

MW-2A (44.85)

MW-4A (44.87)

MW-04

MW-03

MW-02

MW-01R

MW-5

MW-6

MW-09

MW-10 (45.52?)

MW-16 (45.47*)

44.5

MW-15

MW-01A

MW-08

MW-02A

MW-03A

MW-19 (44.71*)

MW-18 (44.65*)

GROUNDWATER FLOW DIRECTION

BASEBALL FIELD

WATER TOWER

MW-0

44.0

MW-12 (43.86)

MW-14 (43.94*)

MW-11

FIRST STREET

MW-13

MW-21 (44.12*)

MW-20 (44.10*)

MW-22

BASE MAP SOURCE: AECOM

N

LEGEND:

① Plating Waste UST

MW-20 Well Utilized For Long Term Monitoring

MW-02A Well Not Utilized For Long Term Monitoring

MW-7 Removed Well

Approximate Site Boundary

Cap

(45.12) Water Table Elevation (Feet MSL)

(45.05*) Potentiometric Surface Elevation (Feet MSL)

—44.0— Groundwater Elevation Contour (Feet MSL)

Approximate Extent Of Site-Related Metals In Groundwater

0' 50' 100' 200'

APPROXIMATE SCALE

FPM GROUP

FIGURE 9
LIBERTY INDUSTRIAL FINISHING SITE
GROUNDWATER MONITORING RESULTS
AUGUST 2023
550 SUFFOLK AVENUE, BRENTWOOD NY

Drawn By: B.F. | Checked By: S.D. | Date: 2/21/24

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, 1995
Date

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

TABLE OF CONTENTS

TABLE OF CONTENTS

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 a 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.

Date	Index No.	Subject of Order
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

Present Worth:	*$ 264,000*
Capital Cost:	*$ 0*
Annual O&M:	*$ 17,200*
Time to Implement	*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

Present Worth:	*$ 501,700*
Capital Cost:	*$ 237,700*

Annual O&M:	*$ 17,200*
Time to Implement	*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

Present Worth:	*$ 2,946,000*
Capital Cost:	*$ 1,102,000*
Annual O&M:	*$ 148,000*
Time to Implement	*1 year*

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 of 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

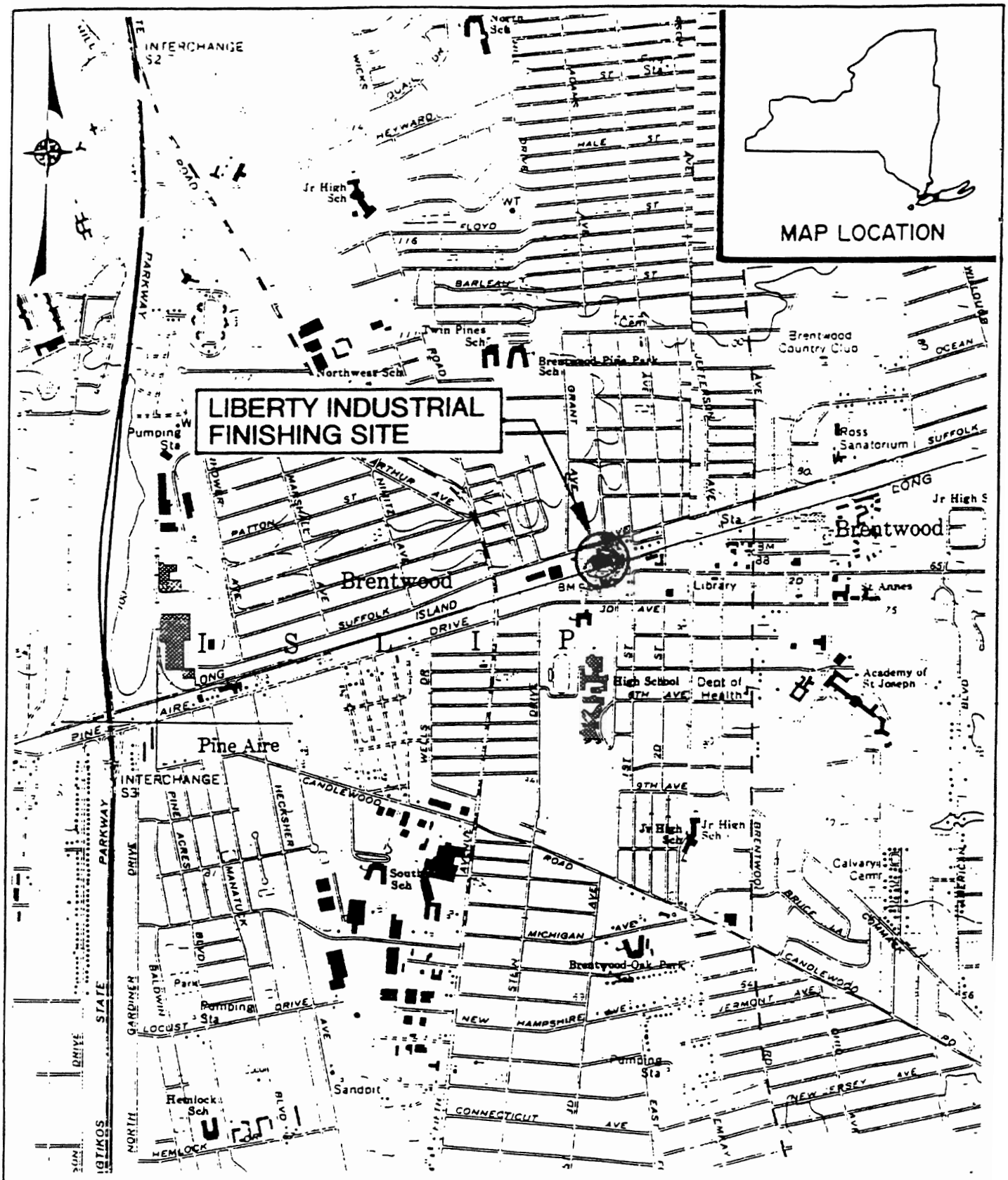
- Institutional controls will be implemented and deed restrictions will be recorded in the chain of title of the property to restrict future use of groundwater at the site.

  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.

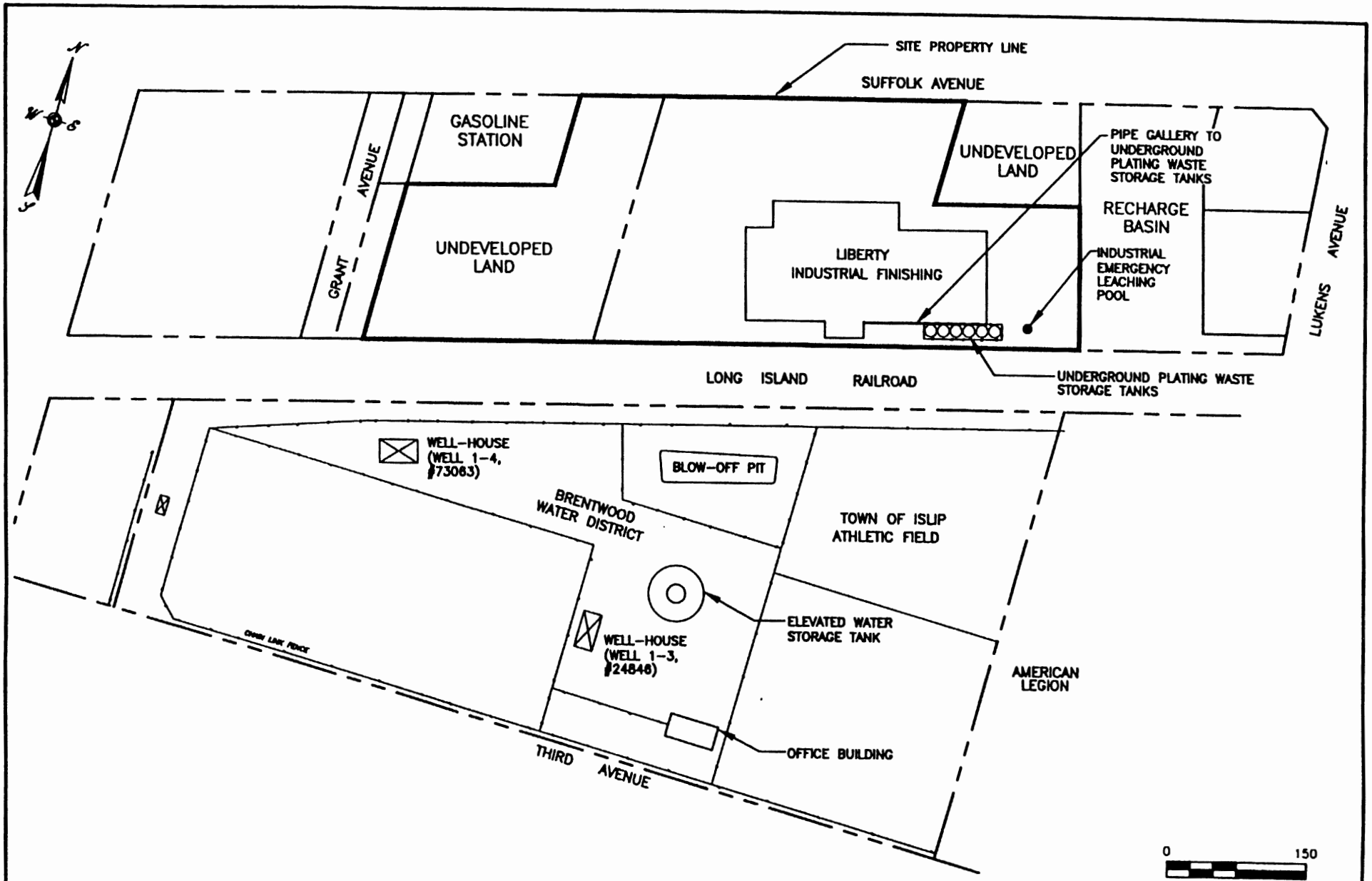


LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

SITE LOCATION MAP

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

FIGURE 1



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

Dvirka and Bartilucci
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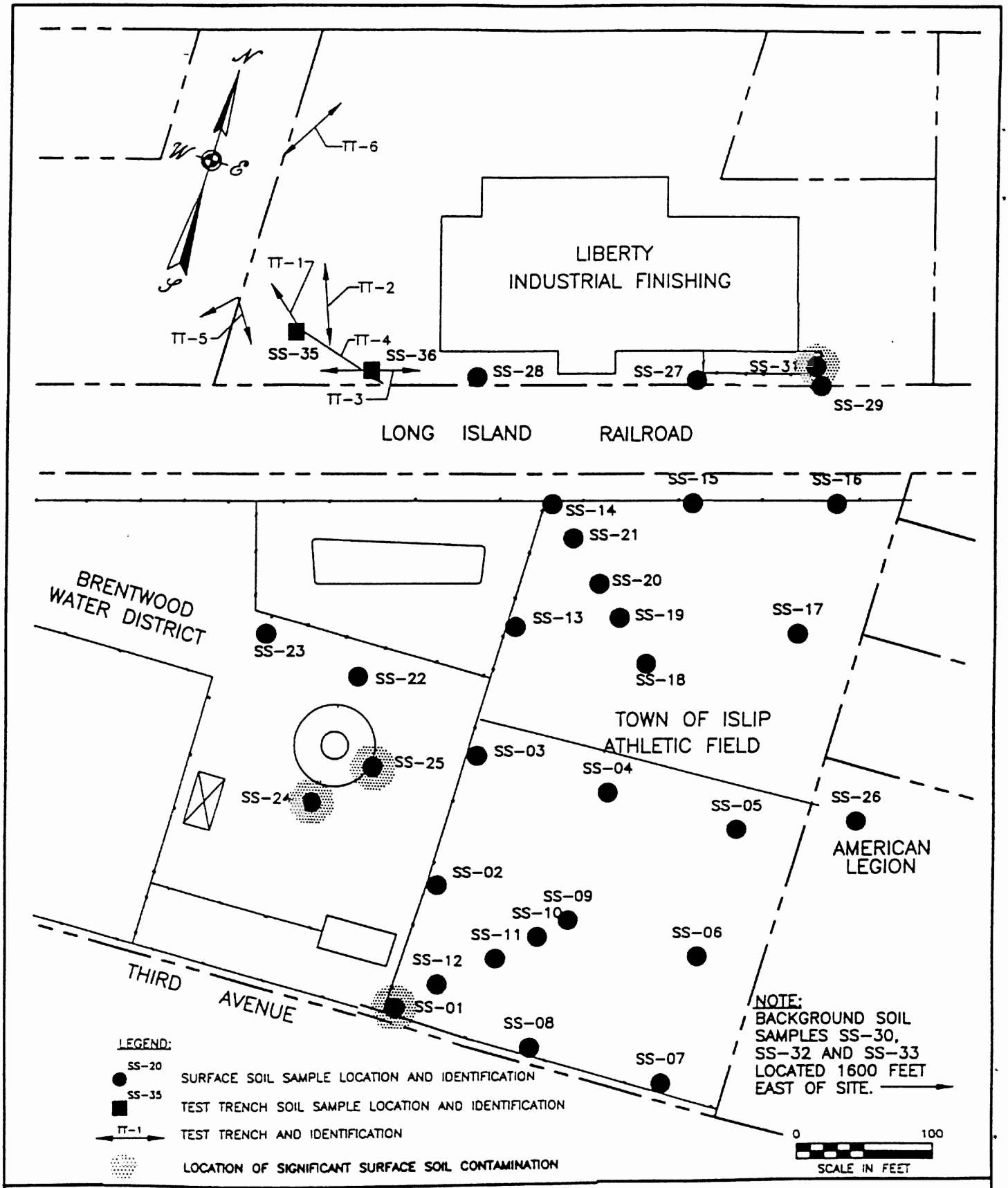
STUDY AREA MAP

FIGURE 2



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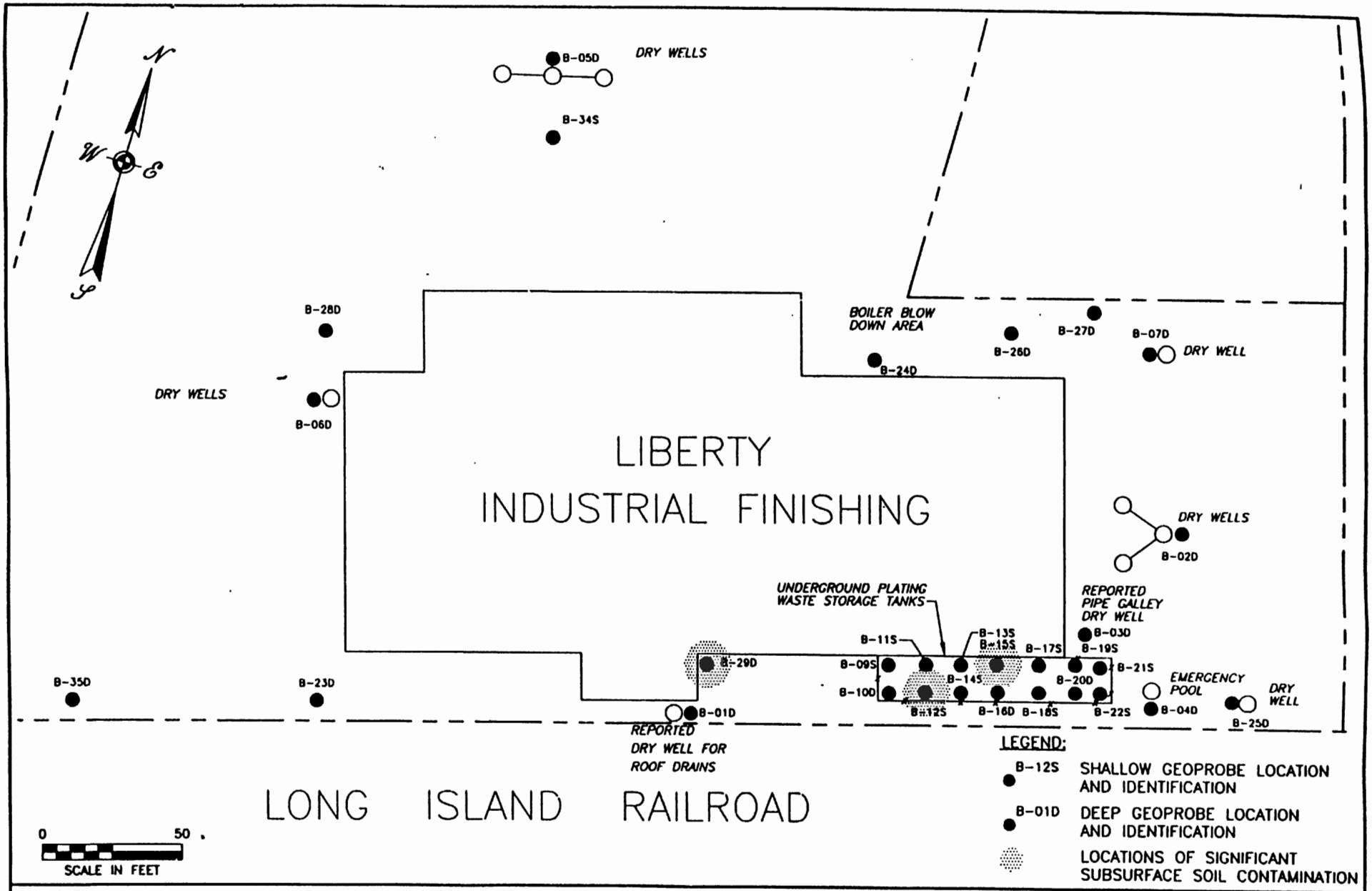
LIBERTY INDUSTRIAL FINISHING SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
BRENTWOOD, NEW YORK

SURFACE SOIL SAMPLE AND TEST TRENCH LOCATIONS

FIGURE 3

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



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

LOCATIONS OF SIGNIFICANT SUBSURFACE SOIL CONTAMINATION

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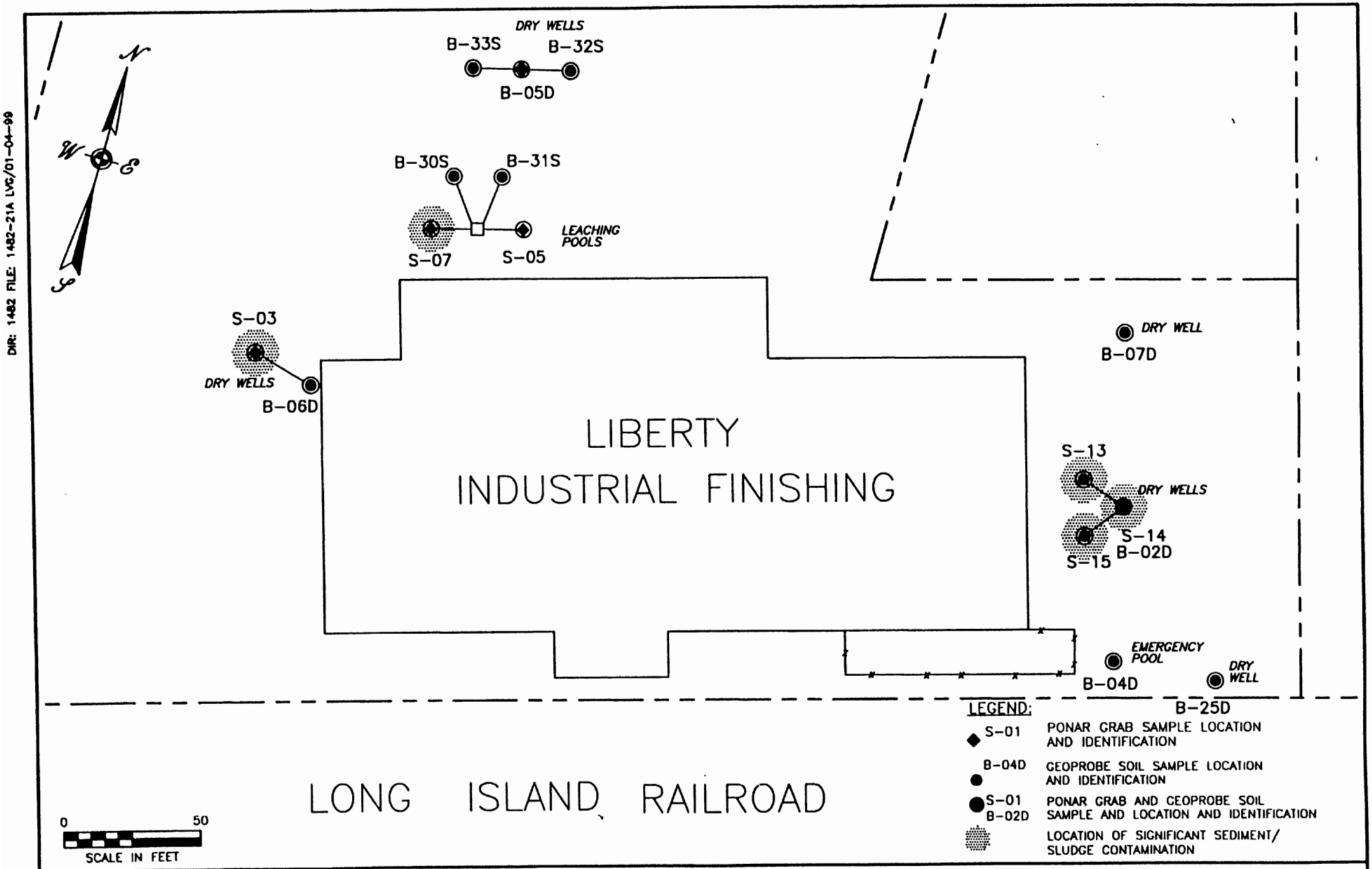
FIGURE 4



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

LOCATIONS OF SIGNIFICANT DRYWELL/ LEACHING POOL SEDIMENT/SLUDGE CONTAMINATION

Dvirka and Bartilucci Consulting Engineers
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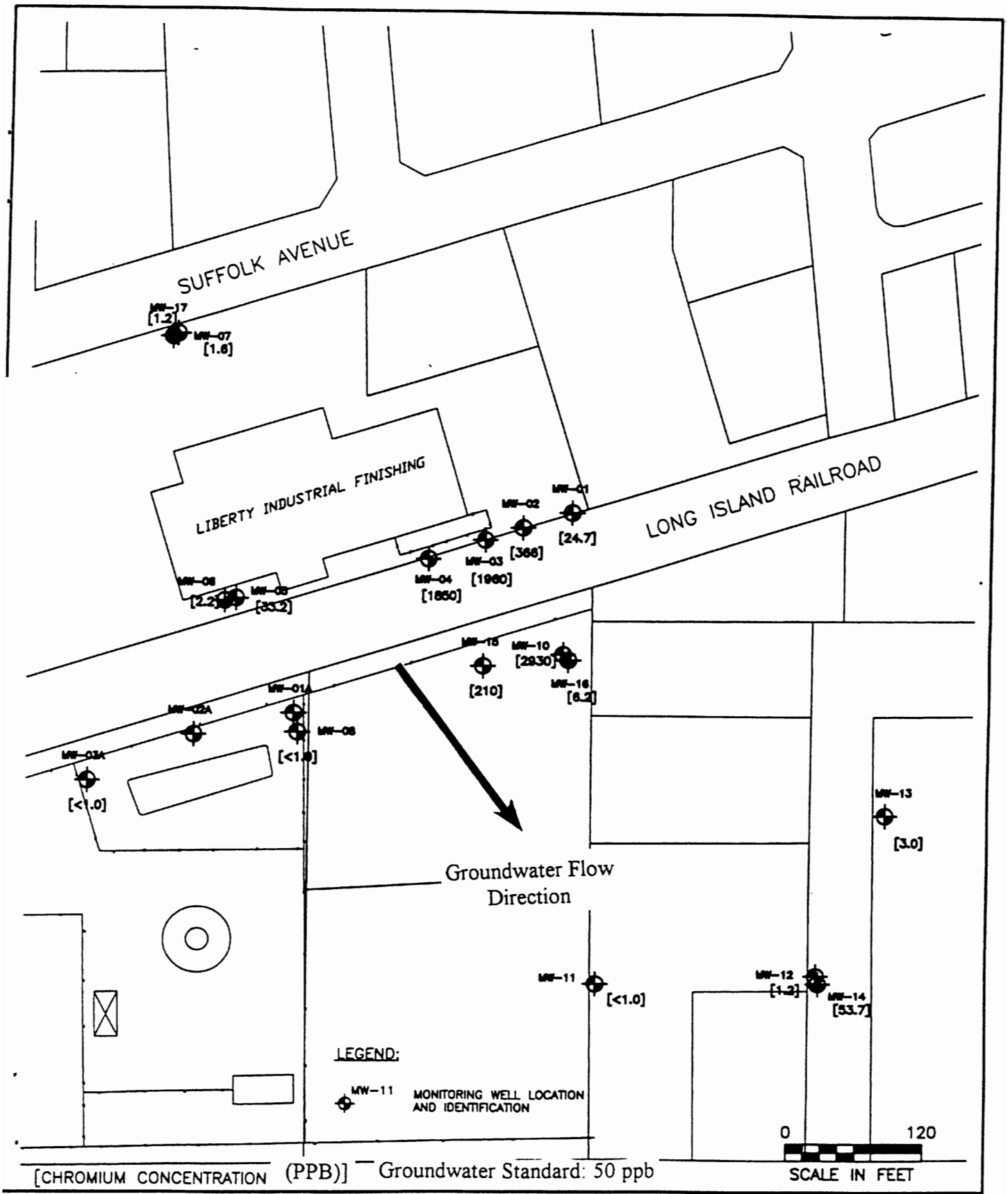
FIGURE 5



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

MONITORING WELL GROUNDWATER SAMPLE RESULTS FOR CHROMIUM

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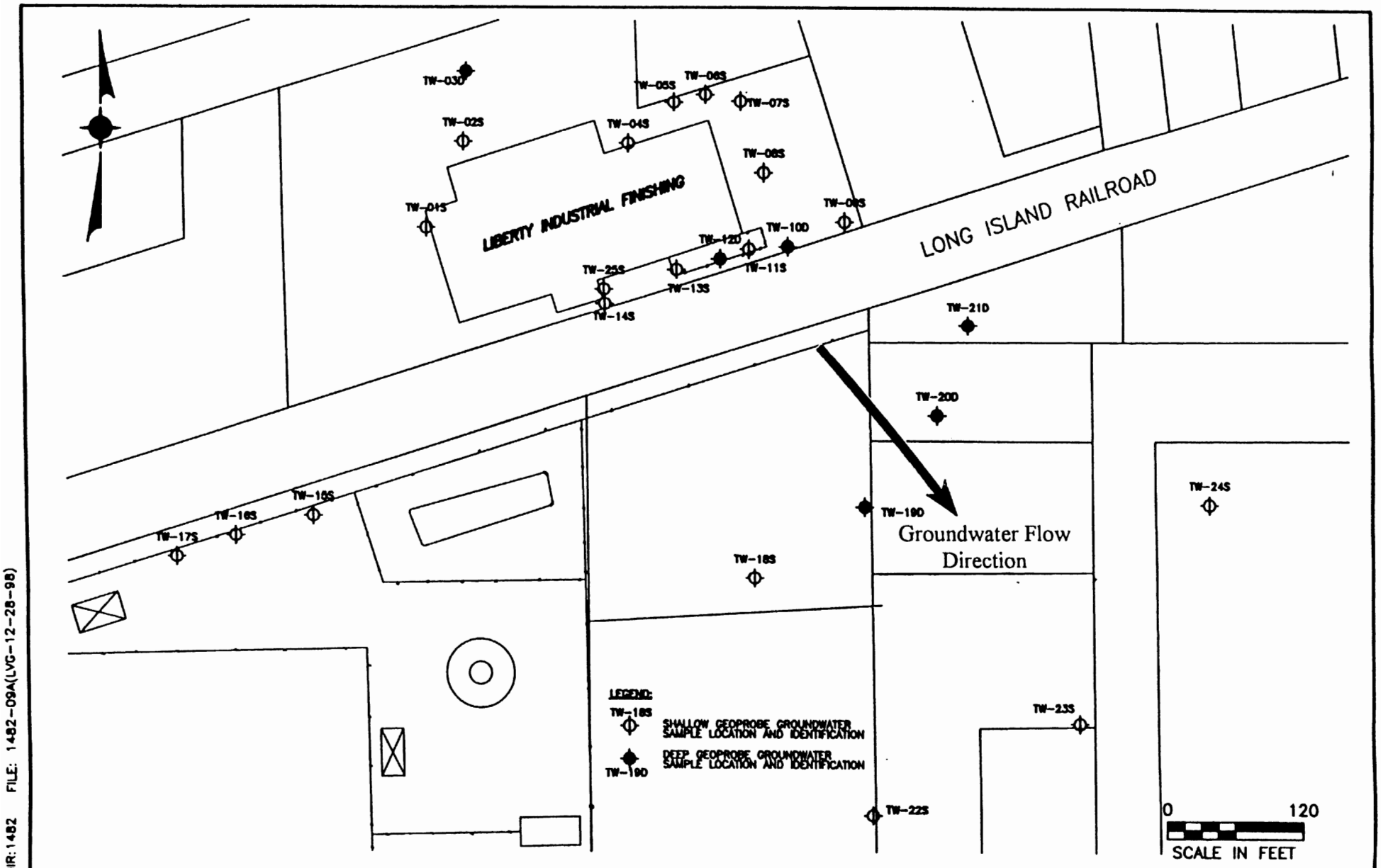
A Division of William F. Cosulich Associates, P.C.

FIGURE 6



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

GEOPROBE GROUNDWATER SAMPLE LOCATIONS

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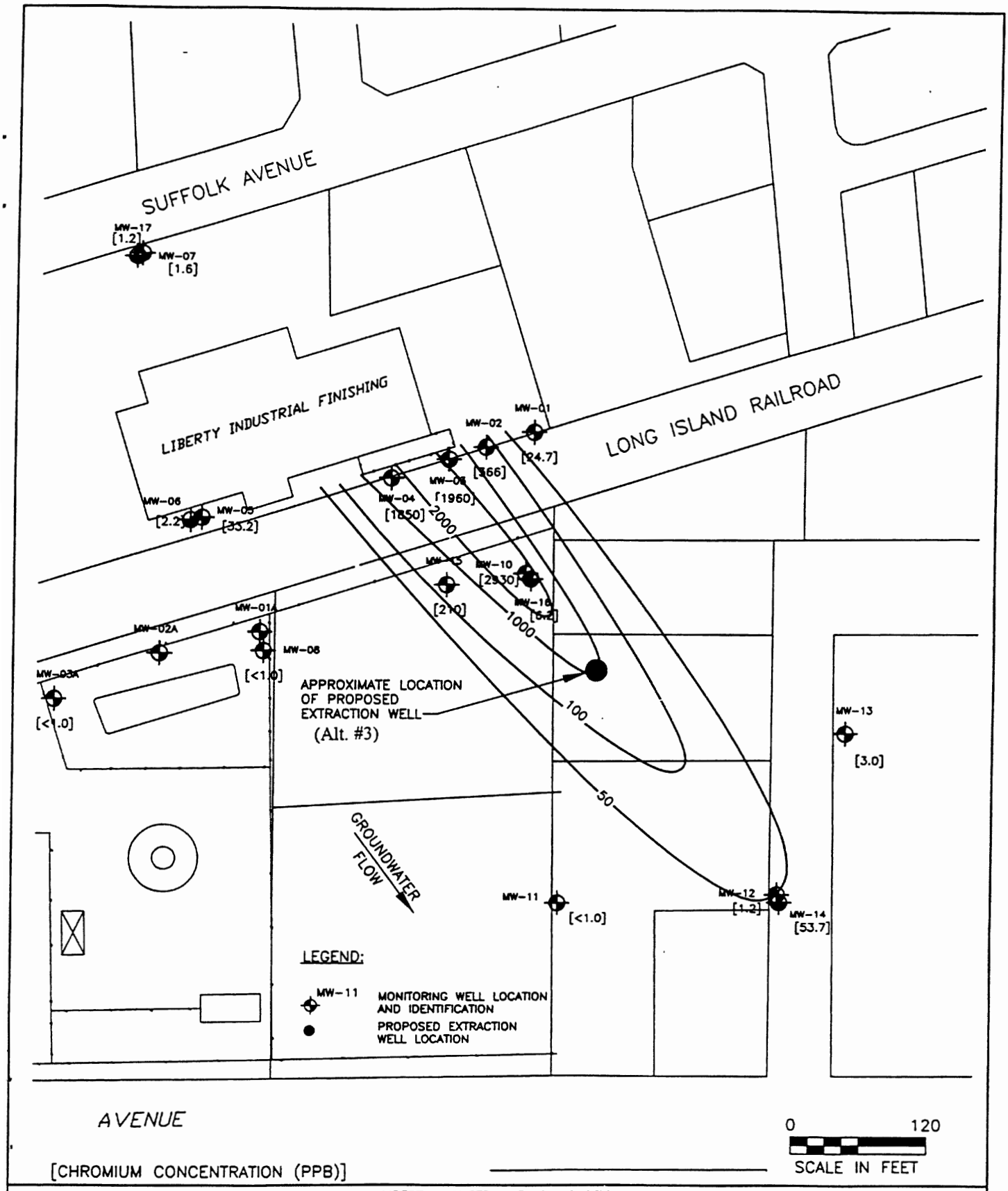
FIGURE 7



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

GROUNDWATER CONTAMINATION CONTOURS SAMPLE RESULTS FOR CHROMIUM

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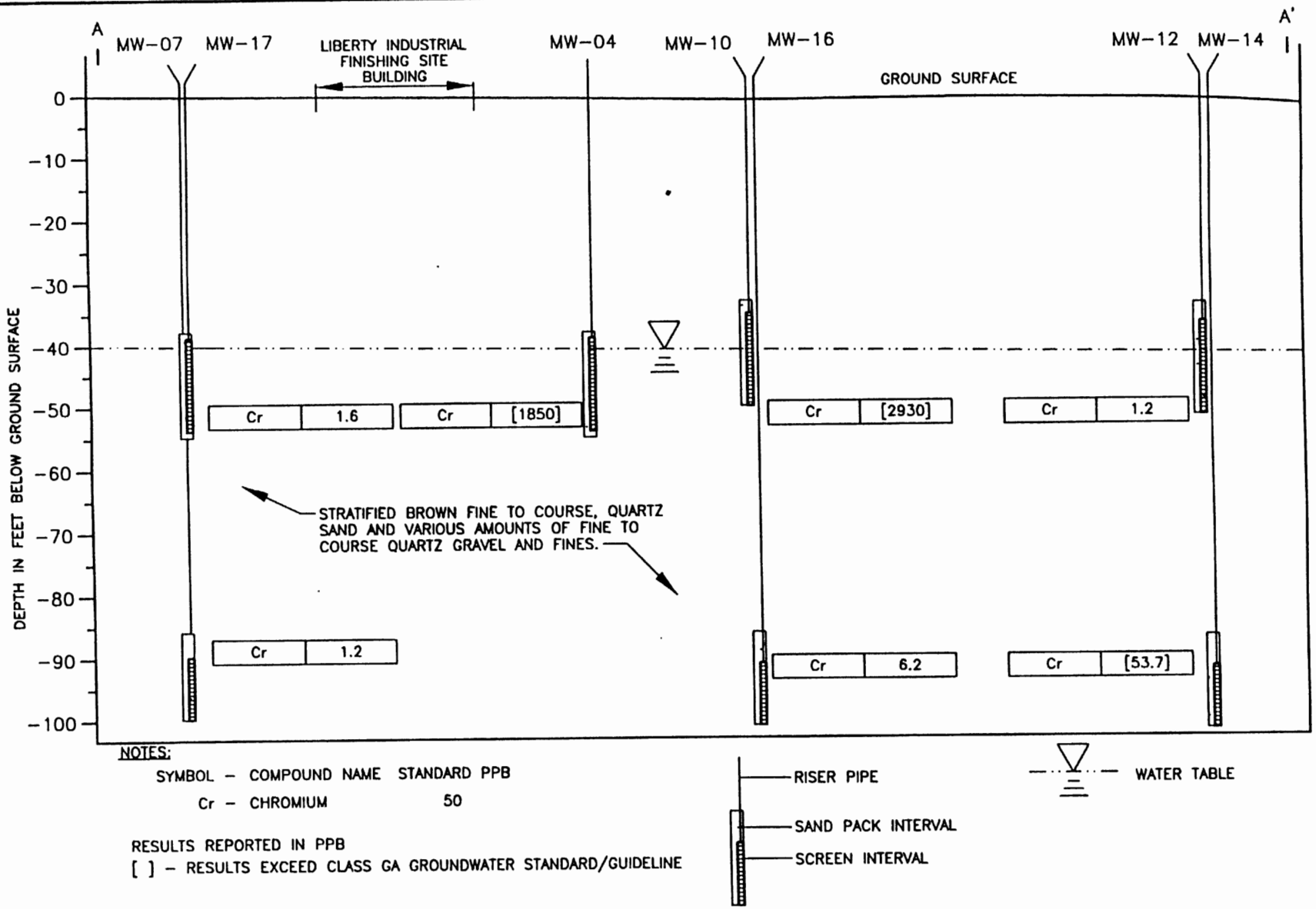
FIGURE 8

FILE: 1482-26A (RH/1-26-99)



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

CHROMIUM CONTAMINATION CROSS-SECTION

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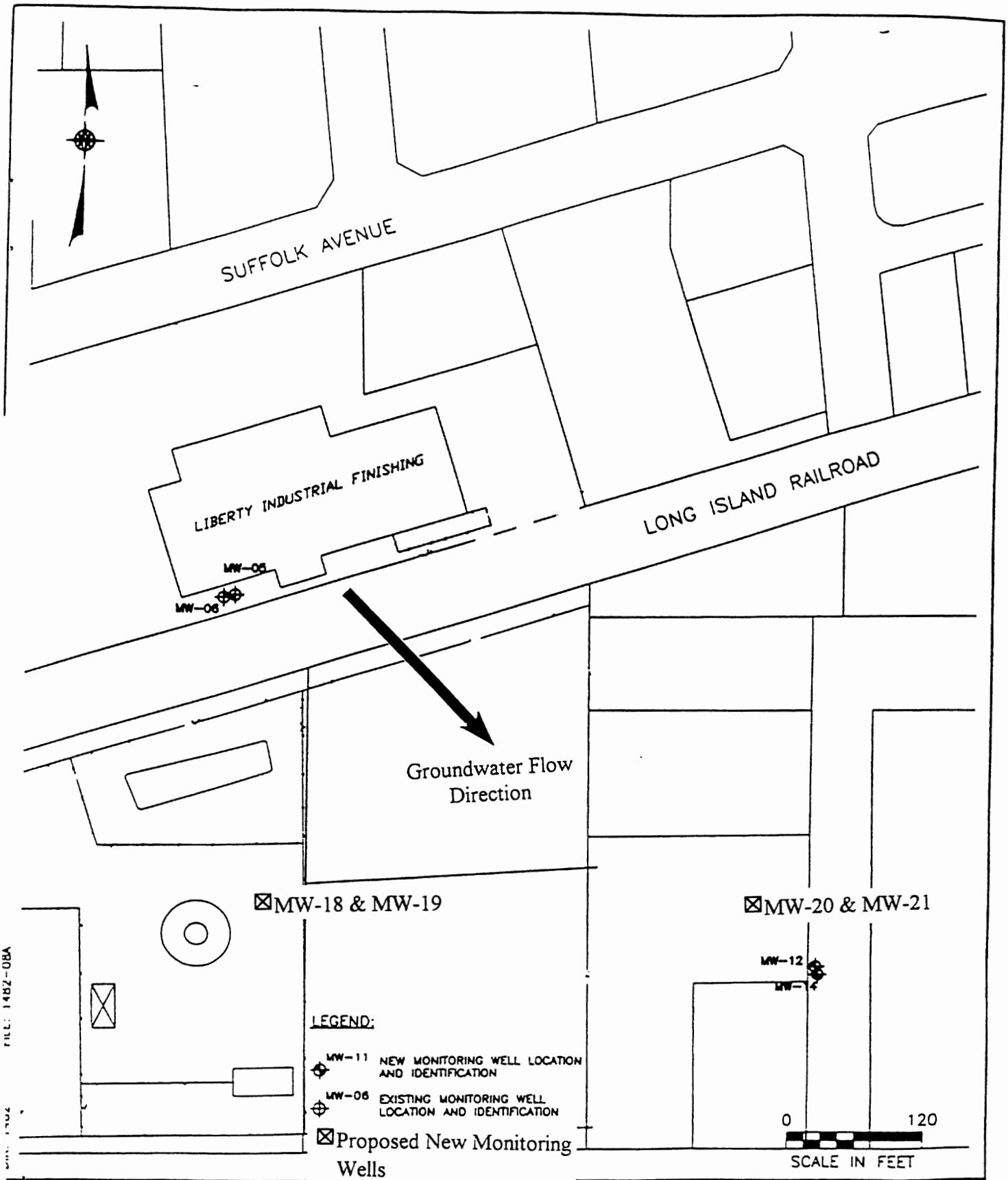
FIGURE 9



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
			Athletic Field*		Water District*				
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 Soil Cleanup Objectives (mg/kg)
SAMPLE ID	S-07	S-03	S-13	S-14	S-15	
SAMPLE DEPTH	0-2"	0-2"	0-2"	0-2"	0-2"	
DATE OF COLLECTION	12/19/97	12/19/97	12/19/97	12/19/97	12/19/97	
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 polyaromatic 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

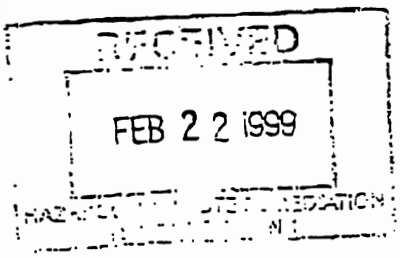
PAUL HARENBERG
Assemblyman 5th District
Room 724
Legislative Office Building
Albany, New York 12248
(518) 455-5937

1217-2 Montauk Highway
Oakdale, 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

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

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's[1], 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 wager 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."

Email: bbbcc@worldnet.att.net
Web page: http://home.att.net/~bbbcc
Phone and Fax: 516-273-9252

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

AECOM	*Client: NYSDEC*	***WELL ID: MW-1R***
	Project Number: 60277021	
	Site Location: Liberty	*Date Installed: 10-22-2019*
	Well Location: Former MW-1 *Coords:*	*Inspector: S.Wright*
	Method: Hollow Stem Auger	*Contractor: PWI*

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum _____
Top of Steel Guard Pipe	0	
Top of Riser Pipe	0.5	
Ground Surface (G.S.)	0.0	
Riser Pipe:		
Length 45'		
Inside Diameter (ID) 2"		
Type of Material PVC		
Bottom of Steel Guard Pipe	1'	
Top of Bentonite	41'	
Bentonite Seal Thickness 2'		
Top of Sand	43'	
Top of Screen	45'	
▲ Stabilized Water Level	44'	
Screen:		
Length 10'		
Inside Diameter (ID) 2"		
Slot Size 0.01		
Type of Material PVC		
Type/Size of Sand #0		
Sand Pack Thickness 12'		
Bottom of Screen	55'	
Bottom of Tail Pipe:	55'	
Bottom of Borehole	55'	

Measuring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

100 % Cement

% Bentonite

% Native Materials

Borehole Diameter: 55'

Approved:

Describe Measuring Point:

Signature

Date

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 1 OF 2
LOCATION Brentwood N.Y.
HOLE NO. MW-5
LINE & STA. _____
OFFSET _____

DEPTH _____ FT. ___ FT. CASING OUT DATE: _____
DEPTH _____ FT. ALL CASING OUT DATE: _____
DATE, START: _____
DATE, FINISH: _____
GROUND ELEVATION _____
GROUND WATER ELEVATION 45'

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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0										
10										
20										
30										
40										

Soils Engineer: _____
Drilling Inspector: _____
Driller: Reynolds Bridgpal
Helper: _____

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 2 OF 2
LOCATION Brentwood N.Y.
HOLE NO. MW-5
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____
DATE, START: ____
DATE, FINISH: ____
GROUND ELEVATION ____
GROUND WATER ELEVATION. 45'

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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0										
40		1	40'-42'		5-	18-	41-33			
		2	42'-44'		18-	26-	49-63			
		3	44'-46'		24-	26-	33-35			
		4	46'-48'		12-	15-	18-19			
10		5	48'-50'		12-	16-	32-48			
50		6	50'-52'		6-	8-	16-38			
		7	52'-54'		5-	5-	8-26			
		8	54'-56'		7-	12-	20-46			
		9	56'-58'		WOR/12"	11-	21		0'-58'	Brown fine medium Sand, Gravel
20										
60										
30										
70										
40										
80										

Soils Engineer: ____ Driller: Reynolds Bridgeal

Drilling Inspector: ____ Helper: ____

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 1 OF 8
LOCATION Brentwood N.Y.
HOLE NO. MW-6
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/8/87
DATE, FINISH: 4/17/87

GROUND ELEVATION
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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0		1	0'-2'		2-	1-	1-1			
		2	5'-7'		9-	13-	13-9		0'-10'	Light brown medium to coars e Sand, cobbles, some medium Gravel
10		3	10'-12'		10-	20-	31-39			
		4	15'-17'		18-	30-	42-44			
20		5	20'-22'		11-	22-	25-22		10'-28'	Light brown edium to coarse Sand, medium Gravel
		6	25'-27'		21-	26-	36-39			
30		7	30'-32'		22-	36-	41-36		28'-35'	Light brown medium to coarse Sand, some Cobbles
		8	35'-37'		30-	38-	46-54			
40										

Soils Engineer: ____ Driller: Victor Aimar
Drilling Inspector: ____ Helper: Don McMahon

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 2 OF 8
LOCATION Brentwood N.Y.
HOLE NO. MW-6
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/8/87
DATE, FINISH: 4/17/87

GROUND ELEVATION ____
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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0										
40		9	40'-42'		27-	39-	38-32			
		10	45'-47'		29-	26-	52-52			
10										
50		11	50'-52'		17-	27-	28-39			
		12	55'-57'		25-	30-	32-19		35'-60'	Brown medium to coarse Sand, Cobbles some Gravel
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			
40										
80										

Soils Engineer: ____ Driller: Victor Aimar
Drilling Inspector: ____ Helper: Don McMahon

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: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/8/87
DATE, FINISH: 4/17/87

GROUND ELEVATION ____
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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0										
80		17	80'-82'		22-	21-	23-25			Brown medium to coarse Sa nd, some Gravel
									60'-85'	
		18	85'-87'		23-	25-	35-32			Brown medium to coarse Sand, Cobbles
10									85'-90'	
90		19	90'-92'		36-	35-	47-47			
		20	95'-97'		32-	50-	68-66			
20										
100		21	100'-102'		20-	21-	18-23			
		22	105'-107'		38-	42-	48-57			
30										
110		23	110'-112'		23-	31-	50-50			
		24	115'-117'		38-	42-	58-57			
40										
120										

Soils Engineer: ____ Driller: Victor Aimar
Drilling Inspector: ____ Helper: Don McMahon

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 4 OF 8
LOCATION Brentwood N.Y.
HOLE NO. MW-6
LINE & STA. _____
OFFSET _____

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

DATE, START: 4/8/87
DATE, FINISH: 4/17/87

GROUND ELEVATION _____
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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0										
120		25	120'-122'		31-	40-	34-30			
		26	125'-126'6"		25-	73-	80		90'-130'	Brown mediumto coarse Sand, some Cobbles
10 130		27	130'-132'		27-	51-	62-67		130'-135'	Light brown medium to fine Sand, trace Silt
		28	135'-137'		35-	43-	63-68			
20 140		29	140'-141'5"		61-	98-	100/5"		135'-145'	Light brown medium to coarse Sand, some Gravel
		30	145'-147'		35-	54-	54-48		145'-150'	Light brown medium to coarse Sand, little Silt, little fine Gravel
30 150		31	150'-152'		38-	40-	34-60			
		32	155'-156'6"		40-	77-	74			
40 160										

Soils Engineer: _____ Driller: Victor Aimar

Drilling Inspector: _____ Helper: don McMahon

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 5 OF 8
LOCATION Brentwood N.Y.
HOLE NO. MW-6
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/8/87
DATE, FINISH: 4/17/87

GROUND ELEVATION ____
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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0 / 160		33	160'-162'		45-	48-	68-62			
		34	165'-166'6"		38-	44-	84			
10 / 170		35	170'-171'6"		35-	78-	90			
		36	175'-175'11"		76-	100/5"				
20 / 180		37	180'-182'		34-	53-	62-67		150'-185'	Brown yellow medium to fine Sand, little Silt, little Clay
		38	185'-186'6"		40-	82-	86			
30 / 190		39	190'-192'		28-	35-	50-73			
		40	195'-197'		30-	53-	54-60		185'-200'	Brown with medium to fine Sand, little Clay
40 / 200										

Soils Engineer: ____ Driller: Victor Aimar

Drilling Inspector: ____ Helper: Don McMahon

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 6 OF 6
LOCATION Brentwood N.Y.
HOLE NO. MW-6
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/8/87
DATE, FINISH: 4/17/87

GROUND ELEVATION
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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
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: Victor Aimar

Drilling Inspector: ____ Helper: Don McMahon

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 7 OF 8
LOCATION ~~Brentwood N.Y.~~
HOLE NO. MW-6
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/8/87
DATE, FINISH: 4/17/87

GROUND ELEVATION ____
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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
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		200'-270'	Brown gray medium to fine Sand, some Clay some Silt
30 270		55	270'-272'		34	36	46-47			
		56	275'-277'		16	31	31-36		270'-278'	Light gray Clay, little medium fine Sand
40 280		57	280'-280'10"		54	100/4"				

Soils Engineer: ____ Driller: Victor Aimar
Drilling Inspector: ____ Helper: Don McMahon

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 8 OF 8
LOCATION Brentwood N.Y.
HOLE NO. MW-6
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/8/87
DATE, FINISH: 4/8/87

GROUND ELEVATION
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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0 / 280										
		58	285'-286'6"		31-	60-	94			
10 / 290										
		59	290'-292'		34-	50-	63-75			
		60	295'-296'6"		30-	58-	81			
		61	298'-299'6"		36-	66-	96		278'-299'6"	Gray black Clay, little Silt
20 / 300										
30 / 310										
40 / 320										

Soils Engineer: ____ Driller: Victor Aimar
Drilling Inspector: ____ Helper: Don McMahon

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 1 OF 2
LOCATION Brentwood N.Y.
HOLE NO. MW-7
LINE & STA. _____
OFFSET _____

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

DATE, START: 4/20/87
DATE, FINISH: 4/20/87

GROUND ELEVATION _____
GROUND WATER ELEVATION 45'

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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
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: Reynolds Bridgpal

Drilling Inspector: _____ Helper: _____

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 2 OF 2
LOCATION Brentwood N.Y.
HOLE NO. MW-7
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/20/87
DATE, FINISH: 4/20/87

GROUND ELEVATION
GROUND WATER ELEVATION 45'

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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0										
40		9	40'-42'		45-	49-	46-47			
		10	45'-47'		30-	38-	40-27			
10 50		11	50'-52'		8-	18-	24-24			
		12	55'-57'		13-	9-	10-6		0'-57'	Brown fine medium Sand, Gravel
20 60										
30 70										
40 80										

Soils Engineer: ____ Driller: Reynolds Bridgpal

Drilling Inspector: ____ Helper: ____

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 1 OF 2
LOCATION Brentwood N.Y.
HOLE NO. MW-8
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/23/87
DATE, FINISH: 4/23/87

GROUND ELEVATION
GROUND WATER ELEVATION 45'

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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
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: Reynolds Bridgpal
Drilling Inspector: ____ Helper: ____

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 2 OF 2
LOCATION Brentwood N.Y.
HOLE NO. MW-8
LINE & STA.
OFFSET

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____

DATE, START: 4/23/87
DATE, FINISH: 4/23/87

GROUND ELEVATION ____
GROUND WATER ELEVATION 45'

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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0										
40		9	40'-42'		12-	21-	22-26			
		10	45'-47'		16-	27-	33-49			
10										
50		11	50'-52'		6-	16-	32-57			
										Brown fine medium Sand, Gravel
		12	55'-57'		WOR/12"-	5-13			0'-57'	
20										
60										
30										
70										
40										
80										

Soils Engineer: ____ Driller: Reynolds Bridgpal

Drilling Inspector: ____ Helper: ____

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 1
LOCATION Bren
HOLE NO. M
LINE & STA. _
OFFSET _____

DEPTH _____ FT. ___ FT. CASING OUT DATE: _____
DEPTH _____ FT. ALL CASING OUT DATE: _____
DATE, START: _____
DATE, FINISH: _____
GROUND ELEVATION
GROUND WATER ELI

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.
HAM
CASING 24"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICA OF SOILS REMARKS
0		1	0'-2'		4-	4-	4-2			
		2	5'-7'		10-	16-	24-37			
10		3	10'-12'		39-	87-	70-44			
		4	15'-17'		13-	18-	29-35			
20		5	20'-22'		11-	14-	33-26			
		6	25'-27'		8-	16-	32-27			
30		7	30'-32'		11-	19-	24-26			
		8	35'-37'		16-	16-	38-42			
40										

Soils Engineer: _____ Driller: Reynolds Bridgpal
Drilling Inspector: _____ Helper: _____

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 2 OF 2
LOCATION Brentwood N.Y.
HOLE NO. MW-9
LINE & STA. ____
OFFSET ____

DEPTH ____ FT. ____ FT. CASING OUT DATE: ____
DEPTH ____ FT. ALL CASING OUT DATE: ____
DATE, START: ____
DATE, FINISH: ____
GROUND ELEVATION ____
GROUND WATER ELEVATION 45'

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 BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	SAMPLE DEPTHS ELEV. / FEET	SAMPLE RECOVERY	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	DENSITY OR CONSIST. MOISTURE	PROFILE CHANGE DEPTH	FIELD IDENTIFICATION OF SOILS REMARKS
0										
40		9	40'-42'		25-	32-	36-24			
		10	45'-47'		20-	23-	24-15			
		11	47'-49'		19-	24-	40-62			
10										
50		12	49'-51'		4-	4-	6-9			
		13	51'-53'		3-	4-	5-8			
		14	53'-55'		2-	3-	5-7			Brown fine medium Sand, Gravel
		15	55'-57'		2-	2-	5-8		0'-57'	
20										
60										
30										
70										
40										
80										

Soils Engineer: ____ Driller: Reynolds Bridgpal
Drilling Inspector: ____ Helper: ____

H2M GEOLOGIC LOG JOB NO. LIBT

WELL DATA: HOLE DIAM.: 6¼ TD 52' SCREEN SETTING: _____ SLOT .10
CASING DIAM. 4" LENGTH 50' WELL STATUS COMPLETE

Borehole Location: MW-10
Contractor: Nfenly + Nichol
Driller: Steven Muller
Elevation: _____ Ref Point: _____

Completion Depth: 50'
Date Started: 10/1/91 Finished: 10/1/91
Weather: SUNNY + Cool Mid 50's
Logged by: M.N. Gentile Checked by: _____

Type of Rig: Truck X 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 Glacial

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. Gentile DATE: 10/1/91

PAGE 2 of 2 H2M GEOLOGIC LOG (CONTINUED) JOB NO. L18T

Borehole Location: MW-10 Completion Depth: 50'
Elevation: _____ Ref Point: _____ Logged by: M.N. Gentile Checked by: _____

Depth to Groundwater: 31.5 Date: 10/1/91 Time: 0910 Aquifer: UPPER GLACIAL

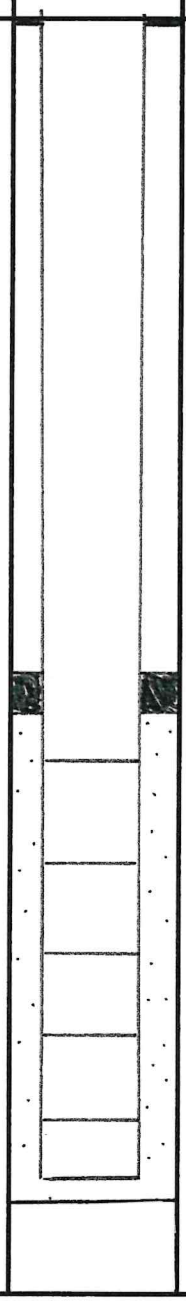
Sample Depth	Sampl No.	Blows 6"	Hnu Res	Recov (in)	Sample Description	Lithology
40'	1	22-20	After	18"	MEDIUM DENSE; TAN BROWN; COARSE	▼ - WATER TABLE
41'		27-25	Heating		TO FINE SANDS; TRACE FINE	SW
42'			<1		GRAVEL; SATURATED + WELL GRADED	
43'			PPM			
44'						
45'	2	11-10	<1	20"	MEDIUM DENSE; BROWNISH; MEDIUM	
46'		12-13	(HEATED)		TO FINE GRAVELLY SANDS;	SW
47'					WELL GRADED; SATURATED	
48'						
49'						
50'	3	13-12	<1	21"	MEDIUM DENSE; BROWNISH; FINE	SET SCREEN AT 50'
51'		11-14	(HEATED)		GRAVELLY SANDS; POORLY	
52'					GRADED; SATURATED	SP
53'						
54'						
55'						
56'						
57'						
58'						

SIGNATURE: Michael N. Gentile DATE: 10/1/91

FPM GROUP
Bohemia, NY

MAP

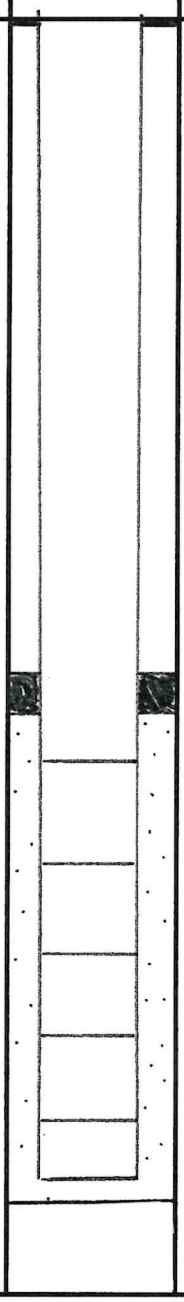
PROJECT NAME	550 Liberty Plaza, LLC	FPM JOB #			
SITE ADDRESS	550 Suffolk Ave				
BORING/WELL	MW-2A	TOTAL DEPTH	55	DIAMETER	2"
TOC ELEVATION		WATER LEVEL INITIAL		STATIC	
SCREEN DIA.	2"	LENGTH	20'	SLOT SIZE	20
CASING DIA.	2"	LENGTH	35'	TYPE	Schedule 40
DRILLING CO.	AARCO	DRILLING METHOD		Sonic	
DRILLER	Dan	LOG BY	CD	DATE DRILLED	4/18/23

DEPTH (FT)	SAMPLE	OVA/PID (PPM)	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (INTERVAL, RECOVERY, COLOR, MATRIX TYPE, MOISTURE CONTENT, COMMENTS)
4					6" manhole flush mount
8					0.5-1' bentonite grout
12					1-31' back filled with cuttings
16					31-33' bentonite grout
20					33-56' #2 Sand
24					0.5-35 2" Schedule 40 PVC
28					35-55 20 slot schedule 40 PVC
32					
36					
40					
44					
48					
52					
56					
60					

FPM GROUP
Bohemia, NY

MAP

PROJECT NAME	550 Liberty Plaza, LLC	FPM JOB #			
SITE ADDRESS	550 Suffolk Ave				
BORING/WELL	MW-3A	TOTAL DEPTH	55	DIAMETER	2"
TOC ELEVATION		WATER LEVEL INITIAL		STATIC	
SCREEN DIA.	2"	LENGTH	20'	SLOT SIZE	20
CASING DIA.	2"	LENGTH	35'	TYPE	Schedule 40
DRILLING CO.	AARCO	DRILLING METHOD			Sonic
DRILLER	Dan	LOG BY	CD	DATE DRILLED	4/18/23

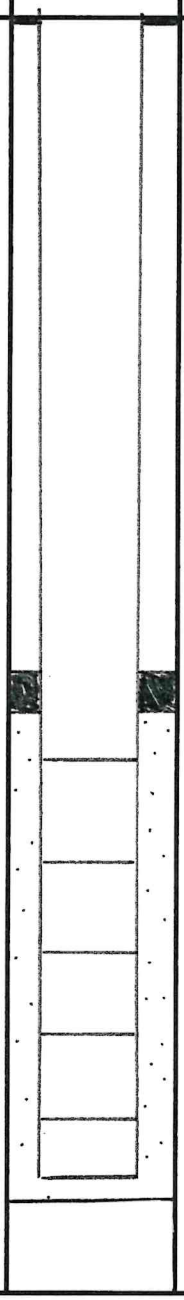
DEPTH (FT)	SAMPLE	OVA/PID (PPM)	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (INTERVAL, RECOVERY, COLOR, MATRIX TYPE, MOISTURE CONTENT, COMMENTS)
4					6" manhole flush mount
8					0.5-1' bentonite grout
12					1-31' back filled with cuttings
16					31-33' bentonite grout
20					33-56' #2 Sand
24					0.5-35 2" Schedule 40 PVC
28					35-55 20 slot schedule 40 PVC
32					
36					
40					
44					
48					
52					
56					
60					

FPM GROUP

Bohemia, NY

MAP

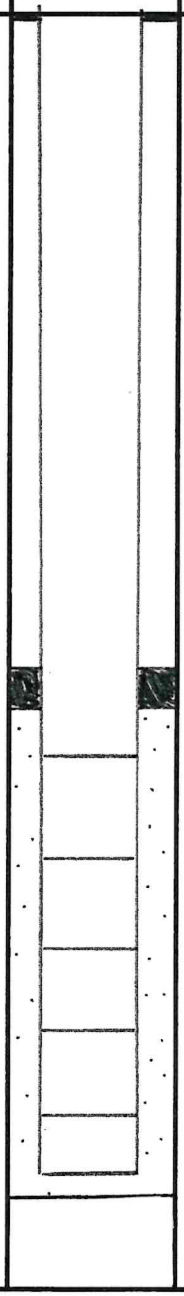
PROJECT NAME	550 Liberty Plaza, LLC	FPM JOB #			
SITE ADDRESS	550 Suffolk Ave				
BORING/WELL	MW-4A	TOTAL DEPTH	55	DIAMETER	2"
TOC ELEVATION		WATER LEVEL INITIAL		STATIC	
SCREEN DIA.	2"	LENGTH	20'	SLOT SIZE	20
CASING DIA.	2"	LENGTH	35'	TYPE	Schedule 40
DRILLING CO.	AARCO	DRILLING METHOD			Sonic
DRILLER	Dan	LOG BY	CD	DATE DRILLED	4/19/23

DEPTH (FT)	SAMPLE	OVA/PID (PPM)	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (INTERVAL, RECOVERY, COLOR, MATRIX TYPE, MOISTURE CONTENT, COMMENTS)
4					6" manhole flush mount
8					0.5-1' bentonite grout
12					1-31' back filled with cuttings
16					31-33' bentonite grout
20					33-56' #2 Sand
24					0.5-35 2" Schedule 40 PVC
28					35-55 20 slot schedule 40 PVC
32					
36					
40					
44					
48					
52					
56					
60					

FPM GROUP
Bohemia, NY

MAP

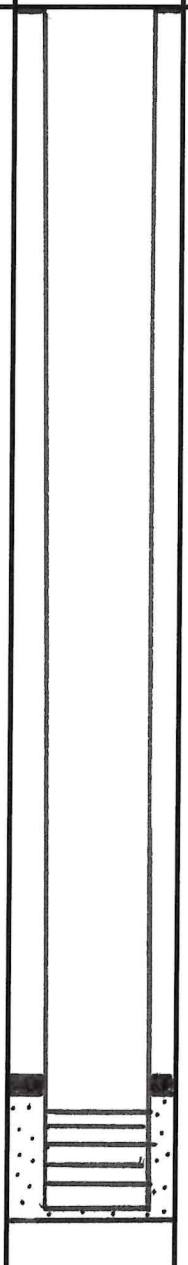
PROJECT NAME	550 Liberty Plaza, LLC		FPM JOB #		
SITE ADDRESS	550 Suffolk Ave				
BORING/WELL	MW-7A	TOTAL DEPTH	55	DIAMETER	2"
TOC ELEVATION		WATER LEVEL INITIAL		STATIC	
SCREEN DIA.	2"	LENGTH	20'	SLOT SIZE	20
CASING DIA.	2"	LENGTH	35'	TYPE	Schedule 40
DRILLING CO.	AARCO	DRILLING METHOD		Sonic	
DRILLER	Dan	LOG BY	CD	DATE DRILLED	4/17/23

DEPTH (FT)	SAMPLE	OVA/PID (PPM)	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (INTERVAL, RECOVERY, COLOR, MATRIX TYPE, MOISTURE CONTENT, COMMENTS)
4					6" manhole flush mount 0.5-1' bentonite grout 1-31' back filled with cuttings 31-33' bentonite grout 33-56' #2 Sand 0.5-35 2" Schedule 40 PVC 35-55 20 slot schedule 40 PVC
8					
12					
16					
20					
24					
28					
32					
36					
40					
44					
48					
52					
56					
60					

FPM GROUP
Bohemia, NY

MAP

PROJECT NAME	550 Liberty Plaza, LLC	FPM JOB #			
SITE ADDRESS	550 Suffolk Ave				
BORING/WELL	MW-17A	TOTAL DEPTH	100	DIAMETER	2"
TOC ELEVATION		WATER LEVEL INITIAL		STATIC	
SCREEN DIA.	2"	LENGTH	10'	SLOT SIZE	20
CASING DIA.	2"	LENGTH	90'	TYPE	Schedule 40
DRILLING CO.	AARCO	DRILLING METHOD		Sonic	
DRILLER	Dan	LOG BY	CD	DATE DRILLED	4/17/23

DEPTH (FT)	SAMPLE	OVA/PID (PPM)	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (INTERVAL, RECOVERY, COLOR, MATRIX TYPE, MOISTURE CONTENT, COMMENTS)
7					6" manhole flush mount 0.6-1' bentonite grout 1-86' back filled with cuttings 86-84' bentonite grout 84-101' #2 Sand 0.5-90' 2" Schedule 40 PVC 90-100' 2" 20 slot Schedule 40 PVC
14					
21					
28					
35					
42					
49					
56					
63					
70					
77					
84					
91					
98					
105					

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 if it becomes available.

MW-2

MW-3

MW-4

MW-12

MW-14

MW-17

MW-18

MW-19

MW-20

MW-21

Appendix C

March 2017 NYSDEC Public Notice: Re-Classification from Class 2 to Class 4

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

PUBLIC NOTICE

State Superfund Program

Receive Site Information by Email. See next page to Learn How.

Site Name: Liberty Industrial Finishing Products **March, 2017**
Site No.: 152108 **Tax Map No.:** 500-136-3-9, 500-136-3-11.6, 500-136-3-10.2
Site Location: 500 Suffolk Avenue, Brentwood, NY 11717

Inactive Hazardous Waste Disposal Site Classification Notice

The Inactive Hazardous Waste Disposal Site Program (the State Superfund Program) is the State's program for identifying, investigating, and cleaning up sites where the disposal of hazardous waste may present a threat to public health and/or the environment. The New York State Department of Environmental Conservation (DEC) maintains a list of these sites in the Registry of Inactive Hazardous Waste Disposal Sites (Registry). The site identified above, and located on the attached map, has been reclassified on the Registry as a Class 4 site as it no longer presents a significant threat to public health and/or the environment for the following reason(s):

Human exposures with residual contamination at the site are being addressed through the implementation of a Site Management Plan which includes an environmental notice that limits the use and development of the site to industrial use and prohibits the use of groundwater at the site as a source of potable or process water without prior approval. Compliance with the approved Site Management Plan and periodic certification by the property owner to the New York State Department of Environmental Conservation will ensure that the institutional and engineering controls remain effective.

If you own property adjacent to this site and are renting or leasing your property to someone else, please share this information with them. If you no longer wish to be on the contact list for this site or otherwise need to correct our records, please contact DEC's Project Manager listed below.

FOR MORE SITE INFORMATION

Additional information about this site can be found using DEC's "Environmental Site Remediation Database Search" engine which is located on the internet at:
www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=3

Comments and questions are always welcome and should be directed as follows:

Project Related Questions
Payson Long, Project Manager
NYS Department of Environmental Conservation
DER – Remedial Bureau E
625 Broadway
Albany, New York 12233-7017
Payson.long@dec.ny.gov
518-402-9813

DEC is sending you this notice in accordance with Environmental Conservation Law Article 27, Title 13 and its companion regulation (6 NYCRR 375-2.7(b)(6)(ii)) which requires DEC to notify all parties on the contact list for this site of this recent action.

Approximate Site Location
Liberty Industrial Finishing Products
SITE ID 152108
500 Suffolk Avenue, Brentwood, NY 11717

Receive Site Updates by Email
Have site information such as this public notice sent right to your email inbox. DEC invites you to sign up with one or more contaminated sites county email listservs available at the following web page: www.dec.ny.gov/chemical/61092.html . It's *quick*, it's *free*, and it will help keep you *better informed*.

As a listserv member, you will periodically receive site-related information/announcements for all contaminated sites in the county(ies) you select.

Note: Please disregard if you received this notice by way of a county email listserv.

Appendix D

Environmental Easement

CERTILMAN BALIN
ATTORNEYS

90 MERRICK AVENUE, 9TH FLOOR
EAST MEADOW, NY 11554
PHONE: 516.296.7000 • FAX: 516.296.7111
www.certilmanbalin.com

BARRY S. COHEN
PARTNER
DIRECT DIAL 516.296.7044
bcohen@certilmanbalin.com

January 4, 2022

Via Certified Mail/
Return Receipt Requested
and E-Mail

Bradford D. Burns, Senior Attorney
NYS Dept of Environmental Conservation
Office of General Counsel
625 Broadway, 14th Floor
Albany, NY 12233-1500

Re: Site No. 152108
Site Name: Former Liberty Industrial Finishing Products
500-550 Suffolk Avenue, Brentwood, New York

Dear Mr. Burns:

Attached please find proof that the Environmental Easement for the above-referenced Site was recorded with the Suffolk County Clerk's Office, and that the required Municipal Notice was provided to the Town of Islip.

Sincerely,

Barry S. Cohen

BSC/gnm
Attachments

CERTILMANBALIN

90 MERRICK AVENUE, 9TH FLOOR
EAST MEADOW, NY 11554
PHONE: 516.296.7000 • FAX: 516.296.7111
www.certilmanbalin.com

BARRY S. COHEN
PARTNER
DIRECT DIAL 516.296.7044
bcohen@certilmanbalin.com

January 3, 2022

Via Certified Mail
Town of Islip
Supervisor's Office
655 Main Street
Islip, New York 11751
Attention: Ms. Angie M. Carpenter, Supervisor

Re: Environmental Easement

Dear Ms. Carpenter:

Attached please find a copy of an environmental easement granted to the New York State Department of Environmental Conservation ("Department") on December 13, 2021, by 550 Liberty Plaza LLC, for property at 500-550 Suffolk Avenue, Brentwood, New York Tax Map No. 0500.136.00.03.00.009.00 & 011.006 DEC Site No: 1-52-108.

This Environmental Easement restricts future use of the above-referenced property to industrial uses. Any on-site activity must be done in accordance with the Environmental Easement and the Site Management Plan which is incorporated into the Environmental Easement. Department approval is also required prior to any groundwater use.

Article 71, Section 71-3607 of the New York State Environmental Conservation Law requires that:

> 1. Whenever the department is granted an environmental easement, it shall provide each affected local government with a copy of such easement and shall also provide a copy of any documents modifying or terminating such environmental easement.
>
> 2. Whenever an affected local government receives an application for a building permit or any other application affecting land use or development of land that is subject to an environmental easement and that may relate to or impact such easement, the affected local government shall notify the department and refer such application to the department. The department shall evaluate whether the application is consistent with the environmental easement and shall notify the affected local government of its determination in a timely fashion, considering the time frame for the local government's review of the application. The affected local government shall not approve the application until it receives approval from the department.

An electronic version of every environmental easement that has been accepted by the Department is available to the public at: http://www.dec.ny.gov/chemical/36045.html. Please forward this notice to your building and/or planning departments, as applicable, to ensure your compliance with these provisions of New York State Environmental Conservation Law. If you have any questions or comments regarding this matter, please do not hesitate to contact me.

Very truly yours,

CERTILMAN BALIN ADLER & HYMAN, LLP

Barry S. Cohen
Title: Partner

BSC/gnm
Enclosures

U.S. Postal Service®
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

USPS® ARTICLE NUMBER

9414 7266 9904 2149 0298 55

Certified Mail Fee	$	~~3.50~~ 3.75
Return Receipt (Hardcopy)	$	~~2.80~~ 3.55
Return Receipt (Electronic)	$	0.00
Certified Mail Restricted Delivery	$	0.00
Postage	$	~~0.50~~ 1.13
Total Postage and Fees	$	~~6.80~~

Postmark Here

HAUPPAUGE, NY 11801 JAN 3 2022 USPS

Sent to: Angie M. Carpenter, Supervisor
Town of Islip
Supervisor's Office
655 Main Street
Islip, NY 11751

Reference Information

G. McDermott
13333.0001

PS Form 3800, Facsimile, July 2015

CC # : C21-35290

COUNTY CLERK'S OFFICE

STATE OF NEW YORK
COUNTY OF SUFFOLK

I, JUDITH A. PASCALE, Clerk of the County of Suffolk and the Court of Record thereof do hereby certify that I have compared the annexed with the original **EASEMENT**

recorded in my office on **12/21/2021** under Liber **D00013135** and Page **013** and, that the same is a true copy thereof, and of the whole of such original.

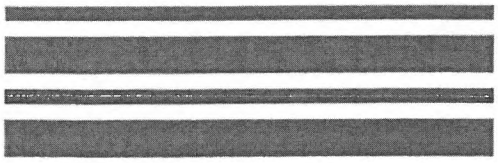
In Testimony Whereof, I have hereunto set my hand and affixed the seal of said County and Court this **12/21/2021** .

SUFFOLK COUNTY CLERK

Judith A. Pascale

JUDITH A. PASCALE

SEAL



SUFFOLK COUNTY CLERK
RECORDS OFFICE
RECORDING PAGE

Type of Instrument: EASEMENT
Number of Pages: 10
Receipt Number : 21-0216009
TRANSFER TAX NUMBER: 21-17277

Recorded: 12/21/2021
At: 02:21:08 PM

LIBER: D00013135
PAGE: 013

District:	Section:	Block:	Lot:
0500	136.00	03.00	009.000

EXAMINED AND CHARGED AS FOLLOWS

Deed Amount: $0.00

Received the Following Fees For Above Instrument

		Exempt			Exempt
Page/Filing	$50.00	NO	Handling	$20.00	NO
COE	$5.00	NO	NYS SRCHG	$15.00	NO
TP-584	$5.00	NO	Notation	$0.00	NO
Cert.Copies	$12.50	NO	RPT	$400.00	NO
Transfer tax	$0.00	NO			
			Fees Paid	$507.50	

TRANSFER TAX NUMBER: 21-17277

THIS PAGE IS A PART OF THE INSTRUMENT
THIS IS NOT A BILL

JUDITH A. PASCALE
County Clerk, Suffolk County

1 | 2

Number of pages 10

This document will be public record. Please remove all Social Security Numbers prior to recording.

RECORDED
2021 Dec 21 02:21:08 PM
JUDITH A. PASCALE
CLERK OF
SUFFOLK COUNTY
L D00013135
P 013
DT# 21-17277

Deed / Mortgage Instrument	Deed / Mortgage Tax Stamp	Recording / Filing Stamps

3 FEES

Page / Filing Fee	50-	Mortgage Amt.	
Handling	20. 00	1. Basic Tax	
TP-584	5-	2. Additional Tax	
Notation		Sub Total	
EA-52 17 (County)		Sub Total 75-	Spec./Assit. or Spec. /Add.
EA-5217(State)			TOT. MTG. TAX
R.P.T.S.A. +1	400		Dual Town ____ Dual County ____ Held for Appointment ____
Comm. of Ed.	5. 00		Transfer Tax
Affidavit			Mansion Tax
Certified Copy	12 50		
NYS Surcharge	15. 00	Sub Total 432.50	
Other		Grand Total 507.50	

The property covered by this mortgage is or will be improved by a one or two family dwelling only.

YES ____ or NO ____

If NO, see appropriate tax clause on page # ____ of this instrument.

12.13.21

4 Dist. 0500 | 4719482

Real Property Tax Service Agency Verification

PTS RAK A 21-DEC-21

See Attached

5 Community Preservation Fund

Consideration Amount $ 0

CPF Tax Due $ ____

Improved ____
Vacant Land ____
TD ____
TD ____
TD ____

6 Satisfactions/Discharges/Releases List Property Owners Mailing Address
RECORD & RETURN TO:

CERTILMAN BALIN ADLER & HYMAN, LLP
ATTN: BARRY S. COHEN, ESQ.
90 MERRICK AVENUE
EAST MEADOW, NEW YORK 11554

Mail to: Judith A. Pascale, Suffolk County Clerk
310 Center Drive, Riverhead, NY 11901
www.suffolkcountyny.gov/clerk

7 Title Company Information

Co. Name

Title #

8 Suffolk County Recording & Endorsement Page

This page forms part of the attached Environmental Easement made by:
(SPECIFY TYPE OF INSTRUMENT)

550 LIBERTY PLAZA LLC

TO

PEOPLE OF THE STATE OF NEW YORK

The premises herein is situated in SUFFOLK COUNTY, NEW YORK.

In the TOWN of ISLIP

In the VILLAGE or HAMLET of BRENTWOOD

BOXES 5 THRU 8 MUST BE TYPED OR PRINTED IN BLACK INK ONLY PRIOR TO RECORDING OR FILING.

(over)

Stat ID: 4719482

Tax Maps

District	Secton	Block	Lot	School District
0500	13600	0300	009000	
0500	13600	0300	011006	

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 13th day of December, 2021 between Owner, 550 Liberty Plaza LLC, having an office at 45 Cuttermill Road, Suite 1, Great Neck, New York 11021, County of Nassau, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 500 and 550 Suffolk Avenue in the Hamlet of Brentwood, County of Suffolk and State of New York, known and designated on the tax map of the County Clerk of Suffolk as tax map parcel numbers: District 0500 Section 136.00 Block 03.00 Lots 009.000 and 011.006, being a portion of the property conveyed to Grantor by deed dated March 7, 2018 and recorded in the Suffolk County Clerk's Office in Liber and Page 12964/ 862 and by correction deed dated December 16, 2019 and filed in the Suffolk County Clerk's Office in Liber and Page 13053/471 The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 3.89 +/- acres, and is hereinafter more fully described in the Land Title Survey dated September 20, 2016 prepared by Russell H. Lewis, L.L.S. of Russell H. Lewis Co., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation

established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: CO 1-20171127-270, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Suffolk County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining

contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation

Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: 152108
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

550 Liberty Plaza LLC:

By: ______________________

Print Name: Aaron Daniels
Authorized Signatory

Title: Member Date: 12/1/2021

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Nassau)

On the 1st day of December, in the year 2021, before me, the undersigned, personally appeared Aaron Daniels, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public - State of New York

CRISTINA MENDEZ
STATE OF NEW YORK
NOTARY PUBLIC
COMMISSION EXPIRES 2/1/2024

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting by and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: Susan Edwards
Susan Edwards, Acting Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 13th day of December, in the year 2021, before me, the undersigned, personally appeared Susan Edwards, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Jennifer Andaloro
Notary Public - State of New York

JENNIFER ANDALORO
Notary Public, State of New York
No. 02AN6098246
Qualified in Albany County
Commission Expires January 14, 2024

SCHEDULE "A" PROPERTY DESCRIPTION

All that certain plot, pieces or parcel of land with buildings and improvements here on erected, situated, lying and being in Brentwood, Town of Islip, County of Suffolk and State of New York, being more particularly bounded and described as follows:

Commencing at the intersection of the Southerly line of Suffolk Avenue (C.R. 100) as widened with the westerly line of 1st (first) Street (Lukens Avenue). Running thence westerly along the Southerly line of Suffolk Avenue 19.14 feet thence 395.33 feet to the point of beginning.

RUNNING THENCE South 16 degrees 19 minutes 00 seconds East, 110.45 feet;

RUNNING THENCE North 73 degrees 41 minutes 00 seconds East, 140.98 feet;

RUNNING THENCE South 16 degrees 19 minutes 00 seconds East, 153.39 feet to lands of MTA Long Island Railroad.

RUNNING THENCE Westerly along the afore mentioned lands South 73 degrees 41 minutes 00 seconds West, 809.12 feet, to the centerline of Grant Avenue not open.

RUNNING THENCE Northerly along the centerline line of Grant Avenue North 00 degrees 09 minutes 10 seconds West, 174.70 feet;

RUNNING THENCE North 73 degrees 41 minutes 00 seconds East, 193.00 feet;

RUNNING THENCE North 00 degrees 09 minutes 10 seconds West, 100.00 feet to the Southerly line of Suffolk Avenue.

RUNNING THENCE Easterly along the Southerly line of Suffolk Avenue North 73 degrees 41 minutes 00 seconds East, 398.69 feet to the POINT OR PLACE OF BEGINNING. Parcel containing 3.89 Acres more or less.

Appendix E

Excavation Work Plan

APPENDIX E – EXCAVATION WORK PLAN (EWP)

E-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the site's cover system, the Site owner or their representative will notify the NYSDEC contacts listed in the table below. Table E.1.1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix J – Site Contact List.

Table E.1.1: Notifications*

NYSDEC Project Manager: Jasmine N. Stefansky	518-402-9575 Jasmine.stafansky@dec.ny.gov
NYSDEC Project Manager's Supervisor: Jeffrey Dyber	518-402-9621 Jeffrey.dyber@dec.ny.gov
NYSDEC Site Control: Kelly Lewandowski	518-402-9553 Kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered 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, and submittals (e.g., reports) to the NYSDEC documenting the completed intrusive work;
- A summary of the applicable components of this EWP;

- A statement that the work will be performed in compliance with this EWP, 29 CFR 1910.120 and 29 CFR 1926 Subpart P;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations.

E-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done in the area of remaining soil contamination and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in Section E-7 of this Appendix.

The capped areas where the remaining soil contamination is present are shown on Figure 8 of the Site Management Plan (SMP). Any soils excavated from these areas will be segregated, stockpiled, and assumed contaminated until testing confirms otherwise. If these areas are disturbed during any intrusive work, the asphalt caps will be restored upon completion of the work.

E-3 SOIL STAGING METHODS

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

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

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

E-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

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

utility stakeout will be completed for all utilities prior to any ground intrusive activities at 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). Trucks transporting contaminated soil must have either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides.

A truck wash will be operated onsite, as appropriate. 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. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

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. Material accumulated from the street cleaning and egress cleaning activities will be disposed offsite at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

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 either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

The truck transport route is as follows:

Exit the Site, turn right onto Suffolk Avenue and proceed east to Washington Avenue. Turn left onto Washington Avenue and proceed north to the Long Island Expressway (LIE, Route 495). Follow the LIE Service Road to the nearest entrance (east-bound or west-bound).

All trucks loaded with site materials will exit the vicinity of the Site using only this approved truck route. 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 onsite in order to minimize offsite disturbance. Off-site queuing will be prohibited.

E-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed off-site in a permitted facility

in accordance with all local, State and Federal regulations. If disposal of material 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 project manager. Unregulated off-site management of materials from this site will not occur without formal NYSDEC project manager 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 debris recovery facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but will not be limited to, waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken offsite will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364 and 365. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

E-7 MATERIALS REUSE ON-SITE

The qualified environmental professional, as defined in 6 NYCRR Part 375, will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material (i.e. contaminated) does not remain onsite. Contaminated onsite material, including historic fill and contaminated soil, that is acceptable for reuse onsite will be placed below the demarcation layer or impervious surface, and will not be reused within the cover system or within landscaping berms. Contaminated onsite material may only be used beneath the Site cover as backfill for subsurface utility lines with prior approval from the NYSDEC project manager.

Proposed contaminated materials for reuse onsite must be sampled for full suite analytical parameters, including per- and polyfluoroalkyl substances (PFAS) and 1,4-

dioxane. The sampling frequency will be in accordance with DER-10 Table 5.4(e)10 unless prior approval is obtained from the NYSDEC project manager for modification of the sampling frequency. The analytical results of soil/fill material testing must meet the site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances [November 2022 or date of current version, whichever is later] guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event.

Soil/fill material for reuse on-site will be segregated and staged as described in Sections E-2 and E-3 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of Site excavation activities and proximity to nearby Site features. Material reuse onsite will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 must be approved by the NYSDEC project manager.

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

E-8 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including but not limited to, excavation dewatering, decontamination waters, and groundwater monitoring well purge and development waters, will be handled, transported and disposed off-site at a permitted facility 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, and will be managed offsite, unless prior approval is obtained from NYSDEC.

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

E-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the Record of Decision and the SMP. The existing cover system is comprised of asphalt pavement and concrete curbing. The demarcation layer, consisting of orange plastic construction fencing 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., an asphalt cover is replaced by soil), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations.

E-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review. A copy of the form is presented in Appendix H – Site Management Forms.

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

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for commercial use. Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 375-6.8(b) of 6 NYCRR Subpart 375-6.8. Soils that meet 'general' fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including PFAS and 1, 4-dioxane. 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 the 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 EXCAVATION 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. The NYSDEC project manager will be promptly notified of the discovery.

Sampling will be performed on product, sediment, and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes [TAL metals, TCL volatiles and semi-volatiles (including 1,4-dioxane), TCL pesticides and PCBs, and PFAS], unless the Site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

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

E-13 COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan (CAMP) has been prepared and is included as Appendix G of the SMP. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

E-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and onsite. Specific odor control methods to be used on a routine basis will include limiting the size of excavations. 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 remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

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

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to onsite 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

Particulate monitoring must be conducted according to the Community Air Monitoring Plan (CAMP) provided in Appendix G of the SMP. If particulate levels at the

Site exceed the thresholds listed in the CAMP or if airborne dust is observed on the Site or leaving the Site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production on the Site.

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

- Dust suppression will be achieved using a dedicated onsite 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 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

HAZWOPER Site Specific Health and Safety Plan (DCSA) With CoVid-19 Pandemic Protocols

NYSDEC Standby Contract #D009803-18

Multi-Site G Liberty Industrial Finishing 500 Suffolk Avenue Brentwood, Suffolk County, NY 11717

New York State

Expiration Date: **November 5, 2021**
(Max. 1-Year from signature date)

Prepared for: NYSDEC
625 Broadway
Albany, NY 12233

Prepared by: AECOM USA, Inc.
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Latham, NY 12110

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Signature: Michael De Paola
Date: 3/26/2021

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Name Dale "Pete" Wray, CSP, CHMM, STS
Title Safety, Health & Environment Manager
Signature:
Date: 11/5/2020

Approval: Project Manager:
Name Michael L. Spera, P.E.
Title Contract Manager, Remediation Regional Practice Leader
Signature: Michael L Spera
Date: 3/26/2021

HASP Summary

Note: This Summary is intended to provide key information only and cannot be substituted for reading, understanding, and complying with the full HASP. This summary may be continually updated as tasks and personnel change. Use Continuation Sheets if necessary.

Project Name:	NYSDEC Standby Contract #D009803	**Project Number:**	60631032
Summary Revision Date:	3/26/2021	**Client Name:**	NYSDEC

Report ALL SH&E Incidents, no matter how minor, to the Incident Hotline: 800-348-5046
Injury, Property Damage, Vehicle, Security, Regulatory Inspection, Environmental Impact, and any potentially work-related injury, discomfort/ pain, or damage.

The nearest Occupational Clinic and Hospital to the site that accepts AECOM Workers Compensation Insurance (see **Attachment A** for instructions) will be identified on a site by site bases. If the nearest such clinic or hospital is an unreasonable distance from the site, identify nearer hospitals or clinics. Maps and directions to the clinics and hospitals will be included in site specific HASPs.

Table of Contents

Attachments

Attachment A: Incident Reporting Flow Chart

Attachment B: Typical Project Risk Register/Hazard Assessment, THA Forms, and Tailgate Safety Meeting Form

Attachment C: Typical AECOM SHE Procedures

Attachment D. Stretch/Flex Poster

Attachment E. Example of Safety Data Sheets

Attachment F. Site Orientation

Attachment G: NYSDOH Generic Community Air Monitoring Plan

Template Revision Log

Version	Revised By	Date	Summary of Revisions
1.0	Kevin J. McGovern	February 2020	Initial Version
1.1	Kevin J. McGovern	March 2020	Added language, THA and SOPs that address COVID-19 epidemic.
1.2	Michael DePaola	September 28, 2020	Added language involving risks that may be encountered on site.

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:

- Cadmium
- Chromium

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.

HASP SUMMARY

Note: This Summary is intended to provide key information only and cannot be substituted for reading, understanding, and complying with the full HASP. This summary may be continually updated as tasks and personnel change. Use Continuation Sheets if necessary.

Project Name:	Multi-Site G Liberty Industrial Finishing 500 Suffolk Avenue Brentwood, Suffolk County, NY	Project Number:	60277021
Summary Revision Date:	August 11, 2017	Client Name:	New York State Department of Environmental Conservation
Report ALL SH&E Incidents, no matter how minor, to the Incident Hotline: 800-348-5046 **Injury, Property Damage, Vehicle, Security, Regulatory Inspection, Environmental Impact, and any potentially work related injury, discomfort/ pain, or damage.**			

Identify the nearest Occupational Clinic and Hospital to the site that accepts AECOM Workers Compensation Insurance (see **Attachment A** for instructions). If the nearest such clinic or hospital is an unreasonable distance from the site, identify nearer hospitals or clinics. Attach maps and directions to the clinics and hospitals in **Attachment A**.

Occupational Clinic:	City Medical of Upper East Side, Pllc City MD Urgent Care	Nearest Hospital:	Southside Hospital
Address:	1757 Sunrise Hwy Bay Shore, NY 11706	Address:	301 East Main Street Bay Shore, New York, 11706
Phone Number:	516-453-0172	Phone Number:	631-968-3000
Key Personnel			
Project Manager (PM):	Paul Kareth	Cell Phone:	845-425-4980
Site Supervisor (SS)	TBD	Cell Phone:	
Safety Officer (SSO):	TBD	Cell Phone:	
AECOM SH&E Mgr.	Pete Wray	Cell Phone:	302-660-9178
Client PM:	Payson Long	Cell Phone:	

PM must positively verify subcontractors are approved in Subport for the work described. If there were any limitations/ conditions of approval, describe them and how they are being met.

Yu & Associates - SAFETY: This does not meet AECOM's criteria (LTI>1), and therefore, an AECOM Subcontractor Variance Form, S3AM-213-FM2, must be completed and approved for each separate project. In addition: (1) The PM must require the sub to develop and submit a project-specific health and safety or safe work plan with associated activity-specific job safety analyses for each activity for each project. The plan must be reviewed and approved by an AECOM safety professional (not the PM) before any work begins. (2) The sub must also complete a task hazard assessment addressing all hazards expected and conducting a re-assessment any time there is a change in conditions. (3) The PM or their designee must conduct a safety orientation with the sub and all workers must be reminded that they have "stop work authority". (4) Require the sub to participate in AECOM's daily safety tailgate meetings or conduct their own if AECOM is not on site. (5) AECOM site personnel will conduct daily spot-checks of the sub's activities.

☐ I have verified that all subcontractors are approved in Subport, and that all conditions of approval are met.

PM Name_____ PM Signature_____ Date _____

1. Introduction

This written Generic HASP is designed to identify, evaluate, and control safety and health hazards, and to outline emergency response actions for AECOM-managed activities. Site specific HASPs must be kept on site during work activities and made available to all workers including subcontractors and other site occupants for informational purposes. AECOM USA, Inc. (AECOM) subcontractors are expected to independently characterize, assess, and control site hazards created by their specific scope of work.

The objective of this Generic HASP is to assign responsibilities, establish personal protective standards and mandatory safety procedures, and provide for contingencies that may arise while performing work assignments issued to AECOM by the New York State Department of Environmental Conservation (NYSDEC) under Standby Contract D009803.

This section of the Generic HASP summarizes important AECOM SH&E Procedures that apply to all Design and Consulting Services (DCS) Americas jobs. See **Attachment B** for the Project Risk Register/ Hazard Assessment and Task Hazard Assessment forms that may apply to work assignments under this contract and **Attachment C** for complete copies of applicable field SH&E Procedures that may be used. This template has been designed primarily for use in the United States; see procedure attachment S3AM-320-ATT2 for Canadian Specific Requirements on AECOM's ecosystem.

1.1 Applicable References

This Health and Safety Plan (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).
- 29 CFR 1926, Safety and Health Regulations for Construction.
- National Institute for Occupational Safety and Health/Occupational Safety and Hazards Administration/U.S. Coast Guard/U.S. Environmental Protection Agency, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Publication No. 85-115, 1985.
- The requirements in this Generic HASP also conform to AECOM's Safety for Life Program requirements as specified in the AECOM Safety, Health and Environment (SH&E) Manual.

Project Assumptions

- **This site is an AECOM-controlled site.**
- **Site management will assist in locating subsurface utilities, vessels, and structures located on the property and outside the scope of the utility locator service.**
- **No confined spaces will be entered on this project.**
- **No excavations will be entered.**
- **Work will be performed during daylight hours.**

2. Site Information and Scope of Work

This is a generic HASP that covers a variety of work assignments over various sites in New York State. Therefore, specifics such as site descriptions/background/history or scopes of work cannot be accurately depicted.

A Site-specific Health and Safety Plan/Safe Work Plan along with the associated Task Hazard Assessments (THAs) will be completed for each project issued under this contract.

Site 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.

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.

Previous Investigations

Table 2 1: Previous Investigation Data

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

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 using low flow techniques. 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.

2.1 Scope of Work Risk Assessment

☐ **Low Risk** *(examples: non-intrusive work, occasional exposure and/or low risk hazards)*

☒ **Medium Risk** *(examples: intrusive work, heavy equipment use, frequent exposure and/or moderate hazards)*

☐ **High Risk** *(examples: complicated scope, large/ multiple work crews, and/or constant exposure to hazards).*

The following tasks/ hazards may be encountered on projects performed under this contract and automatically trigger high risk ranking.

- ☐ Heights > 4 ft
- ☐ Confined Space
- ☐ Trench deeper than 4 ft
- ☐ Lock out/tag out
- ☐ Work on energized equipment
- ☐ Working with electricity
- ☐ Mobile equipment
- ☐ Materials under pressure
- ☐ Work on water or ice
- ☒ Extreme heat or cold
- ☐ Remote/wilderness work
- ☐ Work in controlled areas
- ☐ Use of power tools or equipment
- ☐ Hazardous substances or materials
- ☐ Work around live traffic
- ☐ Isolation from first aid services or immediate emergency assistance

3. AECOM Safety Health and Environment Program

3.1 AECOM Policy

AECOM Imagine it. Delivered.

Safety, Health & Environment Policy

Purpose

This policy establishes the framework to attain best-in-class Safety, Health and Environmental (SH&E) performance in the interest of benefitting AECOM's employees and stakeholders in the global marketplace.

Policy

AECOM is committed to exceptional levels of performance in safeguarding people and the environment as one of our Core Values. In recognition of the right to a safe and healthy working environment, keeping our people and stakeholders safe is our most important measure of success. We strive to be the beacon of safety excellence in the industries and global communities in which we work.

To advance our SH&E program, we are committed to:

- Zero work-related injuries to AECOM employees and stakeholders, and protection of the environment as a result of our activities.
- Providing a safe and healthy work environment, and a highly effective SH&E management system that drives continual review and improvement.
- Meeting client requirements and properly incorporating all applicable safety, health and environmental legal requirements and regulations at the local, state, provincial and national levels.
- Developing an exceptional safety culture where our people and stakeholders embrace ownership for the safety of themselves and others.
- Advancing our goals of pollution prevention, resource conservation and environmental sustainability.
- Setting and meeting aggressive SH&E performance goals and Core Value Metrics to promote continuous improvement.
- Working with employees and business partners in order to continuously improve SH&E performance.
- Recognizing and celebrating those who contribute to excellent SH&E performance.
- Striving to make AECOM the provider of choice for the safe execution of design, build, finance, operate and maintenance work globally.

The commitment to this policy by the leadership, management and employees of AECOM provides the foundation for a safe workplace, operational excellence and long-term business success.

Expectations

Safety is a core value and a key to our success. We demand continuous improvement in our journey toward a "zero" incident culture, where everyone is committed to safety, health and environmental excellence.

To that end, we demand our leaders, managers, supervisors, employees, and subcontractors:

- Demonstrate their commitment in their actions and decisions to assure that every person goes home safe every day.
- Embrace safety as a core value both on and off the job.
- Commit to his/her own safety and that of his/her fellow employees.
- Incorporate AECOM's Life-Preserving Principles into work planning and execution.
- Proactively and aggressively identify, manage and eliminate hazards and reduce risk in the workplace.
- Engage in training and preparations to have the knowledge, skills, competency and equipment required to work safely.
- Take action to stop work if the work cannot be executed safely or if conditions or behaviors on the work activity are unsafe.
- Immediately report safety, health and/or environmental incidents, near-misses, unsafe conditions, and at-risk behaviors to their supervisor; and that we diligently work to correct the problem.

Our SH&E expectations will be accomplished by the demonstrated leadership of management, compliance with regulatory requirements, and consultation with and participation of AECOM personnel.

Review and Communication

This Policy will be reviewed annually to ensure it meets the needs of the company, and will be made available and communicated to all persons under the control of the company.

M. Burke — March 6, 2020

Michael S. Burke — Date

Chairman and Chief Executive Officer

3.2 Safety for Life

"Safety for Life" is a comprehensive integrated AECOM Safety Management System that drives our nearly 100,000 employees toward AECOM's commitment to achieving zero work-related injuries and/or illnesses; preventing damage to property and the environment; and maintaining an environmentally friendly and sustainable workplace. Our Safety for Life program is supported by nine Life Preserving Principles that apply to all AECOM activities.

3.3 Life Preserving Principles

Demonstrated Management Commitment
Our Executive, senior and project managers will lead the SH&E improvement process and continuously demonstrate support and commitment.

Employee Participation
Our employees will be encouraged and empowered to become actively engaged in our safety processes through their active participation in safety committees, training, audits, observations and inspections. Employees will be encouraged to participate in health initiatives and adopt a healthy lifestyle.

Budgeting and Staffing for Safety
Our safety staff will be competent, fully trained and qualified to provide technical resources to our internal and external clients. A budget to support safety activities will be included in project proposals.

Pre-Planning
Our design, engineering, project and construction management staff will deploy effective risk mitigation efforts to design, plan and build safety into every project. Pre-Project and Pre-Task planning will be an effective tool in protecting our employees and the environment.

Contractor Management
Our project staff will work closely with our sub-consultants, subcontractors, contractors and Joint Venture Partners to provide a safe work environment for employees and members of the public. Our goal of SH&E performance excellence will be equally shared by all project participants.

Recognition and Rewards
Our employees will be recognized for their efforts in working safely and their support of our safety efforts.

Safety Orientation and Training
Our employees will be provided with effective safety training in order to identify and mitigate hazards in the workplace to prevent injuries to themselves and others who may be affected by their actions.

Incident Investigation
Our managers and safety professionals will investigate all recordable incidents and serious near misses to identify contributing factors and root causes in order to prevent a reoccurrence. Lessons learned shall be identified, communicated and implemented.

Fit for Duty
Our employees are responsible to report to work each day fit for duty and not to pose a health and safety hazard to themselves or others.

3.4 Driving and Vehicle Safety

The proper operation of vehicles is critical to protecting the safety of AECOM employees and subcontractors. Drivers face numerous hazards while operating vehicles. Some of the hazards include collision with another vehicle, collision with a fixed object, vehicle break down or failure, or falling asleep or becoming otherwise incapacitated while driving. All employees will adhere to Driving procedure S3AM-005-PR, which includes the following key practices:

1. **Authorized Drivers**
   Managers must authorize drivers following evaluation of driver criteria to drive and maintain an AECOM-owned, leased or rented vehicle, a client or customer-owned vehicle, or a personal vehicle operated in the course of conducting AECOM business.

2. Electronic Devices Prohibited

AECOM prohibits use of all portable electronic devices while operating a motor vehicle/ equipment which includes being stopped at a traffic light or stop sign. This includes cell phones, two-way radios and other items whether hand-held or hands-free. Electronic devices include, but are not limited to, all mobile phones, pagers, iPods, MP3s, GPS, DVD players, tablets laptops and other portable electronic devices that can cause driver distraction. Hands-free device use is not allowed.

- GPS units and devices used for navigation may only be used if factory installed or secured to the vehicle with a bracket that allows the driver to view the image without having to take their eyes off the road. Electronic devices shall be setup for operation prior to commencing driving activities and shall not be changed by the driver while driving.

3. Vehicle Inspections

The driver shall conduct pre-trip vehicle inspections prior to each trip. A vehicle inspection checklist, S3AM-005_FM2, can be used to guide and document the inspection process. Vehicle inspection is to include a 360-degree walk around and visual inspection under the vehicle for leaks and obstructions prior to moving the vehicle.

4. Training

All drivers shall complete defensive driver training. Additional training (i.e., hands-on defensive driver training) may apply for medium and high-risk drivers; see Driving procedure S3AM-005-PR and SHE Training procedure S3AM-003-PR for more details.

5. Journey Management Plan

Drivers who undertake trips in excess of 250 miles (400 kilometers) one way, drive in remote or hazardous areas, or when otherwise deemed necessary, shall develop and document a Journey Management Plan using S3AM-005-FM1 or equivalent.

6. Secure Loads

Cargo is only to be carried within the passenger compartment of a vehicle when segregated and restrained to prevent objects from becoming distractions, obstructions or projectiles to occupants should emergency vehicle maneuvers be required (e.g., harsh braking or crash). All goods transported on flatbed trucks or in pickup beds must be securely fastened to prevent them from becoming hazards. All applicable laws and regulations regarding securing of loads must be met. It is prudent to check the load after a few miles to ensure that load has not shifted or loosened prior to completing the remainder of the trip.

7. Backing Up

Reversing the vehicle is to be avoided if at all possible. If backing up is necessary, use the following guidelines:

- Pre-plan all vehicle movements.
- If the pull-through method of parking is not possible, drivers will scan parking spot/area for hazards and back in; thereby, facilitating departure where the first move is forward.
- A light tap of the horn should be used to alert others of your intention to back up.
- Avoid tight spaces.
- Vehicles over 10,000 pounds gross vehicular weight are required to have a competent spotter in place when backing. A competent spotter is one that has received spotter training.
- All vehicles shall have a competent spotter in place when backing in an active work zone. Parking and public access areas are recommended but not required to have a spotter.

3.5 Fitness for Duty

One of AECOM's nine Life-Preserving Principles is Fitness for Duty (see Fitness for Duty procedure S3AM-008-PR). Fitness for Duty means that individuals are in a state (physical, mental, and emotional) that enables them to perform assignments competently and in a manner that does not threaten the health and safety of themselves or others. On certain projects or for specific tasks, fit for duty certifications may be requested of medical providers by SH&E Managers or Human Resources (HR). Employees should report to work fit for duty and unimpaired by substances or fatigue. Supervisors must observe their employees and work with the employee, SH&E staff, and HR to address deficiencies. AECOM will not tolerate retaliation against any employee for filing a complaint or concern regarding their fitness for duty or participating in any way in an investigation.

3.5.1 Medical Surveillance

AECOM's S3AM-128-PR, Medical Screening and Surveillance, details the requirements to participate in a medical monitoring program. Medical Surveillance provides a streamlined process to determine if employees meet the physical requirements to perform assigned duties as defined by applicable regulations. It is also designed to provide a means to collect data relevant to exposure to chemical and physical agents for the protection of the workers and to confirm the effectiveness of health and safety programs.

3.5.2 Proactive Health

AECOM is committed to promoting proactive health activities in addition to the planning for prevention of safety and environmental incidents. Proactive health activities will be completed on an on-going basis at AECOM on a corporate-wide basis (i.e. Wellness program associated with employee benefits), at offices, and at this project site. Management will be actively involved in providing and encouraging opportunities for health and wellness education and improvement. Health initiatives and education will be discussed periodically during office-based meetings as the safety moment or during the daily tailgate meeting as a toolbox talk. Topics may be related to, but are not limited to:

- Heart health;
- Stress management;
- Smoking cessation;
- Diabetes prevention;
- Diet; and
- Exercise benefits.

Topics and educational materials can be located on the AECOM Wellness page, National Institutes of Health website, Centers for Disease Control and Prevention website and other reputable sources online.

In addition, the field team will be encouraged to participate in a daily stretch and flex routine (a standardized way to avoid soft tissue damage from work activities) to the best of their abilities, given their own personal limits. It is particularly beneficial to warm and loosen muscles before repetitive work, manual handling of loads, and when working in cold temperatures or with static postures. The Stretch and Flex manual and poster (Attachment D) serve as guidance for the leader to follow.

3.5.3 Fatigue

One aspect of fit for duty is fatigue management. AECOM has developed procedures that limit work periods or requires additional rest under certain circumstances, including during long-distance travel or when working at high altitudes. These procedures also set limits on extended work periods of 14 hours per day or 60 hours per week. A fatigue management plan is required if longer working hours are necessary (see Fatigue Management Procedure S3AM-009-PR).

3.5.4 Substance Abuse

Drug and alcohol abuse pose a serious threat to the health and safety of employees, clients, and the general public as well as the security of our job sites, equipment and facilities. AECOM is committed to the elimination of illegal drug use and alcohol abuse in its workplace and regards any misuse of drugs or alcohol by employees to be unacceptable. AECOM Substance Abuse Prevention Procedure (S3AM-019-PR) prohibits the use, possession, presence in the body, manufacture, concealment,

transportation, promotion or sale of the following items or substances on company premises. Company premises refer to all property, offices, facilities, land, buildings, structures, fixtures, installations, aircraft, automobiles, vessels, trucks and all other vehicles and equipment - whether owned, leased, or used.

- Illegal drugs (or their metabolites), designer and synthetic drugs, mood- or mind-altering substances, and drug use related paraphernalia unless authorized for administering currently prescribed medication;
- Controlled substances that are not used in accordance with physician instructions or non-prescribed controlled substances; and
- Alcoholic beverages while at work or while on any customer- or AECOM-controlled property.

This policy does not prohibit lawful use and possession of current medication prescribed in the employee's name or over-the-counter medications. Employees must consult with their health care provider about any prescribed medication's effect on their ability to perform work safely and disclose any restrictions to their supervisor.

Although some states may pass laws legalizing medical or recreational marijuana use, the use, sale, distribution and possession of marijuana are violations of federal law and AECOM policy, and will subject an employee to disciplinary action up to and including termination in accordance with controlling law.

3.6 Rewards and Recognition

One of AECOM's Life Preserving Principles is Recognition and Rewards for proactive safety, health and environmentally focused behaviors. All projects are expected to participate in the rewards and recognition programs available on the Corporate and DCS Americas SH&E ecosystem pages. Large, long term projects are encouraged to establish a project specific rewards and recognition program which incorporates project specific goals and activities (template available S3AM-020-FM1). ***All rewards and recognition programs must emphasize the 9 Life Preserving Principles and proactive SH&E activities NOT solely the achievement of lagging metrics ("injury/incident-free" hours, etc.) as those may discourage incident reporting.***

There are several possible appropriate methods of rewarding and recognizing employees and contractors:

1. **Informal** – recognition via verbal acknowledgment, email, spot awards, luncheons, etc.
2. **Formal** – Safety Star Award nomination (link)
3. **Formal** – SH&E Challenge Coins (see local SH&E manager for details)

3.7 Hand Safety

The hands are exposed to hazards more than any body part. SH&E Hand Safety Procedure S3AM-317-PR describes requirements and best practices including these notable practices:

- **All personnel shall have gloves in their immediate possession 100%** of the time when in a shop or on a work site. Gloves that address the hazard shall be worn when employees work with or near any materials or equipment that present the potential for hand injury due to sharp edges, corrosives, flammable and irritating materials, extreme temperatures, splinters, etc. Use the Gloves Needs Assessment (S3AM-317-FM1) to help determine the appropriate glove for the hazard(s).
- **Fixed open-blade knives are prohibited** from use during the course of AECOM work. Examples of fixed open-blade knives include pocket knives, multi-tools, hunting knives, and standard utility knives. For more information about cutting tools, see S3AM-317-ATT1 Safe Alternative Tools.

3.8 Hazard Communication

Hazardous materials that may be encountered on-site as existing environmental or physical/health contaminants are addressed in site specific HASPs. Their properties, hazards, and associated required controls will be communicated to all affected staff and subcontractors in accordance with the requirements of AECOM Procedure S3AM-115-PR1 Hazardous Materials Communication including these key elements:

- All personnel shall be briefed on the hazards of any chemical product they use and shall be aware of and have access to the Safety Data Sheets (SDS).
- 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.).

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 SDS to the Site Supervisor or Site Safety Officer for review and filing. The Site Supervisor or Site Safety Officer will maintain copies of all SDS on site; examples of such SDS can be found in **Attachment E**. SDS may not be available for locally obtained products, in which case an alternate form of product hazard documentation will be acceptable.

3.9 Hazardous Material Handling and Waste Management

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 and SH&E Procedure S3AM-116-PR Hazardous Materials Shipping. A site-specific Entity Letter may be required for the site/client; if so, only persons named on the entity letter are allowed to sign waste shipping papers "***on behalf of [client name]***". Any individual signing shipping papers must have valid Department of Transportation and Resource Conservation and Recovery Act training for waste shipment. Consult the HZM/HZW & TDG page on ecosystem or the SH&E Manager for further guidance on AECOM and regulatory procedures and training requirements.

3.10 Housekeeping and Personal Hygiene

Basic housekeeping requirements for offices and work sites, as well as personal hygiene and sanitation standards can be found in S3AM-013-PR Housekeeping. Inspections should be performed at the regular interval specified below. The housekeeping inspection form S3AM-013-FM1 is available for use.

Complete the table below regarding site-specific Housekeeping and Personal Hygiene requirements:

Housekeeping:	*Inspection Frequency:*	Daily	*Inspector:*	SS/ SSO or designee
Eating, Drinking, Smoking:	Permitted only in designated area(s) located on a per work assignment basis.			
Handwashing:	Water, soap and paper towels or equivalent supplies are located within the support zone. Site staff will wash hands and face after completing work activities and prior to breaks or meals.			
Toilets:	**Toilets** are located at nearby public restrooms. *NOTE: A minimum of one toilet must be provided for every 20 personnel on site. For mobile crews where work activities and locations permit transportation to nearby toilet facilities on-site facilities are not required.*			

Water:	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. Disposable drinking cups for single use and a waste receptacle will be provided as needed. Water containers will be refilled daily and disinfected regularly. 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"***
Illumination:	**Illumination** will be provided in the form of spot lights if natural light or installed lighting fixtures are not sufficient in the work area, toilet, and/or break area.

3.11 Lone Worker

Lone work is typically not performed under this contract, and special provisions will be implemented if a lone worker scenario is performed.

3.12 Safety Observations

Safety observations are observations made by employees or subcontractors of a condition or behavior which could contribute to an incident, prior to the incident occurring. Observations can also identify positive behaviors or interventions which contribute to the prevention of incidents. Large, long-term projects may benefit from the use of LifeGuard to track and trend observations on a site level. All other projects should log their observations using IndustrySafe. Both reporting systems can be accessed on any safety page of ecosystem. Or the QR codes below can be used while off the AECOM network from a smartphone/ device.

LifeGuard

IndustrySafe
Safety Management Software

3.13 Short Service Employee

A Short Service Employee is an employee with fewer than 6 months experience working on field projects or an employee who has not completed the required training or received required certifications (see the Short Service Employee procedure, S3AM-

002-PR). The Project Manager will identify all Short Service Employees working on the project, and each Short Service Employee will be assigned to an experienced team member so all activities may be monitored. Short Service Employees shall be easily identified in the field environment, such as through wearing a specific colored hardhat, a manufacturer-approved orange stripe applied to their hardhat or be clearly identified by some other system. Any new employee shall wear the designated Short Service Employee identifier until the Project Manager determines the employee has the knowledge, skills, and ability related to the specific hazard on the project.

3.14 Stop Work Authority

AECOM empowers and expects all employees to exercise their Stop Work Authority (see Stop Work Authority Procedure S3AM-002-PR) if an incident appears imminent, or when hazardous behaviors or conditions are observed. A stop work request can be informal if the situation can be easily corrected or may require shutting down operations if revised procedures are necessary to mitigate the hazard. If an AECOM employee observes an imminently hazardous situation on a site controlled by others (i.e., a client-managed contractor), the employee can always stop work for themselves by removing themselves from the situation. Employees also may attempt to stop work to avoid allowing the contractor to come to harm by immediately notifying the contractor foreman or site engineer, or if necessary, the client or party managing the contractor.

No employee should object to the issuance of a stop-work request, nor can any disciplinary action be levied against the employee. All employees must agree that the situation has been mitigated before resuming work. No employee will be disciplined for refusing to work if they feel it is unsafe.

4. Roles and Responsibilities

Roles and responsibilities for the project team are defined in SH&E Procedure S3AM-117-PR1, Hazardous Waste Operations. The Project Manager (PM) is ultimately responsible for the development of site-specific HASPs and establishing a budget to implement the controls and training required. The Project Manager is also responsible for ensuring that the plan is implemented, that appropriate documentation is generated, and that records are maintained. The SH&E Manager is responsible for reviewing and approving site-specific HASPs and assisting with other SH&E matters upon request. A Site Safety Officer may be appointed to oversee implementation of the HASP in the field. All project team members are responsible for reviewing and abiding by site specific HASPs, performing daily (or more frequent) task hazard assessments, stopping work when necessary to correct unsafe behaviors or conditions, and reporting incidents promptly to the PM and AECOM Incident Reporting Hotline (Incident Hotline 800-348-5046).

4.1 Project Manager

The Project Manager has overall management authority and responsibility for all site operations, including safety. The Project Manager will provide the site supervisor with work plans, staff, and budgetary resources, which are appropriate to meet the safety needs of the project operations. Some of the Project Manager's specific responsibilities include:

- Project start-up activities require appropriate SH&E planning prior to work commencing, including identification of hazards, associated risk, and appropriate controls for each task and operation found in the work scope.
- Completed project risk registers /task hazard assessments shall be incorporated into the Project's SH&E Plan.
- Verifying that personnel, to whom site specific HASPs applies, including AECOM subcontractors, have received a copy of it, with ample opportunity to review the document and to ask questions.
- Providing the concurring SH&E Manager with updated information regarding conditions at the site and the scope of site work if changes occur that will affect the accuracy of site-specific HASPs.
- Providing adequate authority and resources to the Site Supervisor or Site Safety Officer to allow for the successful implementation of all necessary SH&E Procedures.
- Maintaining regular communications with the Site Supervisor or Site Safety Officer and, when necessary, the AECOM Client SH&E Program Manager.
- Coordinating the activities of AECOM subcontractors and ensuring that they are aware of the pertinent health and safety requirements for these projects, when applicable.
- Conducting Safety System Auditing by way of Management Site Visits and/or Project Manager Self-Assessments on a regular basis.
- Approving amendments to the HASP (in conjunction with the Site Supervisor or Site Safety Officer).
- Coordinating activities with the client as needed to ensure the safe implementation of site-specific HASPs.

4.2 Site Supervisor

The Site Supervisor has the overall responsibility and authority to direct work operations at the job site according to the provided work plans and HASP. The Project Manager may act as the Site Supervisor while on site. The Site Supervisor's responsibilities include:

- Discussing deviations or drift from the work plan with the Site Safety Officer and Project Manager.
- Discussing safety issues with the Project Manager, Site Safety Officer, and field personnel.

- Assisting the Site Safety Officer with the development and implementation of corrective actions for site safety deficiencies.
- Assisting the Site Safety Officer with the implementation of site-specific HASPs and ensuring compliance.
- Assisting the Site Safety Officer with inspections of the site for compliance with site specific HASPs and applicable SH&E Procedures.
- Reviewing Project Risk Register/ Task Hazard Assessments and Task Hazard Assessments (THAs) with the work crew.
- Reporting incidents and ensuring incidents and observations are logged into Lifeguard or IndustrySafe.
- Verifying that all operations are in compliance with the requirements of site-specific HASPs and halting any activity that poses a potential hazard to personnel, property, or the environment.
- Temporarily suspending individuals from field activities for infractions against the HASP pending consideration by the Site Safety Officer, the SH&E Manager, and the Project Manager.

4.3 Site Safety Officer

The Site Safety Officer supports the Site Supervisor in providing a safe work environment. Not all sites will have a designated Site Safety Officer; the decision should be made by the Project Manager and SH&E Manager taking into consideration the complexity and risks of the scope of work. The Site Supervisor may act as the Site Safety Officer on sites without one. The Site Safety Officer's responsibilities include:

- Updating the site-specific HASP to reflect changes in site conditions or the scope of work. HASP updates must be reviewed and approved by the SH&E Manager.
- Inspecting the site for compliance with site specific HASPs and the SH&E Procedures using the appropriate field audit inspection checklist found in IndustrySafe.
- Coordinating with Site Supervisor to review THAs with the work crew.
- Assisting as needed to report incidents and verify that incidents and observations are logged into Lifeguard or IndustrySafe.
- Working with the Site Supervisor and Project Manager 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).
- Contacting the SH&E Manager for technical advice regarding safety issues.
- Determining emergency evacuation routes, establishing and posting local emergency telephone numbers, and arranging emergency transportation.
- Checking that all site personnel and visitors have received the proper training, orientation and medical clearance prior to entering the site.
- Establishing controlled work areas (as designated in site specific HASPs or other safety documentation).
- Facilitating or co-leading daily tailgate meetings and maintaining attendance logs and records.
- Discussing potential SH&E hazards with the Site Supervisor, the SH&E Manager and the Project Manager.
- Selecting an alternate Site Safety Officer by name and informing him/her of their duties, in the event that the Site Safety Officer must leave or is absent from the site.
- Verifying that all operations are in compliance with the requirements of site-specific HASPs.
- Issuing a "Stop Work Order" under the conditions set forth in site specific HASPs.
- Temporarily suspending individuals from field activities for infractions against the HASP pending consideration by the SH&E Manager and the Project Manager.

4.4 Employees

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

- Understanding and abiding by the SH&E Procedures specified in the HASP and other applicable safety policies, and clarifying those areas where understanding is incomplete.
- Providing feedback to SH&E management for continuous improvement relating to omissions and modifications in the HASP or other safety policies and procedures.
- Notifying the Site Supervisor or Site Safety Officer of unsafe conditions and acts.
- Stopping work if there is doubt about how to safely perform a task or if unsafe acts or conditions are observed (including subcontractors or team contractors).
- Speaking up and refusing to work on any site or operation where the SH&E procedures specified in site specific HASPs or other safety policies are not being followed.
- Contacting the Site Supervisor or Site Safety Officer or the SH&E Manager at any time to discuss potential concerns and update the THA in the field to reflect the modifications
- Provide THA feedback to the supervisor for continuous improvement

4.5 Subcontractors

The requirements for subcontractor selection and subcontractor safety responsibilities are outlined in AECOM Procedure *S3AM-213-PR Subcontractor Management*. 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 as well as all other requirements applicable to their work. 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 on-site activities.

Hazards not listed in site specific HASPs but known to any subcontractor, or known to be associated with a subcontractor's services, must be identified and addressed to the AECOM Project Manager 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.

4.6 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 Project Manager, Site Supervisor, or Site Safety Officer 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, site specific HASPs specify the minimum acceptable qualifications, training and PPE that are required for entry to any controlled work area; visitors must comply with these requirements at all times.

If the site visitor requires entry to any exclusion zone (EZ), but does not comply with the above requirements, all work activities within the EZ must be suspended. Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

5. Training and Documentation

The following sections describe the standard practices or programs that AECOM will establish to prepare employees to perform work safely and consistent with AECOM policy and Procedures.

5.1 HASP/SITE Orientation

The Project Manager shall conduct a project/site-specific HASP orientation prior to the start of field operations, with support as needed by the SH&E Manager, Site Safety Officer, or Site Supervisor. This meeting will involve representatives from all organizations with a direct contractual relationship with AECOM on the job site. Minimum items to be covered are listed in **Attachment F**. Participants will then sign the HASP Personnel Acknowledgement register at the end of the HASP.

5.2 Daily Tailgate Meetings and THA Review

The Site Supervisor, Site Safety Officer or designee shall facilitate a tailgate meeting to discuss the specific requirements of site-specific HASPs and review the applicable THAs prior to the commencement of daily project activities. Attendance at the daily tailgate meeting is mandatory for all employees and subcontractors at the site contracted to AECOM. Simultaneous operations are encouraged to attend each other's tailgate meetings or at the very least the supervisors shall discuss the coordination of activities and associated hazards of each other's tasks. The supervisor will then convey the information to the work crew. The Tailgate Meeting must be documented by the Site Supervisor or Site Safety Officer on a Daily Tailgate Meeting form, a blank copy of which is included in **Attachment B**.

As part of the daily tailgate meeting, employees and subcontractors will be encouraged to voluntarily warm up and stretch select muscle groups to the best of their ability and within each person's individual limitations. Stretching is particularly beneficial to warm and loosen muscles before repetitive work, manual handling of loads, and when working in cold temperatures or with static postures. The exercises included in **Attachment D** may be used to facilitate these efforts.

5.3 Worker Training and Qualifications

All personnel at this site must be qualified and experienced in the tasks they are assigned. SH&E Training Procedure S3AM-003-PR establishes the general training requirements for AECOM employees. In addition, S3AM-117-PR, Hazardous Waste Operations, explains the HAZWOPER training and S3AM-128-PR, Medical Screening and Surveillance, details the medical surveillance requirements.

Check all required training on the table below. Verify training records of employees and subcontractors.

Site-Specific Training Requirements	
Training	**Applies to**
☒ HASP Orientation	All Employees and Subcontractors
☒ HAZWOPER 40 –HR	On HAZWOPER sites, in EZ, exposed to hazardous contamination
☒ HAZWOPER Supervisor	Employees managing others in HAZWOPER activities
☒ Field Safety	Anyone visiting the field that does not require HAZWOPER
☒ Speak-Up/Listen Up	All Field Employees and Supervisors
☒ Fit Test/ Respiratory Protection	Employees needing to wear respirators
☒ Hazardous Materials Shipping	Employee responsible for shipping HZM/HZW/DG and/or signing manifests
☒ Annual Medical Surveillance/ Clearance	Employees working in an exclusion zone and the regulatory required exposure limit **is** exceeded for 30 or more days a year

Site-Specific Training Requirements	
Training	**Applies to**
☐ Biennial Medical Surveillance/ Clearance	Working in an exclusion zone more than 30 days a year and the regulatory required exposure limit is **not** exceeded
☒ OSHA 10 hr. Construction	Employees working near heavy equipment, including drill rigs and remediation equipment (see Section .5.3.2)
☒ OSHA 30 hr. Construction	Supervisor/SSO overseeing work with heavy equipment (see Section 5.3.2)
☒ Local requirements:	As required
☐ Client requirements:	
☒ Coronavirus (Co-Vid-19) Training	All Workers

5.3.1 Coronavirus (CoVid-19) Training

Coronavirus (CoVid-19) Awareness Level One Training is required for all workers.

Coronavirus (CoVid-19) Level Two Training is required for workers involve in any Pandemic Response.

5.3.2 OSHA 10 Hr./OSHA 30 Hr. Training

OSHA 10/30 training is required for projects with construction or construction-like hazard, including. work where we, our client, or another contractor are presently building, removing, or disassembling structures or digging excavations of any size by mechanical means. This includes projects where we serve as PMCM, GC, Inspectors, or any work where our employees are exposed to construction site hazards. “Construction-like” hazards exist on n sites where the focus is NOT construction/demolition, but where our work scope includes use of heavy machinery movement, work at heights, confined space, hot work, lifting/hoisting loads, and/or ground breaking (includes drill rig, direct push and vac truck use).If these hazards exist, OSHA 10 hr. training is required for field staff.

OSHA 30 hr. training is required for supervisors. The term “supervisor” has many different meanings. As with HAZWOPER supervisor training, the requirement to complete the OSHA 30 hr. construction course will be based on field supervisory roles and responsibilities, not administrative supervision roles. Field supervisors required to take the OSHA 30 construction course are defined as those individuals who provide work direction and leadership directly to AECOM field personnel and/or our subcontractors for construction/demolition activities or tasks that have construction-like hazards. These supervisors must be knowledgeable of construction hazards and controls because they are responsible for:

- Field implementation of a construction/demolition scope of work
- Controlling performance on the job site
- Evaluating and controlling hazards & preventing site safety risks
- Intervening to prevent unsafe actions or conditions of employees, clients, and subcontractors related to construction/demolition hazards

As with OSHA 10, OSHA 30 is being phased in and must be completed by the end of FY2019.

5.4 Competent Person

A competent person is an employee who, through education, training and experience, has knowledge of applicable regulatory requirements, is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

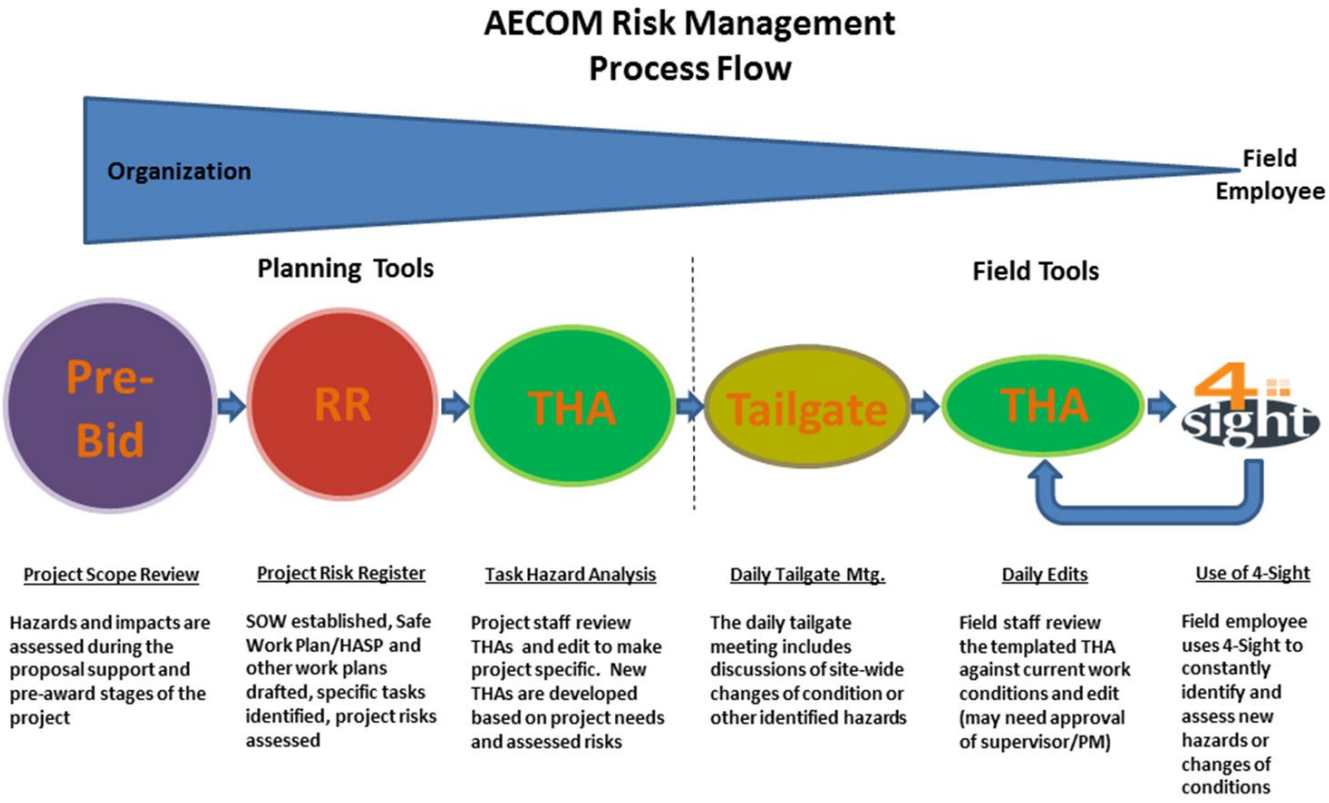
AECOM's Competent Person Designation Procedure, S3AM-202-PR, explains the roles, responsibilities and procedures of naming a competent person. Complete the table below and include a S3AM-202-FM1 Competent Person Designation Form for each AECOM competent person (subcontractors to use an equivalent process).

These activities require a competent person. Mark all that apply and list the name of the person.

	Activity	Name of Person
☐	**Asbestos**	
☐	**Assured Equipment Grounding Conductor**	
☐	**Blasting & Explosives**	
☐	**Concrete & Masonry Construction**	
☐	**Confined Spaces**	
☐	**Control of Hazardous Energy (Lockout-Tagout)**	
☐	**Crane Assembly / Disassembly**	
☐	**Cranes & Derricks**	
☐	**Demolition**	
☐	**Electrical Wiring Design & Protections**	
☐	**Elevated Work Platforms & Aerial Lifts**	
☐	**Fall Protection**	
☐	**Hearing Protection**	
☐	**Heavy Equipment**	
☐	**Ionizing Radiation**	
☐	**Lead**	
☐	**Material Hoists & Personnel Hoists**	
☐	**Respiratory Protection**	
☐	**Rigging Equipment**	
☐	**Scaffolds**	
☐	**Stairways & Ladders**	
☐	**Steel Erection**	
☐	**Trench & Excavations**	
☐	**Underground Construction**	
☐	**Welding & Cutting**	

6. Hazard Assessment and Control

AECOM has adopted an approach to hazard assessment and control that incorporates both qualitative and quantitative methods to identify hazards and the degree to which they may impact employees and AECOM operations. See S3AM-209-PR, Risk Assessment and Management, for details regarding AECOM's process. This approach is illustrated below and described in the following section.



6.1 SH&E Procedures

All AECOM SH&E procedures, in their controlled copy version, are available on the internal SH&E Policy and Procedures ecosystem page. Programmatic procedures referenced in this document (for example SH&E Training) do no need to be printed for inclusion in site specific HASPs. Only procedures that are needed for field activity reference and application MUST be printed in full and included in site specific HASPs. The applicable field procedures checklist is in the Physical Hazards section below and procedures are included in **Attachment C**.

6.2 Project Risk Register/ Hazard Assessment

Project start-up activities require appropriate SH&E planning prior to work commencing, including identification of hazardous tasks required to complete the Scope of Work (SOW). A Project Risk Register/Hazard Assessment shall be developed to guide work. Form S4[DCS]AM-209-FM4-A may be used and should be included in **Attachment B**.

6.3 Task Hazard Assessments (THAs)

A task hazard assessment (THA) form (located in S3AM-209-PR1) shall be prepared for each task to be performed as part of the scope of work. This includes driving to the site, parking, and walking as well as the hazards, associated risk, and appropriate controls for all other work activities. The DCS Americas Templated THA Library may also be used to find previously approved THAs. The preparer shall have one THA form for each task in the Scope of Work found in this work plan and shall also include blank copies in **Attachment B**.

In the field, the THA forms are to be reviewed at the location where the work will take place, just prior to beginning work on that task. Many times when employees arrive in the field, situations are different than originally planned for or additional job steps are required. The THA asks workers update or 'dirty up' the THA in the 'On-Site Edits' rows to assess the risks presented by the changed condition and requires the worker to describe steps to reduce the risk. If the hazard(s) cannot be successfully mitigated, the work is not allowed to proceed.

6.3.1 Hazard Categories

THAs should include consideration of the following hazard categories when identifying hazards and task specific controls:

- Biological
- Chemical
- Electrical
- Gravity
- Mechanical
- Motion
- Pressure
- Noise
- Radiation
- Thermal

6.4 4-Sight

When preparing hazard assessments and throughout the day workers should use 4-Sight. This is a mental process through which workers ask themselves (and each other) four questions designed to effectively assess hazards. Using these questions during each task, especially those without established THAs, will help workers identify hazards and condition changes so that they can control them or stop work to seek assistance.

1) What am I about to do?
2) What could go wrong?
3) What could be done to make it safer?
4) What have I done to communicate the hazards?

6.5 Speak Up/Listen Up

All AECOM employees have a responsibility to help create the environment where the expectation is Safety for Life. Speak Up/Listen Up (SULU) is a technique to steward jobsite safety by utilizing 4-Sight as a basis for safety feedback conversations. SULU has two main parts:

- **Speak Up** where employees use three simple steps when providing feedback to others about unsafe acts:
  - Ask to discuss their hazard assessment or 4-Sight for the task
  - Get a commitment from the employee to apply the hazard controls and perform the task according to the accepted procedures
  - Follow up to ensure the employee is working safely

- **Listen Up** where employees use two simple steps when responding to safety feedback:
  - Listen – Focus on the message, not the messenger
  - Commit to performing the task the safer way

SULU conversations should happen consistently throughout the work day to create clear expectations of how work should be performed. All employees should recognize safe work behaviors in order to reinforce them and keep them going. An occasional correction is much more effective when employees are frequently encouraged and positively recognized for their safe actions. Managers and supervisors should be having SULU conversations during site visits and ensure peer to peer and site supervisor to crew SULU conversations are being held.

7. Physical Hazard Assessment

7.1 Physical Hazards

A physical hazard is a hazard that threatens the physical safety of an individual; contact with the hazard typically results in an injury. The following table summarizes the physical hazards or activities containing physical hazards present at the site and the associated procedures that address protection and prevention of harm.

All checked procedures are likely to be encountered during work under this contract and therefore included in **Attachment C** for implementation and reference.

Check all applicable hazards/ activities and add site specific description of the hazard.

	Hazard/ Activity *(note: text in this column links to procedure)*	Site Specific Description *[where, what phase of work, frequency, etc.]*	Applicable Procedure
☐	**Abrasive Blasting**		S3AM-335-PR
☐	**Aerial Work Platforms**		S3AM-323-PR
☐	**All-Terrain Vehicles**		S3AM-319-PR
☐	**Blasting and Explosives**		S3AM-336-PR
☐	**Bloodborne Pathogens**		S3AM-111-PR
☐	**Cofferdams**		S3AM-344-PR
☒	**Cold Stress**	Working during winter	S3AM-112-PR
☐	**Compressed Air Systems and Testing**		S3AM-337-PR
☐	**Compressed Gases**		S3AM-114-PR
☐	**Concrete Work**		S3AM-338-PR
☐	**Confined Spaces**		S3AM-301-PR
☐	**Corrosive Reactive Materials**	Handling pre-preserved bottle ware for sampling	S3AM-125-PR
☐	**Cranes and Lifting Devices**		S3AM-310-PR
☐	**Demolition**		S3AM-339-PR
☐	**Diving (scientific and commercial)**		S3AM-334-PR
☐	**Drilling, Boring & Direct Push Probing**		S3AM-321-PR
☐	**Electrical Safety**	Working with generators.	S3AM-302-PR
☐	**Excavation**		S3AM-303-PR
☐	**Fall Protection**		S3AM-304-PR
☐	**Flammable and Combustible Liquids**	Portable generator	S3AM-126-PR
☐	**Gauge Source Radiation**		S3AM-122-PR
☒	**Hand and Power Tools**	Accessing monitoring wells and soil vapor implants.	S3AM-305-PR
☐	**Hazardous Waste Operations**		S3AM-117-PR
☒	**Heat Stress**	Working during summer.	S3AM-113-PR
☐	**Heavy Equipment**		S3AM-309-PR
☐	**High Altitude**		S3AM-124-PR
☒	**Highway and Road Work**	Working alongside roadways and sidewalks	S3AM-306-PR
☐	**Hoists Elevators and Conveyors**		S3AM-343-PR
☐	**Hot Work**		S3AM-332-PR
☐	**Ladders**		S3AM-312-PR
☐	**Lockout Tagout**		S3AM-325-PR
☐	**Machine Guarding Safe Work Practice**		S3AM-326-PR

	Hazard/ Activity *(note: text in this column links to procedure)*	Site Specific Description *[where, what phase of work, frequency, etc.]*	Applicable Procedure
☐	**Marine Safety and Vessel Operations**		S3AM-333-PR
☐	**Material Storage**		S3AM-316-PR
☐	**Mine Site Activities**		S3AM-341-PR
☐	**Mining Operations**		S3AM-345-PR
☐	**Non-Ionizing Radiation**		S3AM-121-PR
☐	**Overhead Lines**		S3AM-322-PR
☒	**Pandemic Virus**	All Workers	SR1-003-PR2
☐	**Powder-Actuated Tools**		S3AM-327-PR
☐	**Powered Industrial Trucks**		S3AM-324-PR
☐	**Radiation**		S3AM-120-PR
☐	**Railroad Safety**		S3AM-329-PR
☐	**Respiratory Protection**	Removing free product from wells	S3AM-123-PR
☐	**Scaffolding**		S3AM-311-PR
☐	**Steel Erection**		S3AM-340-PR
☐	**Temp. Floors, Stairs, Railings, Toe-boards**		S3AM-342-PR
☒	**Underground Utilities**		S3AM-331-PR
☐	**Underground Work**		S3AM-330-PR
☒	**Wildlife, Plants and Insects**	Sampling monitoring wells.	S3AM-313-PR
☒	**Working Alone**	Groundwater sampling/well maintenance	S3AM-314-PR
☐	**Working On and Near Water**		S3AM-315-PR

7.2 Biological Hazards – Pandemic Virus – COVID-19

Due to the constantly changing situation AECOM employees and contractors will follow the – Interim Guidance for Coronaviruses: AECOM Guidance for Coronavirus and the AECOM Pandemic Procedure: SR1-003-PR2

8. Chemical Hazard Assessment

AECOM will perform tasks that can expose personnel to a variety of hazards due to the operational activities, physical conditions of the work locations, and potential presence of environmental contaminants. This section presents a variety of potential chemical hazards, exposure pathways, and related mitigation actions. See S3AM-110-PR, Toxic and Hazardous Substances, for information on planning, training, monitoring, and details on several specific chemicals (Benzene, Cadmium, Chromium, Hydrogen Sulfide, Lead, and Silica).

8.1 Potential Chemical Hazards

The exposure to potential chemical hazards will be determined on a site by site basis. However, below is a list of potential chemical hazards that may be encountered during work under this contract.

Summary of Hazardous Properties of Contaminant Exposure Hazards

PEL:.....Permissible Exposure Limits

TLV:.....Threshold Limit Values

	Chemical Name	Media	Primary Routes of Exposure	PEL	TLV	IP electron volts (eV)
Metals	Antimony	Soil, GW, Vapor, etc.	Dermal	0.5 mg/m^3	0.5 mg/m^3	n/a
	Arsenic	Soil, GW, Vapor, etc.	Dermal	0.5 mg/m^3	0.2 mg/m^3	n/a
	Barium	Soil, GW, Vapor, etc.	Dermal	0.5 mg/m^3	0.5 mg/m^3	n/a
	Beryllium	Soil, GW, Vapor, etc.	Dermal	2 µg/m^3	0.05 µg/m^3	n/a
	Cadmium	Soil, GW, Vapor, etc.	Dermal	0.005 mg/m^3	0.01 mg/m^3	n/a
	Chromium III	Soil, GW, Vapor, etc.	Dermal	0.5 mg/m^3	0.5 mg/m^3	n/a
	Chromium VI	Soil, GW, Vapor, etc.	Dermal	0.005 mg/m^3	0.005 mg/m^3	n/a
	Cobalt	Soil, GW, Vapor, etc.	Dermal	0.1 mg/m^3	0.02 mg/m^3	n/a
	Copper	Soil, GW, Vapor, etc.	Dermal	1.0 mg/m^3	1.0 mg/m^3	n/a
	Lead	Soil, GW, Vapor, etc.	Dermal	0.05 mg/m^3	0.05 mg/m^3	n/a
	Manganese	Soil, GW, Vapor, etc.	Dermal	5 mg/m^3	0.2 mg/m^3	n/a
	Mercury	Soil, GW, Vapor, etc.	Dermal	0.1 mg/m^3	0.025 mg/m^3	n/a
	Molybdenum soluble	Soil, GW, Vapor, etc.	Dermal	5 mg/m^3	0.5 mg/m^3	n/a
	Nickel	Soil, GW, Vapor, etc.	Dermal	1 mg/m^3	0.5 mg/m^3	n/a
	Selenium	Soil, GW, Vapor, etc.	Dermal	0.2 mg/m^3	0.2 mg/m^3	n/a
	Silver	Soil, GW, Vapor, etc.	Dermal	0.01 mg/m^3	0.01 mg/m^3	n/a
	Vanadium	Soil, GW, Vapor, etc.	Dermal	0.05 mg/m^3	0.05 mg/m^3	n/a
	Zinc	Soil, GW, Vapor, etc.	Dermal	15 mg/m^3	10 mg/m^3	n/a
Pesticides	endrin	Soil, GW, Vapor, etc.	Dermal	0.1 mg/m^3	0.1 mg/m^3	n/a
	dieldrin	Soil, GW, Vapor, etc.	Dermal	0.25 mg/m^3	0.25 mg/m^3	n/a
	Lindane/ gamma BH C	Soil, GW, Vapor, etc.	Dermal	0.5 mg/m^3	0.5 mg/m^3	n/a
	4,4' – DDE[1]	Soil, GW, Vapor, etc.	Dermal	1 mg/m^3	0.5 mg/m^3	n/a
	4,4' – DDT[1]	Soil, GW, Vapor, etc.	Dermal	1 mg/m^3	0.5 mg/m^3	n/a
	4,4' – DDD[1]	Soil, GW, Vapor, etc.	Dermal	1 mg/m^3	0.5 mg/m^3	n/a
	alpha-Chlordane [2]	Soil, GW, Vapor, etc.	Dermal	0.5 mg/m^3	0.5 mg/m^3	n/a
	gamma-Chlordane [2]	Soil, GW, Vapor, etc.	Dermal	0.5 mg/m^3	0.5 mg/m^3	n/a
	Endosulfan I	Soil, GW, Vapor, etc.	Dermal	None	0.1 mg/m^3	n/a

1. *Exposure limits based on DDT.*
2. *Exposure limits based on Chlordane. No PELs are set for alpha or gamma chlordane.*

	Chemical Name	Media	Primary Routes of Exposure	PEL	TLV	IP electron volts (eV)
Common Site COCs	1,1,2,2-Tetrachloroethane	Soil, GW, Vapor, etc.	Inhalation	5 ppm	1 mg/m3	~11.1
	Benzene	Soil, GW, Vapor, etc.	Inhalation	1 ppm	0.5 ppm	9.25
	Coal tar pitch hydrocarbons PAH	Soil, GW, Vapor, etc.	Inhalation	0.2 mg/m^3	0.2 mg/m^3	n/a
	Di-(2-Ethylhexyl)phthalate	Soil, GW, Vapor, etc.	Inhalation	5 mg/m^3	5 mg/m^3	9.64
	Diesel fuel (TPH-DRO)	Soil, GW, Vapor, etc.	Inhalation	n/a	15 ppm	n/a
	Dioxins/furans	Soil, GW, Vapor, etc.	Inhalation	n/a	n/a	9.19/8.89
	Dust	Soil, GW, Vapor, etc.	Inhalation	15 mg/m^3	10 mg/m^3	n/a
	Ethylbenzene	Soil, GW, Vapor, etc.	Inhalation	100 ppm	20 ppm	8.77
	Gasoline (TPH-GRO)	Soil, GW, Vapor, etc.	Inhalation	n/a	300 ppm	n/a
	Hydrogen sulfide	Soil, GW, Vapor, etc.	Inhalation	20 ppm	1 ppm	10.46
	Methane	Soil, GW, Vapor, etc.	Inhalation	n/a	1,000 ppm	12.61
	Oils (TPH-LRO)	Soil, GW, Vapor, etc.	Inhalation	5 mg/m$^{3\,b}$	5 mg/m$^{3\,b}$	n/a
	Phenol	Soil, GW, Vapor, etc.	Inhalation	5 ppm	5 ppm	8.5
	Polychlorinated biphenyls (PCBs)	Soil, GW, Vapor, etc.	Absorption, ingestion	1 mg/m^3 (42% chlorine); 0.5 mg/m^3 (54% chlorine)	1 mg/m^3 (42% chlorine); 0.5 mg/m^3 (54% chlorine)	n/a
	Silica	Soil, GW, Vapor, etc.	Inhalation	See OSHA website for formula		n/a
	Tetrachloroethylene (PCE)	Soil, GW, Vapor, etc.	Inhalation	100 ppm	25 ppm	9.32
	Toluene	Soil, GW, Vapor, etc.	Inhalation	200 ppm	20 ppm	8.82
	Xylene	Soil, GW, Vapor, etc.	Inhalation	100 ppm	100 ppm	8.45, 8.56

8.2 Potential Exposure Pathways

Occupational exposure to chemical hazards associated with the work activities could potentially occur by two primary routes (inhalation and skin contact) and one indirect route (incidental ingestion).

8.2.1 Inhalation

The primary risks associated with AECOM's scope of work pertain to potential exposure to airborne contaminants and explosion hazards. Constituents that potentially pose an occupational concern to employees by the inhalation route are carbon monoxide, hydrogen sulfide, methane, and volatile organic compounds. Air monitoring will be performed within the employee breathing zone to assess the need to implement appropriate control measures or stop work. In addition, air monitoring will be performed at the source to assess potential explosion hazards.

8.2.2 Skin Contact

Personnel handling residual product or waste and associated equipment may be exposed to chemical hazards by skin contact or adsorption. However, exposure is expected to be limited since workers will be required to wear appropriate PPE (i.e. appropriate work gloves, body clothing, and/or face shield).

8.2.3 Ingestion

Personnel handling residual product or waste and associated equipment, including project hazardous materials, may be exposed by incidental ingestion. Typically, this exposure occurs if proper PPE was not used or personal hygiene was not practiced. Personal protection against exposure via ingestion can be accomplished by performance of proper decontamination procedures when exiting contaminated work areas as well as using the correct PPE.

8.3 Decontamination

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities. Decontamination steps are outlined in Hazardous Waste Operations procedure S3AM-117-PR. Some key elements are as follows:

- All persons and equipment entering the EZ shall be considered contaminated, and thus, must be properly decontaminated prior to exiting to clean areas of the site.
- Avoid reactions between the solutions and contaminated materials. Review the applicable SDS.
- All contaminated PPE and decontamination materials shall be contained, stored and disposed of in accordance with site-specific requirements determined by site management.
- Use caution while working around decontamination stations, including the decontamination pad, which may be a slip or trip hazard.
- Use disposable equipment when possible and practical.
- 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.
- All decontaminated equipment shall be visually inspected for contamination prior to leaving the Contaminant Reduction Zone (CRZ).

Decontamination Procedures & Equipment	
Procedure	***Equipment Needed***
Remove all equipment, sample containers, and notes to the CRZ. Obtain decontamination solutions and decontaminate the tools (shovels, auger flights, etc.) by brushing them under a water rinse. A high-pressure steam cleaner also may be used for decontamination. All waste and spent decontamination solutions will be properly contained. Remove disposable booties, or scrub boots with a stiff bristle brush and water, when necessary. Washtubs and chairs will be provided. Remove outer gloves (and boot covers, if used). Remove Tyvek® coveralls; discard in provided container. Remove hardhat and eye protection. Remove respirator. Remove inner gloves. Wash hands and face. The decontamination area will be covered with plastic sheeting that will be replaced when torn or heavily soiled and at the end of each shift.	Alconox solution Deionized water Brushes Plastic sheeting

Equipment Decontamination Procedures		
Type Equipment	***Decontamination Solution***	***Procedure***
Respirator	Alconox solution and deionized water	**Washing**: Disassemble and wash with an Alconox solution in deionized water. A stiff bristle (not wire) brush may be used. **Rinsing**: Rinse in deionized water to remove all traces of detergent. This is important to prevent dermatitis. **Disinfecting**: Thoroughly rinse or immerse in a sanitizer provided by the manufacturer. **Final Rinsing**: Rinse thoroughly in clean water to remove all traces of disinfectant. **Drying**: Drain and dry by hanging by the straps from racks or by towel drying with clean, soft cloths or paper towels.
Water quality meter, oil/water interface probe, down-hole water		**Washing**: Disassemble and wash with an Alconox solution in deionized water.

sampling pumps, reusable sampling tools/ equipment		**Rinsing**: Rinse in deionized water to remove all traces of detergent.
Drilling Equipment/ Tools	High-pressure steam cleaner	Apply steam cleaner to used equipment/ tools

Waste Handling for Decontamination	
Waste Streams/Products	***Disposal Procedures***
Wash water	Containerize in 55-gallon DOT drums, and stage drums in temporary location pending shipment off site for treatment/ disposal.
Used PPE	
Spent plastic sheets/ consumables from decontamination procedures	

8.4 Air Monitoring

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 in accordance with Exposure Monitoring Procedure S3AM-127-PR and specified in the work permit and/or THA for the tasks. Key elements of the procedure include:

- Calibration of monitoring equipment and/or daily bump tests to verify calibrations and confirm alarm function.
- Personal monitoring and result evaluation must be directed by a Certified Industrial Hygienist or Certified Safety Professional.

All monitoring data, including background readings, will be logged in a field logbook and incorporated into the project files. See the New York State Department of Health's (NYSDOH's) Generic Community Air Monitoring Plan (**Attachment G**) for additional information.

8.4.1 Real-Time Exposure Measurement/ Equipment

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 the work permit and THA as work is performed. All instrumentation needs to be rated intrinsically safe to prevent fire or explosion.

Instrument	Manufacturer/Model	Substances Detected
Photo Ionization Detector (PID)	RAE Systems mini-RAE Photovac Microtip (min. 10.6 eV bulb)	• Petroleum hydrocarbons • Organic Solvents
Multi or 4 Gas Detectors	RAE Systems Multi-RAE	• Lower Explosive Limit • Oxygen • Carbon Monoxide • Hydrogen Sulfide
Combustible Gas Indicator (CGI) *May be combined with individual or multi-gas detectors.*	TBD	• Explosivity
Particulate Monitor	MIE Model PDM-3 mini-RAM	• Aerosols, mist, dust, and fumes

8.4.2 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 mitigation 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 Site Supervisor or Site Safety Officer or the Safety Manager.

Reasons to Upgrade:

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

8.4.3 Monitoring Procedures

The monitoring procedures shown below are general guidelines for sampling activities. A reading in excess of action level outlined below will require additional ventilation for 30 minutes, followed by re-monitoring.

Monitoring Procedures and Action Levels

Parameter	Zone Location and Monitoring Interval	Response Level	Response Activity
Volatile Organic Compounds (VOCs) and volatile hydrocarbons (total by PID)	Breathing zone, continuously during tasks where exposure to VOCs and volatile hydrocarbons is possible	< 5 ppm	Continue monitoring, may continue work in required PPE
		5- 25 ppm (sustained for 5 minutes)	STOP WORK and notify PM. Investigate the cause of elevated VOC measurements and identify measures to reduce concentrations (cover impacted soils, ventilation, etc.). Work activities shall only continue once levels have decreased to or below 5 units above background. If levels continue above 5 units, only individuals who are medically qualified to wear respiratory protection are permitted to continue work activities with Project Manager approval. Don Level C PPE (organic vapor respirator cartridges), continue monitoring, and initiate continuous air monitoring for benzene.
		> 25 ppm (sustained for 5 minutes)	Cease work, exit, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
Benzene (by PID with benzene-specific separation tube)	Breathing zone, continuously where indicated by VOC readings	> 0.25 ppm	Cease work, exit the area, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
Hydrogen Sulfide (multi-gas detector or individual H_2S meter)	Breathing zone, continuously during tasks where exposure to hydrogen sulfide is possible	< 5 ppm	Continue work activities. Contact the Site Safety Officer to investigate the potential for contributing factors.
		> 5 ppm	Cease work, exit the area or confined space, and contact the Site Safety Officer, Site Supervisor and Project Manager.
Combustible Gas (multi-gas meter or individual combustible gas indicator, CGI)	Breathing zone or in the immediate work area continuously during tasks where explosive atmospheres are possible	> 5% of LEL	Cease work, exit, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
Oxygen (O_2) (multi-gas detector or individual O_2 meter)	Breathing zone, continuously during tasks were oxygen enriched or deficient atmospheres are possible	< 19.5 % O_2	Cease work deficient atmosphere), exit the area or confined space, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
		> 23.5 % O_2	Cease work enriched atmosphere), exit the area or confined space, and contact the Site Safety Officer, Site Supervisor, and Project Manager.

Parameter	Zone Location and Monitoring Interval	Response Level	Response Activity
Carbon Monoxide (CO) (multi-gas detector or individual CO meter)	Breathing zone, continuously during tasks where exposure to CO is possible	< 10 ppm	Continue work in Level D and continue monitoring
		> 10 ppm	Cease work, exit the area or confined space, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
Dust not otherwise classified (total by aerosol monitor)	Breathing zone every 30 minutes during field activities where exposure to excessive dusts are possible	< 5 mg/m^3	Continue work in Level D and continue monitoring
		> 5 mg/m^3	Upgrade to Level C (P100 respirator cartridges), implement dust suppression measures; contact the Site Safety Officer & Site Supervisor.
		> 10 mg/m^3	Cease activities, implement more effective dust suppression measures; contact the Site Safety Officer & Site Supervisor.
Dust not otherwise classified (total by aerosol monitor)	Edge of Exclusion Zone, every 30 minutes during excavation activities	< 5 mg/m^3	Continue work in required PPE, monitor air, and implement engineering controls
		> 5 mg/m^3	Cease activities and contact the Site Safety Officer & Site Supervisor.

9. Environmental Impact Prevention

AECOM strives to avoid or control environmental impacts from our operations through planning and implementation of best practices as well as preparing responses to react to environmental incidents. Environmental Compliance procedure S3AM-204-PR provides details on permitting and planning requirements.

9.1 Incidental Spill Prevention and Containment

Spill prevention and containment planning must be conducted, and appropriate control measures established, consistent with regulatory requirements. Personnel are not expected to perform a response action related to an uncontrolled release of a hazardous substance. However, in the event of an incidental release of a hazardous material, a response will be performed to absorb, neutralize or otherwise control the release within the immediate work area. Procedures contained in the SDS of the hazardous material will be implemented to perform the response. The Emergency Response section of site-specific HASPs contains information on spill reporting, pre- and post- spill evaluation, and response

9.1.1 Spill Prevention and Containment Practices

Work activities may involve the use of hazardous materials (i.e. fuels, solvents) or work involving drums or other containers. When these activities exist the procedures outlined below will be used to prevent or contain spills:

- All hazardous material will be stored in appropriate containers and labelled.
- Tops/lids will be placed back on containers after use.
- Containers of hazardous materials will be stored appropriately away from moving equipment.
- 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.
- Equipment will be inspected daily for signs of leaks, wear, or strain on parts that, if ruptured or broken, would result in a spill.
- Refueling should occur in designated areas where incidental spills can be prevented from reaching permeable ground surfaces.
- Whenever possible, position parked or stationary equipment over secondary containment and/ or absorbent materials to prevent spills from reaching permeable ground surfaces.
- A 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, absorbent pads, etc.) will be available on the project site and positioned for quick and easy access.

10. Personal Protective Equipment

PPE is considered the last line of defense in hazard control. PPE is meant to protect workers when all other methods (elimination, substitution, engineering, and administrative) have been exhausted. All employees must be trained in the proper use and maintenance of PPE. See Procedure S3AM-208-PR1, Personal Protective Equipment.

A PPE assessment (see S3AM-208-FM1) can be performed to help determine PPE requirements. PPE upgrades for individual tasks or steps of a task are to be identified in the appropriate THA(s).

Minimum Required PPE (per AECOM PPE and HAZWOPER Procedures):

- Hard hat
- Safety glasses w/ side shields (may be clear or shaded)
- Safety toe work boots
- Long pants and shirts with sleeves (short or long- cover shoulders no tank or muscle shirt styles)

Complete the table below for site-specific PPE:

Additional PPE Needed On Site

(to encompass all task specific additions and upgrades)

Face/ Eyes

- ☒ Spoggles (Safety Glasses with foam liner for dust protection)
- ☐ Welding Mask/Goggles
- ☐ Chemical Goggles
- ☐ Face Shield (splash)
- ☐ Face Shield (impact)

Head/ Ears

- ☐ Helmet with Chin Strap
- ☐ Wide Brimmed Hat
- ☒ Earplugs
- ☒ Over-ear Hearing Protection

Hands

- ☒ Nitrile
- ☒ Leather
- ☒ Cut, Abrasion and Puncture Resistant
- ☒ Impact-resistant
- ☒ Other Chemical Resistant : *(specify)*
  - neoprene
  - Butyl rubber

Legs/ Feet

- ☐ High Ankle Boots
- ☐ Snake Guards
- ☒ Rubber Boots/Waders
- ☐ Metatarsal Guards
- ☐ Electrically-resistant boots

Body

- ☒ Sunscreen
- ☒ Insect Repellent (DEET)
- ☐ Permethrin Applied to Clothing
- ☒ Long-sleeved Shirt
- ☒ High-visibility Vest
- ☐ High-visibility Pants
- ☒ Disposable Coveralls
- ☐ Flame Retardant Clothing
- ☐ Fall Protection
- ☐ Personal Floatation Device
- ☒ Other: *(specify)*
  - Disposable booties. Respirator w/organic vapor/HEPA cartridge
  - Potential for SCBA

Equipment

- ☒ **Air/Noise Monitoring Equipment:** *(specify)*
  - PID, Multi or 4 Gas, CGI, Particulate Monitor, Single Gas Detectors, Noise Dosimeter
- ☒ **Traffic/Work Zone Control Equipment:** *(specify)*
  - Traffic Cones, Caution Tape
- ☐ **Communication Beyond Cell Phones:** *(specify)*
- ☐ **Fire Controls:** *(specify)*
  - Fire Extinguishers per our procedure requirements

11. Site Control

The purpose of site control is to protect the public from inadvertently coming into contact with site hazards and to protect AECOM employees being impacted by hazards. This section details the equipment and actions needed to promote optimal site control.

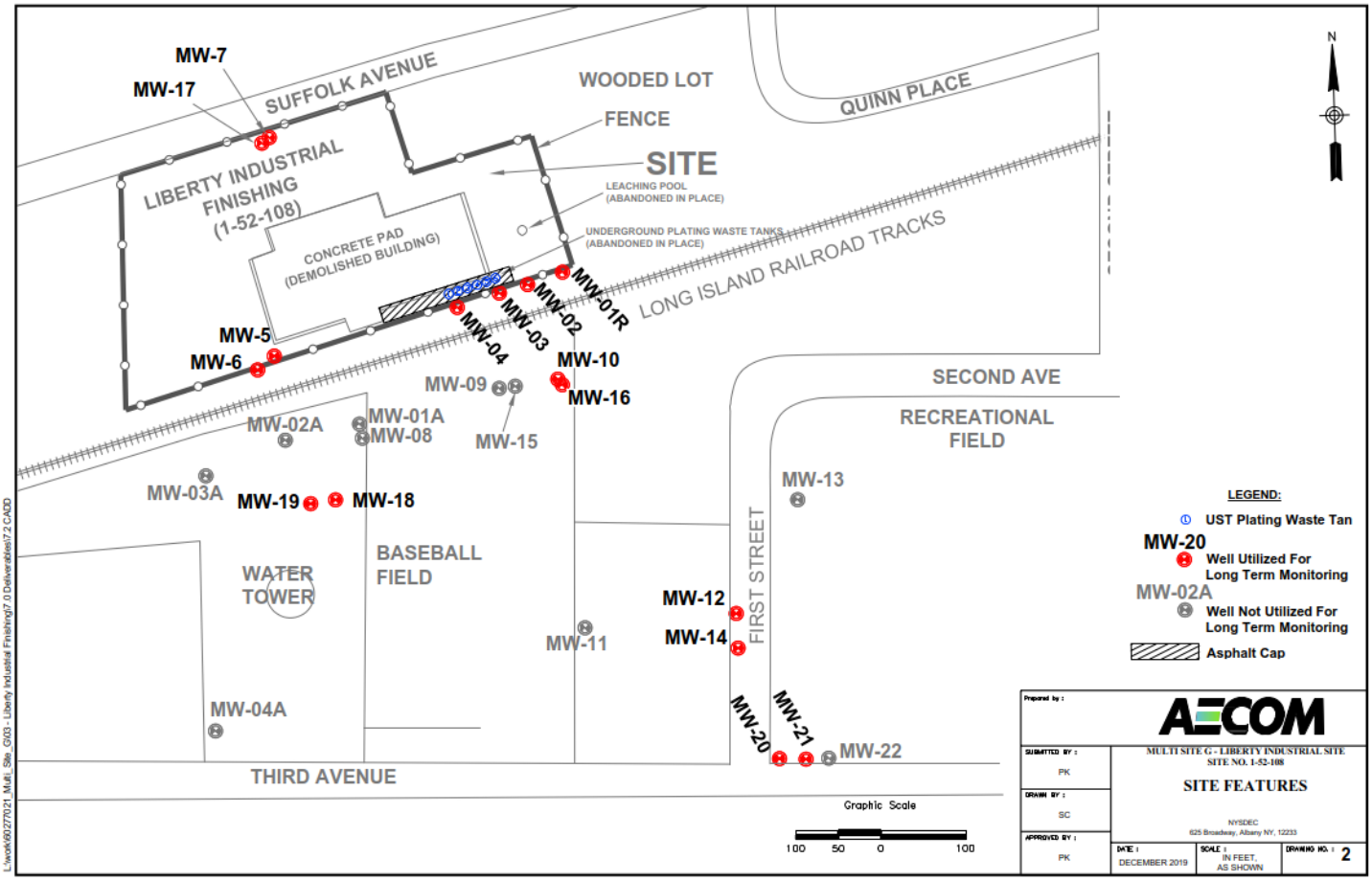
11.1 Site Work Zones

Site layout and site control need to be coordinated achieve a productive work environment and efficient work process while minimizing exposure of employees and the public to hazards associated with the work. Consider the following items when planning the site layout and controls:

- "Line of Fire" hazards- overhead utilities, falling/ tipping equipment, release of energy/ pressure, flying debris,
- Noise, dust, odor suppression
- Contamination containment and decontamination area layout
- Traffic control for site vehicles/ equipment (public traffic control requires Traffic control Plan)
- Restricted access for areas requiring special training, skills, or certifications
- Restriction of work near railroads
- Presence or creation of excavations
- Loading/unloading areas
- Portable restrooms
- Dumpsters and bins
- Equipment lay down
- Heavy equipment parking
- Overnight safety and security needs

The site controls will be established on a location by location basis.

11.2 Site Control Map/ Diagram



11.3 Simultaneous and Neighboring Operations

Simultaneous and neighboring operations vary by site, making general site controls impractical. Such operations and controls will be addressed on a site by site basis.

11.4 Site Security

All projects should be reviewed for the potential for personal security issues (e.g., assault, robbery, threat, etc.). Check all of the following that apply:

- ☐ Project site located in a higher crime area or has a history of security incidents
- ☐ Working outside of regular cellular telephone service
- ☐ Idle property with potential for trespasser(s) to shelter in buildings/structures and assault personnel
- ☐ Working at night

Detail the security measures to address the above risks:

If possible, all equipment will be off site at the end of each work day. If a piece of equipment cannot leave the Site, then that piece equipment will be secured as not to be stolen or tampered (i.e., locked).

12. Emergency Response

AECOM requires that all projects plan for reasonably foreseeable emergencies (see Emergency Response Planning Procedure S3AM-010-PR). Prior to the start of site operations, all personnel shall review the table below for site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures. An Incident Response Flow Chart is included in **Attachment A**.

12.1 Incident/ Emergency Contact Information

AECOM Contacts			
Name	**Title**	**Telephone Number**	**Mobile Phone**
Paul Kareth	Project Manager	845-425-4980	973-891-4882
TBD	Site Supervisor	TBD	TBD
TBD	Site Safety Officer	TBD	TBD
Michael L. Spera, PE	NYSDEC Contract D009803 Manager	(212) 377-8715	(917) 514-5186
Peter Gregory, CSP, MPH, STS	Region SH&E Manager	(973) 883-8683	(201) 602-3511
Pete Wray, CSP, CHMM, STS	Area SH&E Manager	(302) 781-5872	(302) 660-9178
Incident Reporting	DCS Incident Reporting & Help Line	800-348-5046	
AECOM Nurse direct	Use only after incident reporting line	877-878-9525	
Client Contacts			
Name	**Title**	**Telephone Number**	**Mobile Phone**
TBD	Client Project Manager	TBD	TBD
Organization/Agency			
Police Department (local)			911
Fire Department (local)			911
Ambulance Service (EMT will determine appropriate hospital for treatment)			911
Hospital: (Site personnel to use for emergency care) TBD			631-968-3000
Occupational Clinic: (Site personnel to use for non-emergency care) TBD			516-453-0172
Poison Control Center			(800) 222-1222
Pollution Emergency (NYSDEC Spill Hotline)			(800) 457-7362
INFOTRAC (AECOM's account number 74984)			800-535-5053
AECOM Hazardous Material Shipping Help Line			800-381-0664
Public Utilities			
Call Before You Dig			811

12.2 Muster Location

At vehicle parking location.

12.3 Communication Procedures

Direct visual or auditory contact or cell phone use when not within speaking distance will be used while onsite.

12.4 CPR/ First Aid Trained Personnel

TBD.

12.5 Incident Reporting

Incidents involving or affecting an AECOM employee will be reported in a prompt manner verbally to the site supervisor and project manager.

1. If the incident is a significant or life-threatening emergency, the employee or supervisor shall immediately dial 911 or the appropriate emergency contact phone number for your site.
2. The employee or supervisor shall contact the Incident Hotline (800-348-5046). *Note: Do not report subcontractor injuries to the Incident Hotline as AECOM Nurses cannot provide direction to subcontractors. The Subcontractor should follow their injury reporting and response procedure. The incident should be reported to IndustrySafe as described below.*
3. The employee or supervisor must notify their operational leaders and the Area SH&E Manager.
4. The supervisor, or delegate, must make initial notification in IndustrySafe within 4 hours for significant incidents, including subcontractor injuries, or 24 hours for less significant events event.
5. Client and account management notifications may also apply. The Project Manager will make any necessary notifications.

Any injury, even if no treatment is required, and any incident for which assistance by SH&E Management is needed must be immediately communicated to the Incident Hotline at 1-800-348-5046.

All incidents are also to be reported to IndustrySafe within the timeframes listed below:

Incident Type	IndustrySafe Reporting Time Frame
Significant Incident, including any injury to an AECOM Employee or Subcontractor	➔ 4 Hours
All Other Incidents	➔ 24 Hours

Significant Incident:

- Fatality;
- Amputation;

- Hospitalization for treatment for more than 24 hours (admission);
- Any single event resulting in more than one employee requiring medical treatment or more than one employee being away from work more than 3 days;
- Any SH&E-related Consent Agreement/Order/Lawsuit or enforcement action seeking more than $10,000 or alleging criminal activity;
- Any spill or release of a hazardous material that is reportable to a regulatory agency;
- Any Notices of Violation resulting from not operating within a regulatory agency permit/license or consent;
- Any incident resulting in property damage expected to exceed $10,000 United States (US) dollars;
- Any security-related incident that could have caused significant harm to an AECOM employee; and/or
- Any Near Miss event that may have resulted in any of the above consequences but because of "luck" did not result in harm to persons, property or the environment.

All Other Incidents:

- Any injury or illness to an AECOM employee or subcontractor, even if it does not require medical attention, including work-related injuries/illnesses that have become significantly aggravated by the work environment;
- An injury to a member of the public, or clients, occurring on an AECOM-controlled work site;
- Re-occurring conditions such as back pain or cumulative trauma disorders (e.g., carpal tunnel syndrome);
- Fire, explosion, or flash that is not an intended result of a planned event (e.g., remediation process, laboratory Procedure);
- Any incident involving company-owned, rented, or leased vehicles (including personal vehicles used for company business); and/or
- Any failure to comply with the requirements of a regulatory permit issued to AECOM.
- Scan the QR code below to access IndustrySafe reporting system from your smartphone/ device.

IndustrySafe
Safety Management Software

12.6 Medical Emergencies

In the event of a life-threatening or critical emergency, AECOM employees should dial 911 and follow the recommended instructions. However, in less serious situations, an injured employee or a co-worker should contact the Incident Hotline at 800-348-5046 to ensure that the employee receives the best care at the best time (i.e., within the first hour following an injury or potential injury). By contacting the Incident Hotline, the worker can be connected with AECOM's nurses for first aid advice. If recommended by the nurse, the supervisor or a co-worker should drive the injured employee to the project-designated clinic or hospital.

12.7 Vehicle Incidents

All vehicles should be rented through Carson Wagonlit Travel (accessible via Ecosystem) to ensure that AECOM insurance is included in the rental rate. All other insurances should be declined. AECOM's rental vehicle insurance policy for National/Enterprise or Avis can be found on the DCS Americas United States or Canada travel pages. **Drivers MUST print and carry the applicable insurance policy for the rental**.

In the event of a vehicle incident (including collisions as well as mechanical difficulties such as breakdowns and flat tires) the following responses are recommended:

- For breakdowns and flat tires, contact an emergency provider.

- For rental vehicles, contact the rental company.
- To the extent possible, AECOM personnel should not change flat tires or perform similar repairs.
- If a collision has occurred, assess the situation and move all occupants (except the injured) out of further harm's way. If safe to do so, remove the car from the traveled way. Call 911 if necessary and report the incident to the Incident Hotline at 800-348-5046 as soon as practical. If appropriate, wait for police to arrive before moving vehicles. Provide insurance information to other drivers if necessary or requested and collect the same. If possible, obtain names and phone numbers of witnesses. Take photographs of the scene if possible. DO NOT ADMIT LIABILITY, AGREE TO PAY FOR DAMAGE, OR SIGN A DOCUMENT RELATED TO AN INCIDENT EXCEPT AS REQUIRED BY LAW.

12.8 Spill or Release

AECOM employees are not expected to take action or to participate in rescues or responses to chemical releases (including of petroleum products) beyond the initial discovery of the release and immediate mitigation actions such as closing a valve, placing absorbents, and notifying the client and or public emergency response system (911), unless there is a contractual provision for this response and specially trained employees.

12.8.1 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 incident reporting procedure. In determining whether a spill or release must be reported to a regulatory agency, the Site Supervisor or qualified worker will assess the quantity of the spill or release and evaluate the reporting criteria against the state-specific reporting requirements, applicable regulatory permit, and/or client-specific reporting procedures. **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 the table below.

Table 12-1: CERCLA Reportable Quantities

Hazardous Substance	Regulatory Synonyms	Final RQ (lbs.)
1,1,1-Trichloroethane	TCA	1,000
Arsenic	N/A	1
Benzene	N/A	10
Cadmium	N/A	10
Carbon Tetrachloride	N/A	10
Chromium	N/A	5,000
Ethyl Benzene	N/A	1,000
Lead	N/A	10
Mercury	N/A	1
Methyl Ethyl Ketone	MEK	5,000
Nickel	N/A	100
Pentachlorophenol	PCP	10
Selenium	N/A	100
Tetrachloroethylene	Perchloroethylene, PCE	100
Toluene	N/A	1,000
Trichloroethylene	Trichloroethene, TCE	100
Xylene	N/A	100

CERCLA RQ's can be found at: http://www.epa.gov/oem/docs/er/302table01.pdf

NYSDEC Petroleum Spill Requirements

All petroleum spills that occur at the site must be reported to the NYSDEC Spill Hotline (1-800-457-7362) within 2 hours of discovery, except spills which meet all of the following criteria:

- The quantity is known to be less than 5 gallons; and
- The spill is contained and under the control of the spiller; and
- The spill has not and will not reach the State's water or any land; and
- The spill is cleaned up within 2 hours of discovery.

A spill is considered to have not impacted land if it occurs on a paved surface such as asphalt or concrete. A spill in a dirt or gravel parking lot is considered to have impacted land and is reportable.

NYSDEC's Spill Regulations/Guidelines can be found at: https://www.dec.ny.gov/chemical/8692.html.

The spill containment program addresses the following site-specific information:

- Potential hazardous substance spills and available controls;
- Initial notification and response;
- Spill evaluation and response; and
- Post-spill evaluation.

12.8.2 Spill Evaluation and Response

The SSO is responsible for evaluating spills and determining the appropriate response. When this evaluation is being made, the spill area is isolated and demarcated to the extent possible. When an incidental release occurs, clean-up personnel receive instructions in a pre-clean-up meeting as to spill conditions, PPE, response activities, decontamination, and waste handling.

The procedures of the Emergency Response section of site-specific HASPs are immediately implemented when the spill is determined to require emergency precautions and action. If necessary, to protect those outside the clean-up area, notification of the appropriate authorities is made. Table 12-1 lists the spill conditions that trigger notification of Federal, state, and local agencies.

The following are general measures that response/clean-up personnel take when responding to a spill:

- To minimize the potential for a hazardous spill, hazardous substances, control/absorbent media, drums and containers, and other contaminated materials are properly stored and labeled;
- When a spill occurs, only those persons involved in overseeing or performing spill containment operations will be allowed within the designated hazard areas. If necessary, the area will be roped or otherwise blocked off. Unauthorized personnel are kept clear of the spill area;
- Appropriate PPE is donned before entering the spill area;
- Appropriate spill control measures are applied during spill response;
- Whenever possible without endangerment of personnel, the spill is stopped at the source or as close to the source as possible;
- Ignition points are removed if fire or explosion hazards exist;
- Surrounding reactive materials are removed;
- Drains or drainage in the spill area are blocked or surrounded by berms to exclude the spilled waste and any materials applied to it;

- Provisions are made to contain and recover a neutralizing solution, if used;
- Small spills or leaks from a drum, tank, or pipe will require evacuation of at least Enter Distance feet in all directions to allow clean-up and to prevent employee exposure. For small spills, sorbent materials such as sand, sawdust, or commercial sorbents are placed directly on the spill to prevent further spreading and aid in recovery;
- Spill area is sprayed with appropriate foam where the possibility of volatile emissions exists;
- If the spill results in the formation of a toxic vapor cloud, from vaporization, reaction with surrounding materials, or the outbreak of fire, further evacuation may be required;
- To dispose of spill waste, all contaminated sorbents, liquid waste, or other spill clean-up will be placed in small quantities Enter QTY pounds) in approved drums for proper storage or disposal as hazardous waste; and

12.8.3 Post Spill Evaluation

As part of the incident investigation and reporting documentation, a written spill response report shall be prepared at the conclusion of clean-up operations. The report will include, at a minimum, the following information:

- Date of spill incident;
- Cause of incident;
- Spill response actions;
- Any outside agencies involved, including their incident reports; and
- Lessons learned or suggested improvements.

The spill area is inspected to ensure the area has been satisfactorily cleaned. The use of surface and air sampling is utilized in this determination, as necessary. The root cause of the spill is examined, and corrective steps taken to ensure the engineering and control measures in place have performed as required. If alternative precautions or measures are needed, they are made available and implemented.

All durable equipment placed into use during clean-up activities is decontaminated for future utilization. All spill response equipment and supplies are re-stocked as required.

12.9 Fire

AECOM employees are not expected to attempt to put out fires. Stop work; notify all AECOM personnel, move upwind and contact 911 and/or emergency response at the site. If employees have been properly trained in the operation of a fire extinguisher, they may attempt to put out a small fire, provided that the following conditions are met:

- The fire must be small (i.e., smaller than a trash can) and in its early stages
- The employee must have an escape route
- The employee must be trained and know they have the right type of extinguisher
- The employee must be safe from toxic gases
- There must be no hazardous conditions that could quickly accelerate the fire (i.e., presence of chemicals, especially dry grass, etc.)
- Above all, if in doubt, the employee must not attempt to fight the fire

13. Personnel Acknowledgement and Disclaimer

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Generic Health and Safety Plan for various projects performed under NYSDEC Standby Contract #D009803. 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. The employee understands that they are NOT to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the Incident Hotline at 800-348-5046 for any incident, ***including ANY injury even if no first aid or medical treatment is required.***

Print Name	Signature	Organization	Date

13.1 Disclaimer:

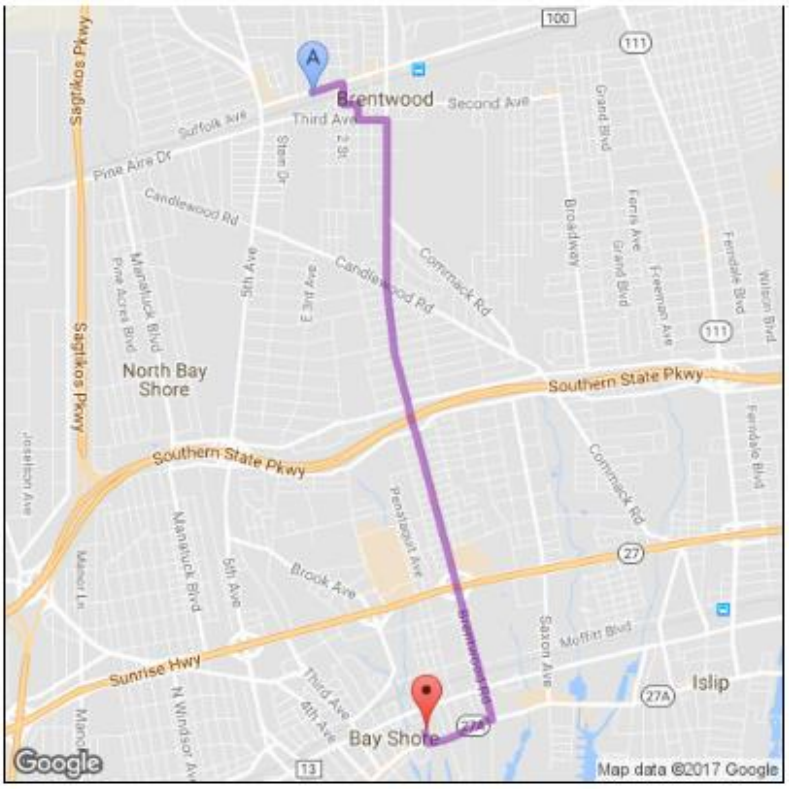
This SH&E Plan, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on industrial sites or projects where AECOM is providing engineering, construction management or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility therefore. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

Attachment A

Incident Reporting and Response Flow Chart

Attachment A. Hospital and Clinic Directions/ Maps Incident Reporting and Response Flow Chart

Nearest Hospital:	Southside Hospital	Phone Number:	631-968-3000
Address:	301 East Main Street, Bay Shore, New York, 11706		



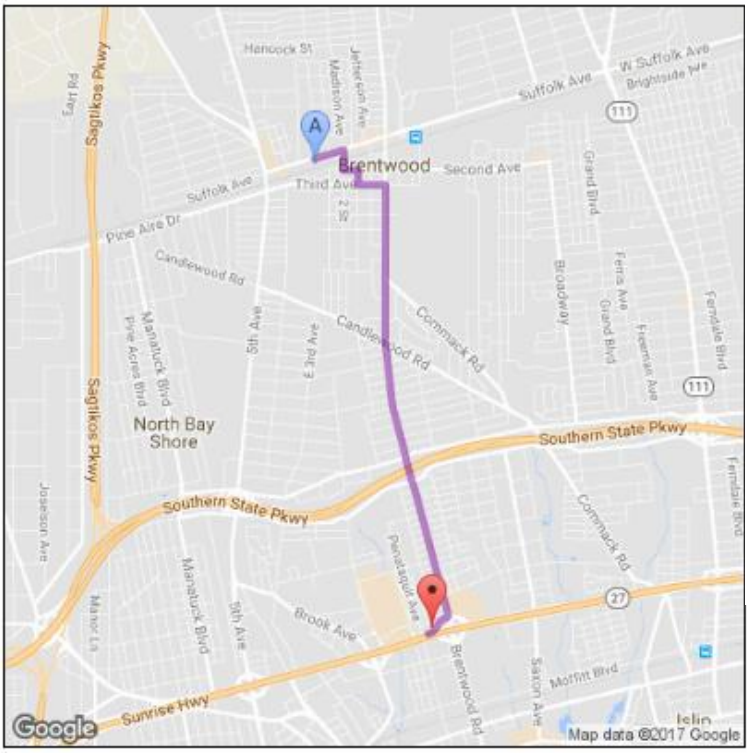
From: 500 Suffolk Avenue
Brentwood, NY 11717
New Start Address

To: 301 E Main St
Bay Shore, NY 11706

1. Head **east** on **Suffolk Ave** toward **Adams Ave**	0.2 mi
2. Turn **right** onto **2nd St**	0.1 mi
3. Turn **left** onto **Second Ave**	446 ft
4. Turn **right** at the 1st cross street onto **Third St**	476 ft
5. Turn **left** at the 1st cross street onto **Third Ave**	0.2 mi
6. Turn **right** onto **Brentwood Rd**	3.6 mi
7. Turn **right** onto **E Main St**	0.4 mi
8. Turn **right** at **Mowbray Pl**	348 ft
Destination will be on the right	
Estimated driving time: 14 minutes	4.7 mi

Occupational Clinic- Address, written directions, and mapped route from site

Nearest Occupational Clinic:	City Medical of Upper East Side, Plc. City MD Urgent Care	Phone Number:	516-453-0172
Address:	1757 Sunrise Hwy, Bay Shore, NY 11706		



From: 500 Suffolk Avenue, Brentwood, NY 11717 — New Start Address

To: 1757 Sunrise Hwy, Bay Shore, NY 11706

1. Head **east** on **Suffolk Ave** toward **Adams Ave**	0.2 mi
2. Turn **right** onto **2nd St**	0.1 mi
3. Turn **left** onto **Second Ave**	446 ft
4. Turn **right** at the 1st cross street onto **Third St**	476 ft
5. Turn **left** at the 1st cross street onto **Third Ave**	0.2 mi
6. Turn **right** onto **Brentwood Rd**	2.7 mi
7. Take the ramp to **US 27 W**	0.2 mi
8. Merge onto **Sunrise Hwy North Service Rd**	10 ft
Destination will be on the right	
Estimated driving time: 10 minutes	3.5 mi

AECOM

Work-Related Incident Flowchart for Employees | Updated October 2016

DCS - Americas

Updated October 2016

AECOM Imagine it. Delivered.

Attachment B

Typical Project Risk Register/ Hazard Assessment, THA Forms, and Tailgate Safety Meeting Forms

Attachment B. Project Risk Register/ Hazard Assessment, THA Forms, and Tailgate Meeting Forms

The Project Manager shall download and prepare a Project Risk Register/ Hazard Assessment for the project. Checklist S4[DCS]AM-209-FM4-A shall be used. In addition, each discrete task being performed during the project (i.e., Driving, Inspection, Sample Collection, etc.) requires a Task Hazard Assessment (THA; form S4[DCS]AM-209-FM6-A). If you don't have a THA for a task, obtain or develop one. The DCS Americas Templated THA Library may also be used to find previously approved THAs.

The THAs MUST be reviewed at the location where the work will take place, just prior to beginning each task and signed by all staff involved in the operation. The THAs should be consulted and updated throughout the day if conditions change using the 'On-Site Edits' lines.

Insert Task Hazard Analyses here. Include these documents after this cover sheet in the final SWP.

The preparer shall download a sufficient number of blank copies of the Tailgate Meeting Form (S3AM-209-FM5) to use each day of field work, and blank THA forms so that new task can be performed, if not covered by previously-prepared THAs. A THA must be in hand prior to starting to perform work on any task.

DCS Americas THA Review Guide

Task Hazard Assessment Instructions:

Each unique task or work group should have their own THAs. If workers have a THA for their task(s) in hand, they should simply review it and document the site-specific edits in red pen in the appropriate section. If workers do ***not*** have a THA for all tasks to be performed, a THA must be obtained or drafted *prior to starting work* on that task. Use additional pages as needed.

- Identify the basic steps of the task that must be performed in order and their associated hazards. Identify controls or barriers to mitigate each identified hazard.
- Clearly identify any **STOP WORK** triggers
- Document stop work and change management if conditions/ scope changes.
- Use 4-Sight to identify and mitigate site-specific hazards throughout the day. Modify the THA as needed. Contact site supervisors or the PM for any significant scope changes or changes of expected conditions.
- All THAs shall be 3 pages (maximum) or less (preferred). If they are longer, the task is too broad
- All hazards will use standardized nomenclature (Hazard Wheel), should be specific, detail how someone could be hurt and what the outcome could be
- All actions to mitigate hazards must be specific, clearly aligned with its respective hazard and not generic. Avoid words such as "*proper", "correct*", or "*appropriate*"). Use specifics and numerical values (i.e. wear disposable nitrile gloves, stand back 6 feet/1.8 meters, take a 10-minute break every hour)
- PPE cannot be the only line of defense - PPE is always the last line of defense, so think through what other controls (engineering, administrative, etc.) could mitigate hazards

Discuss as Applicable and Modify THA as Needed

Check ☑ if reviewed or mark N/A

- ☐ *Biological/ Chemical/ Electrical Hazards*
- ☐ *Decontamination Procedures*
- ☐ *Ergonomics- Lifting, Body Position*
- ☐ *Lock Out/ Tag Out*
- ☐ *Short Service Employees- visual identifier and mentor/ oversight assignment*
- ☐ *Simultaneous/ Neighboring Operations*
- ☐ *Slip/ Trip/ Fall Hazards*
- ☐ *Specialized PPE Needs*
- ☐ *Traffic Control*
- ☐ *Waste Management/ Decontamination*
- ☐ *Weather Hazards/ Heat Stress/ Cold Stress*
- ☐ *Work Permit requirements (identify):*
- ☐ *Other (describe):*

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>$250K to $1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> $10K to $250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> $1K to $10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	</=$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Using the Matrix:

1. Identify basic steps of the task and associated hazards.
2. Calculate the initial risk rating.
3. Identify control measure to eliminate or reduce the hazard's risk and calculate the residual risk rating.
4. If the risk rating (after controls are implemented) cannot be reduced to 4 or lower, additional approvals are needed before the activity can begin.

Attachment C

Typical AECOM SH&E Procedures

Attachment C. AECOM SH&E Field Applicable Procedures

	Hazard/ Activity *(note: text in this column links to procedure)*	Site Specific Description *[where, what phase of work, frequency, etc.]*	Applicable Procedure
☐	**Bloodborne Pathogens**	First aid providers	S3AM-111-PR
☒	**Cold Stress**	Working during winter	S3AM-112-PR
☐	**Compressed Air Systems and Testing**	Air sparge testing; SVE/SP System Ops	S3AM-337-PR
☒	**Compressed Gases**	Soil vapor sampling, calibrating meters listed in Section 8.4.1.	S3AM-114-PR
☐	**Concrete Work**	Flag replacement	S3AM-338-PR
☐	**Corrosive Reactive Materials**	Handling pre-preserved bottle ware for sampling	S3AM-125-PR
☐	**Cranes and Lifting Devices**	UST closure	S3AM-310-PR
☐	**Drilling, Boring & Direct Push Probing**	Installing, borings, monitoring wells, and soil vapor implants.	S3AM-321-PR
☐	**Electrical Safety**	Working with generators.	S3AM-302-PR
☐	**Excavation**	UST closure or interim remedial effort.	S3AM-303-PR
☐	**Flammable and Combustible Liquids**	Portable generator	S3AM-126-PR
☒	**Hand and Power Tools**	Accessing monitoring wells and soil vapor implants.	S3AM-305-PR
☐	**Hazardous Waste Operations**	Generating hazardous investigation derived waste (IDW) and signing off on waste manifest	S3AM-117-PR
☒	**Heat Stress**	Working during summer.	S3AM-113-PR
☐	**Heavy Equipment**	Working alongside excavators/ drill rig equipment	S3AM-309-PR
☒	**Highway and Road Work**	Working alongside roadways and sidewalks	S3AM-306-PR
☐	**Overhead Lines**	Positioning drill rigs adjacent to overhead power lines	S3AM-322-PR
☒	**Pandemic Virus**	All Workers	SR1-003-PR2
☐	**Respiratory Protection**	Removing free product from wells	S3AM-123-PR
☐	**Underground Utilities**	Installing, borings, monitoring wells, and soil vapor implants.	S3AM-331-PR
☒	**Wildlife, Plants and Insects**	Sampling monitoring wells and soil vapor implants.	S3AM-313-PR
☐	**Working Alone**	Groundwater sampling/well maintenance	S3AM-314-PR
☐	**Working On and Near Water**	Working along shorelines of rivers, lakes, etc.	S3AM-315-PR

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Attachment D

Stretch/Flex Poster

Attachment E

Example of Safety Data Sheets (SDSs)

Attachment F

Site Orientation

Attachment F. Site Orientation

AECOM will conduct a site safety briefing for a person's initial visit to the site. The briefing will be conducted:

- Prior to the start of work;
- For any new AECOM or subconsultant personnel; and
- At each mobilization, or whenever there is a change in task or significant change in task location.

All personnel working on the project who have received the site briefing (including the HASP review) will sign the Personal Acknowledgement located at the end of the HASP. Visitors may receive a shortened version to address the hazards specific to their visit.

The following items, at minimum, will be discussed during the site safety briefing:

- Contents of site-specific HASPs;
- The Emergency Response Plan;
- Contractor SH&E Management expectations;
- Injury management, including notification and hospital and occupational clinic locations;
- The AECOM 4-Sight program;
- Stop Work authority;
- The THAs (**Attachment B**) for the tasks that will be performed on a given project;
- Types of hazards at the site and means for minimizing exposure to them;
- Instructions for new operations to be conducted, and safe work practices;
- PPE that must be used;
- Lone worker check-in procedures;
- Emergency evacuation routes, muster points, and tornado/storm shelters; and
- Location and use of emergency equipment.

These meetings must be documented and maintained in the project files.

Attachment G

NYSDOH Generic Community Air Monitoring Plan

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, September 2020 and October 2020 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/m^3 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/m^3 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/m^3 (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 persist 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 direct 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 Management Forms

AECOM

SITE INSPECTION FORM

Liberty Industrial Finishing Site
550 Suffolk Ave, Brentwood, Suffolk County, NY
NYSDEC Site ID # 1-52-108

Client: New York State Department of Environmental Conservation

Preparer's Name: Date/Time:

Asphalt Cap

Has the condition of the asphalt degraded since the last inspection?	☐ YES	☐ NO	☐ NA
Are any cracks visible in the asphalt pavement?	☐ YES	☐ NO	☐ NA
Is there evidence of uneven settling and or ponding?	☐ YES	☐ NO	☐ NA
Is there damage to any surface coverage?	☐ YES	☐ NO	☐ NA

Fence

Are there any breaks in the perimeter fence?	☐ YES	☐ NO	☐ NA
Are there any damaged or bent posts?	☐ YES	☐ NO	☐ NA
Are the "No Tresspassing" signs missing or damaged?	☐ YES	☐ NO	☐ NA
Is the Suffolk Avenue gate damaged or bent?	☐ YES	☐ NO	☐ NA
Is the gate padlock damaged or in poor condition?	☐ YES	☐ NO	☐ NA

Site Condition

Is there any evidence of illegal disposal?	☐ YES	☐ NO	☐ NA
Is there uncontrolled vegetation growth?	☐ YES	☐ NO	☐ NA
Is there any evidence of unauthorized entry?	☐ YES	☐ NO	☐ NA

If yes to any question above, provide additional information below.

AECOM

WELL NO.

WELL SAMPLING FORM	PROJECT: Liberty Industrial Finishing	PROJECT No.	SHEET: 1 OF 1 SHEETS
LOCATION: Brentwood, NY		DATE WELL SAMPLED	
CLIENT: NYSDEC		NAME OF INSPECTOR	

ONE WELL VOLUME : gallons WELL TD: ft PUMP INTAKE DEPTH: ft

Time	Depth to Water (ft)	Purge Rate (mL/min)	FIELD MEASUREMENTS						REMARKS
			Temp. (°C)	Conduct. (µs/cm)	DO (mg/L)	pH	ORP	Turbidity (ntu)	

Pump Type: Bladder Pump

Analytical Parameters: TAL Metals (Total and Field Filtered)

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: _____

Current Reporting Period
Reporting Period From: _____ To: _____

Contact Information
Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CONTRACTOR CERTIFICATION
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of _____ (**Contractor Name**), which is responsible for the work documented on this form. According to my knowledge and belief, all of the information provided in this form is accurate and the site management program complies with the DER-10, DER-31, and CP-49 policies. _____ **Date** **Contractor**

Appendix I

Quality Assurance Project Plan and Sampling and Analysis Plan

APPENDIX I

FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN

LIBERTY INDUSTRIAL FINISHING SITE, NYSDEC #152108 550 SUFFOLK AVENUE, BRENTWOOD, NY

This Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) describe the procedures and quality assurance protocols for Site media sampling anticipated under the Site Management Plan (SMP) for the Liberty Industrial Finishing Site (NYSDEC #152108), as revised in July 2023. The FSP provides detailed procedures for collection and management of environmental samples. The QAPP includes procedures to ensure that the technical data generated from the environmental samples are of sufficient quality for their intended purpose.

Site media sampling anticipated under the SMP includes periodic groundwater monitoring and collection of soil samples on an as-needed basis. All sampling work will be conducted by a Qualified Environmental Professional (QEP).

I.1 Field Sampling Plan

The procedures for each type of sampling are described below. Quality assurance/quality control (QA/QC) procedures are presented in Section I.2 (QAPP).

I.1.1 Sampling Procedures

Prior to any intrusive sampling work, the One Call service will be contacted to mark the utilities on the public streets adjoining proposed sampling locations. If necessary, prior to the start of activities a subsurface utility markout will be performed at proposed intrusive sample locations where the potential presence of subsurface utilities presents a concern. Any utilities or other subsurface obstructions identified will be marked on the ground surface. The markings will be reviewed by the QEP to evaluate the potential presence of subsurface utilities in the work areas. Sampling locations will be adjusted as needed to avoid obstructions.

Road-opening permits and/or other municipal or access permits will be sought as needed to facilitate sampling. At present, none of the sampling anticipated under the SMP is on a municipal roadway and road-opening permits are not anticipated to be needed. Access permits may be needed.

It should be noted that due to the prevalence of PFAS in consumer products, laboratory-recommended quality assurance protocols will be followed during all investigation and sampling efforts to reduce the potential for field contamination. Some of these protocols will include prohibiting the use of certain personal care products by field personnel during field activities and the use of certain common field equipment. These prohibitions will apply to all field personnel, including observers who may be present.

Non-dedicated equipment and tools used to collect samples for analysis will be decontaminated prior to and between each sample interval. Decontamination procedures are discussed in Section I.2.3. Dedicated disposable equipment will be used as feasible. All used disposable equipment and personal protective equipment (PPE) will be properly disposed as solid waste at the end of each sampling event.

- Groundwater Sampling

Groundwater sampling will be performed for the targeted monitoring wells at the frequency established in Section 3.4.1 of the SMP. Sampling will be in accordance with laboratory-recommended procedures for all analytes. For PFAS sampling no field equipment containing Teflon or low-density polyethylene parts will be used; the field equipment is anticipated to include stainless steel and HDPE.

At each well to be sampled the depth to the static water level and depth of the well will be measured to the nearest 0.01 foot with a decontaminated interface probe, with the measurements recorded on well sampling forms and in the sampler's field notebook. The potential presence of non-aqueous-phase liquid (NAPL) will also be assessed. Then a decontaminated low-flow pump equipped with dedicated HDPE tubing will be used to purge the well until the turbidity of the produced water is less than 25 NTU or until five well volumes of water have been purged. Following the removal of each well volume, field parameters, including pH, turbidity, specific conductivity, and temperature, will be monitored and recorded. When all stability parameters vary by less than 10 percent between the removal of successive well volumes, the well will be sampled. Well sampling forms documenting the well purging and sampling procedures and measurements will be completed. Well purging water will be filtered using granulated activated carbon and then discharged to the ground surface adjacent to the well from which the water was derived.

Samples for PFAS will be obtained before any other sampling is performed. PFAS samples will be obtained using only dedicated disposable HDPE tubing or HDPE bailers suspended from dedicated cotton or polypropylene lines. The retrieved samples will be decanted into laboratory-supplied sample containers. Upon completion of sampling, the sample containers will be sealed, labeled, managed, transported, and tracked as described below.

Following the completion of PFAS sampling, and after those samples have been properly secured, the targeted wells will each be sampled for TAL metals. Samples for all analyses except PFAS may be obtained directly from the pump or using dedicated disposable polyethylene bailers suspended from dedicated cotton or polypropylene lines. These samples will also be obtained, containerized, labeled and managed under chain of custody procedures and in accordance with laboratory recommendations, as described below.

- Soil Sampling

Although soil sampling is not anticipated to be routinely performed under the SMP, soil sampling may be performed as needed to assess soil quality following completion of remedial actions. If soil sampling is contemplated, a work plan will be submitted to the NYSDEC project manager for approval prior to conducting the work. The work plan will describe the purpose of the sampling, the proposed soil sample locations and depths, the contemplated analytical parameters, and other details as needed to fully describe the proposed sampling work. Following NYSDEC approval of the work plan, the sampling frequency may only be modified with the approval of the NYSDEC project manager. If applicable, the SMP will be modified to reflect changes in soil conditions or sampling plans approved by the NYSDEC project manager.

In general, soil samples will be obtained continuously at each sample location. The retrieved soil samples will be visually examined, screened by an environmental professional with a calibrated photoionization detector (PID), and classified using the Unified Soil Classification System (USCS). Soil observations will be recorded on boring logs and the boring locations will be identified using a global positioning system (GPS).

Soil samples will be collected and submitted for laboratory analysis in accordance with a NYSDEC-approved work plan. It is anticipated that soil sampling will likely be intended to evaluate soil for the potential presence of metals that may be related to the Site and, therefore, soil samples

are anticipated to be tested, at a minimum, for metals. Soil sample analyses may also be performed for the NYSDEC DER-10 full list of parameters and PFAS. If indications of potential impacts (odor, staining, and/or significant PID readings) are identified during soil screening, then additional samples may be taken to characterize the impacted soil and the apparently-clean soil below the impacts. Soil samples will not be obtained at or below the water table interface.

For samples that will be tested for emerging contaminants, the portion of the sample to be tested for PFAS will be collected first, before samples for other analyses are collected. Samples retained for VOC analysis will be collected using Method 5035A preservation procedures. Upon completion of sampling, the sample containers for all analyses will be sealed, labeled, managed, transported, and tracked as described below.

Completed soil borings and other types of soil sample locations will be marked with surveyor's flags and recorded using GPS for future reference.

- Sample Management and Analyses

- Each sample container will be labeled using a ball-point pen, and the labeled containers containing soil or groundwater samples will be placed in a cooler with ice (blue ice packs will not be used) to depress the sample temperature. Samples for PFAS testing will be placed into individual sealed Zip-lock bags and stored in a separate cooler from all other samples. A chain of custody form will be completed and kept with each of the coolers to document the sequence of sample possession. At the end of each day, the filled coolers will be transported by overnight courier to the analytical laboratory.

- Laboratories for all soil and groundwater samples will be NYSDOH ELAP-certified for the proposed analyses.

- All groundwater samples will be analyzed for Target Analyte List (TAL) metals using Method 6010C, and PFAS (40 compounds) using Method 1633. All soil samples will be analyzed as described in the NYSDEC-approved work plan.

- The analytical methods used for all testing will be as per NYS Analytical Services Protocol (ASP) with Category B deliverables. Electronic data deliverables (EDDs) will be prepared and uploaded into the NYSDEC's environmental information management system.

Additional details concerning sampling, analysis, and QA/QC are provided in the Quality Assurance Project Plan (QAPP) presented in Section I.2 below.

I.2 Quality Assurance Project Plan (QAPP)

This Quality Assurance Project Plan (QAPP) is applicable to all sampling activities conducted under the SMP for this Site. The sampling work is primarily intended to gather sufficient information to assess Site-related groundwater conditions. Site soil conditions may also be evaluated.

Sampling procedures and sample management are presented in the Field Sampling Plan in Section I.1. A site plan showing the existing groundwater sample locations is presented on Figure 3 in the SMP. Table 3.4.1 in the SMP summarizes the types of samples to be collected, their frequency, and the analyses to be conducted. Table I.2.1 at the end of this QAPP presents a summary of the analytical methods and the QA/QC sample program. QA/QC samples are further discussed below.

I.2.1 Data Quality Objectives

Data Quality Objectives (DQOs) will be applicable to all data-gathering activities at the Site. DQOs will be incorporated into sampling, analysis, and quality assurance tasks associated with site management activities. A QEP will oversee all sampling activities conducted during site management.

The data users for this project are the QEPs, the NYSDEC, and the NYSDOH. The Site owner will also be provided with the data. No other data users are anticipated. The collected groundwater data are intended to provide sufficient information to assess the progress of the remedy.

Field screening will be performed during sampling activities. Field screening includes monitoring for organic vapors in the soil cuttings (if generated) and in the air in the work zone using a Photovac MicroTIP PID (or equivalent) and visual observations of soil and groundwater characteristics. All readings and observations will be recorded by the QEP in his or her field notebook.

To assure that the results of laboratory analyses may be assessed relative to the standards, criteria and guidance (SCGs) applicable to the media being tested, the QEP will confirm that the laboratory method detection limits (MDLs) are sufficiently low that they do not exceed the applicable SCGs.

I.2.2 Standards, Criteria, and Guidance

The following SCGs have been identified for the Site:

- NYSDEC DER-10;
- The NYSDEC Class GA Ambient Water Quality Standards (Standards), which are used to evaluate the groundwater chemical analytical results;
- NYSDEC's April 2023 (or more recent update) *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS),* which are used to evaluate PFAS results from soil and groundwater samples; and
- The 6 NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (SCOs), which are used to evaluate soil sample results.

I.2.3 Quality Assurance/Quality Control Procedures

QA/QC procedures will be utilized during the site management sampling work to ensure that the resulting chemical analytical data accurately represent subsurface conditions. The following sections include descriptions of the QA/QC procedures to be utilized.

➢ Equipment Decontamination Procedures

In general, all non-disposable downhole equipment (i.e., pumps, direct-push rods, core samplers, etc.) used during sampling activities will be decontaminated by washing in a potable water and Alconox solution and rinsing in potable water prior to use at each location to reduce the potential for cross contamination. All sampling equipment will be either dedicated disposable equipment or will be decontaminated prior to use at each location. The decontamination procedures utilized for all non-disposable sampling equipment will be as follows:

1. The equipment will be scrubbed in a bath of potable water and low-phosphate detergent (Alconox or Liquinox) followed by a potable water rinse;
2. The equipment will be rinsed with distilled water; and

3. The equipment will be allowed to air dry, if feasible.

In addition, for sampling activities involving PFAS, the following procedures will be followed due to the prevalence of these compounds in consumer products:

- No field clothing or PPE containing Gore-Tex, Tyvek, or fabric softener, will be worn. Any wet weather clothing will be made of polyurethane or PVC only;
- Waterproof field books, plastic clipboards, binders, or hard cover notebooks will not be used. No materials with adhesives (tape, post-it notes, etc.) will be used. Permanent markers (e.g. Sharpies) will not be used (ballpoint pens are acceptable);
- Field personnel will not use cosmetics, moisturizers, hand cream, sunscreen or insect repellent on the day of sampling. Field personnel must wash hands prior to donning nitrile gloves used during sampling;
- All decontamination will be performed using laboratory-provided PFAS-free water, Alconox, and/or Liquinox. Aluminum foil will not be used;
- All field equipment must not contain Teflon or low-density polyethylene materials. All sampling materials must be made from stainless steel, HDPE, acetate, silicon, or polypropylene; and
- PFAS samples must be maintained in a separate cooler from other types of samples (some sample containers contain PFAS). Coolers containing PFAS samples may be cooled with regular ice only; blue ice packs may not be used.

➢ Sampling Sequence

To reduce the risk of cross-contamination, soil and groundwater sampling will be conducted in the following sequence at all locations where multiple analyte groups will be tested:

- Following the advancement of soil sampling equipment to the target depth or the completion of purging for groundwater, all the samples for PFAS testing will be obtained, containerized, labeled, and managed under chain of custody procedures and in accordance with laboratory recommendations before sampling for other analytes is conducted. QA/QC samples for PFAS analysis will also be collected at this time; and
- After all the samples for PFAS are secured, sampling for the other analytes will be conducted.

➢ QA/QC Samples

QA/QC samples will be collected and utilized to evaluate the potential for field or laboratory contamination and to evaluate the laboratory's analytical precision and accuracy. A sampling chart showing the number and types of primary samples, analytical methods, and QA/QC samples is presented on Table I.2.1 at the end of this Section. The specific types of QA/QC samples to be collected are described below.

Decontamination procedures will be evaluated using equipment blank samples. These samples consist of aliquots of laboratory-supplied water that are poured over or through the dedicated or decontaminated sampling equipment and then submitted to the laboratory for analysis. An equipment blank sample will be prepared for each day that soil or groundwater sampling is conducted at the Site using decontaminated equipment and will be analyzed for the same analytes as the primary environmental samples collected that day. The equipment blanks will be labeled in a manner to prevent identification by the analytical laboratory. Equipment blank samples are not required if only dedicated disposable sampling equipment is used.

Particular care will be taken with the equipment blank samples for PFAS. Laboratory-provided PFAS-free water containing the required preservative will be used to prepare the equipment blank

samples for PFAS testing. The filled equipment blank container and the empty container that formerly contained the PFAS-free water must be labeled, placed in individual Zip-lock bags, and returned to the laboratory in the same cooler as the PFAS samples.

Trip blank samples will be utilized to evaluate the potential for VOC cross-contamination between samples in the same cooler or shipping container. Trip blank samples consist of laboratory-provided containers filled with laboratory water that are sealed in sample containers at the laboratory and that are transported to and in the field with the other sample containers. A trip blank will be shipped with each group of soil samples to be analyzed for VOCs and will be managed in the field and analyzed in the laboratory in the same manner as the primary environmental samples.

Blind duplicate samples will be obtained at a frequency of at least one per every 20 environmental samples and will be used to attest to the precision of the laboratory. A blind duplicate consists of a separate aliquot of sample collected at the same time, in the same manner, and analyzed for the same parameters as the primary environmental sample. The blind duplicate samples are labeled in a manner such that they cannot be identified by the laboratory. The sample results are compared to those of the primary environmental sample to evaluate laboratory analytical precision.

Matrix spike/matrix spike duplicate (MS/MSD) samples will be collected at a frequency of one per 20 environmental soil or groundwater samples. The purpose of the MS/MSD samples is to confirm the accuracy and precision of laboratory results based on a particular matrix. The MS/MSD results will be evaluated during the preparation of the DUSRs, as discussed below.

- Chain-of-Custody Procedures

For each day of sampling, chain-of-custody (COC) sheets will be completed and submitted to the laboratory with the samples collected that day. A copy of each COC sheet will be retained by the QEP for sample tracking purposes. Each COC sheet will include the project name, the sampler's signature, the sampling locations and intervals, and the analytical parameters requested.

- Documentation

Field procedures and observations will be documented in the field sampler's field notebook and on sampling forms, as applicable. Observations will include the date and times of sampling, weather and Site conditions, identification for field personnel and visitors, a description of the field activities and locations, problems encountered and corrective actions taken, and a record of the field measurements.

- Data Usability Summary Reports

All chemical analytical results will be evaluated using the sample data packages, sample data summary packages, and case narratives provided by the analytical laboratory. The data evaluation will be performed to verify that the analytical results are of sufficient quality to be relied upon to assess the potential presence of contaminants in the groundwater and/or soil samples. A data usability summary report (DUSR) will be prepared for each data package following the "Guidance for the Development of Data Usability Summary Reports" provided by the NYSDEC (Appendix 2B of DER-10).

I.2.4 Sample Analysis

All samples will be submitted to NYSDOH ELAP-certified laboratories. The analytical data will be provided by the laboratory in electronic format, in accordance with DER-10, Section 1.15. Electronic data deliverables (EDDs) will also be prepared and uploaded into the NYSDEC's environmental information management system.

All groundwater samples will be analyzed for TAL metals using Method 6010C, and PFAS using Method 1633 with reporting limits less than or equal to 2 nanograms per liter (ng/l, or parts per trillion) in water. All soil samples will be analyzed as per the NYSDEC work plan for each soil sampling event. The analytical methods used will be as per NYS Analytical Services Protocol (ASP) with Category B deliverables.

If the turbidity of a groundwater sample to be tested for metals is not below 25 NTU, then a separate aliquot of that groundwater sample will be obtained, filtered to remove turbidity, and analyzed for TAL metals using Method 6010C.

1.2.5 Data Evaluation

The data collected will be assembled, reviewed, and evaluated to assess Site conditions.

TABLE I.2.1
SITE MANAGMENT SAMPLING MATRIX
LIBERTY INDUSTRIAL FINISHING SITE, NYSDEC SITE #152108
550 SUFFOLK AVENUE, BRENTWOOD, NEW YORK

Environmental Sample Type	Number of Locations	Samples per Location	Total Number of Samples (excluding QA/QC)	Sample Depths	Preparation and Analyses - All Samples	Sample Bottles/Preservation	Holding Time
Groundwater Samples	13	1	13	Monitoring well screen interval	TAL Metals (Methods 3050B/6010B and 7470A/7241A), PFAS (EPA Method 1633)	One 500 ml plastic with HNO3 plus one 500 ml plastic unpreserved if filtration required (metals), 2 or 3 250-ml polypropylene bottles with Trizma preservative, cool to 4°C +-2°C	28 days (metals), 14 days (PFAS)
Soil Samples (as needed)	TBD	TBD	TBD	TBD	TAL Metals (Methods 3050B/6010B, and 7470A/7241A), other analytes as per work plan	One 8oz CWM, other containers and preservatives as needed	Metals: 28 days, other analytes as per Method requirements

QA/QC Sample Type	Number/Frequency	Matrix	Preparation and Analysis	Sample Bottles/Preservation	Holding Time
Equipment blanks	One per day during soil or groundwater sampling	Lab Water	Groundwater: TAL Metals (Methods 3050B/6010B and 7470A/7241A), PFAS (EPA Method 1633)	One 500 ml plastic with HNO3 plus one 500 ml plastic unpreserved if filtration required (metals), 2 or 3 250-ml polypropylene bottles with Trizma preservative, cool to 4°C +-2°C	28 days (metals), 14 days (PFAS)
			Soil: TAL Metals (Methods 3050B/6010B and 7470A/7241A), other analyte groups as needed	One 8oz CWM, other containers and preservatives as needed	Metals: 28 days, other analytes as per Method requirements
Trip blanks	One per cooler with soil samples for VOC analysis	Lab Water	TCL VOCs plus TICs (Method 8260C)	Two Glass VOA vials with HCl	14 days
Blind Duplicates	One per 20 environmental samples	Soil	TAL Metals (Methods 3050B/6010B and 7470A/7241A), other analyte groups as needed	One 8oz CWM, other containers and preservatives as needed	Metals: 28 days, other analytes as per Method requirements
	One per 20 environmental samples	Groundwater	Groundwater: TAL Metals (Methods 3050B/6010B and 7470A/7241A), PFAS (EPA Method 1633)	One 500 ml plastic with HNO3 plus one 500 ml plastic unpreserved if filtration required (metals), 2 or 3 250-ml polypropylene bottles with Trizma preservative, cool to 4°C +-2°C	28 days (metals), 14 days (PFAS)
MS/MSD	One per 20 environmental samples	Soil	Same as associated primary samples	One 8oz CWM, other containers and preservatives as needed	Metals: 28 days, other analytes as per Method requirements
	One per 20 environmental samples	Groundwater		One 500 ml plastic with HNO3 plus one 500 ml plastic unpreserved if filtration required (metals), 2 or 3 250-ml polypropylene bottles with Trizma preservative, cool to 4°C +-2°C	28 days (metals), 14 days (PFAS)

Notes:

MS/MSD = Matrix spike/matrix spike duplicate
VOCs = Volatile organic compounds
HNO3 = nitric acid
TICs = tentatively-identified compounds
TAL = Target Analyte List
CWM = clear wide-mouth
TBD = to be determined
HCl = hydrochloric acid
PFAS = per and polyfluoroalkyl substances

Appendix J

Site Contact List

APPENDIX J – LIST OF SITE CONTACTS

This Appendix includes a listing of all site contacts.

Name	**Phone/Email Address**
Site Owner: 550 Liberty Realty LLC Contact: Aaron Daniels	516-487-9516 aaron@adreny.com
Qualified Environmental Professional: Stephanie O. Davis, PG	631-737-6200, etc. 528 s.davis@fpm-group.com
Remedial Engineer: Kevin F. Loyst, PE	631-737-6200, ext. 510 k.loyst@fpm-group.com
NYSDEC DER Project Manager: Jasmine N. Stefansky	518-402-9575 Jasmine.stefansky@dec.ny.gov
NYSDEC DER Project Manager's Supervisor: Jeffrey Dyber	518-402-9621 Jeffrey.dyber@dec.ny.gov
NYSDEC Site Control: Kelly Lewandowski	(518) 402-9553 Kelly.lewandowski@dec.ny.gov
NYSDOH Project Manager: Arunesh Ghosh	(518) 402-0450 arunesh.ghosh@doh.ny.gov
Remedial Party Attorney: Barry S. Cohen, Esq.	516-296-7000 bcohen@certilmanbalin.com

Appendix K

Remedial System Optimization Table of Contents

REMEDIAL SYSTEM OPTIMIZATION FOR LIBERTY INDUSTRIAL FINISHING SITE

TABLE OF CONTENTS