



Where to Find Information

Access project documents through the DECinfo Locator and at these location(s):

Mott Haven Library
321 East 140th Street
Bronx, NY 10454
(718) 665-4878

Bronx Community Board 1
3024 Third Avenue
Bronx, NY 10455
(718) 585-7117

Who to Contact

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

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(518) 402-7860
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For more information about New York's Brownfield Cleanup Program, visit:
www.dec.ny.gov/chemical/8450.html

FACT SHEET

Brownfield Cleanup Program

Gerard Avenue and East 146th
Street Site
404 Exterior St, 417 and 445 Gerard
Ave, 440 Major WM Deegan Blvd
Bronx, NY 10451

SITE No. C203111
NYSDEC REGION 2

December 2019

Interim Remedial Measure to Begin

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is announcing an expedited cleanup of contamination at the Gerard Avenue and East 146th Street site ("site") located at 404 Exterior Street, 417 and 445 Gerard Avenue and 440 Major Wm Deegan Boulevard, Bronx, NY. Please see the map for the site location. Documents related to the cleanup of this site final Interim Remedial Measure Work Plan can be found at the location(s) identified to the left under "Where to Find Information." The expedited cleanup activities are expected to begin in December 2019 and last about 2 months. The activities will be performed by 445 Gerard LLC ("applicant") with oversight provided by NYSDEC.

- Access the IRM Work Plan and other project documents online through the DECinfo Locator: <https://www.dec.ny.gov/data/DecDocs/C203111/>.
- Documents also are available at the location(s) identified at left under "Where to Find Information."

Interim Remedial Measure (IRM) Work Plan: An IRM is a cleanup activity that may be performed when a source of contamination or exposure pathway (the way in which a person may contact contamination) can be effectively addressed without extensive investigation and evaluation.

The IRM work plan describes upcoming cleanup activities that include:

- Abating hazardous building materials and lead based paint and demolishing existing buildings;
- Decommissioning and removing five underground storage tanks (USTs), five aboveground storage tanks (ASTs) and four oil-water separators;
- Excavating and off-site disposing of historic fill and petroleum-impacted soil in the vicinity of the USTs, ASTs and oil-water separators;
- Importing clean material that meets the lower of protection of groundwater and restricted residential soil cleanup objectives (SCOs) for use as backfill, and;
- Implementing a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) during all ground intrusive activities.

BROWNFIELD CLEANUP PROGRAM

Site Description: The 0.87-acre site is located in the Mott Haven neighborhood of the Bronx and is bound by East 146th Street to the north, Gerard Avenue to the east, East 144th Street to the south, and Exterior Street to the west. Commercial and industrial facilities have occupied the site since the early 1900s including manufacturers, a paint company, an auto repair shop, a Con Edison garage, and mirror fabrication facility.

Additional site details, including environmental and health assessment summaries, are available on NYSDEC's Environmental Site Remediation Database (by entering the site ID, C203111) at:

<http://www.dec.ny.gov/cfm/external/derexternal/index.cfm?pageid=3>

Summary of the Investigation: The primary contaminants of concern at the site are petroleum-related volatile organic compounds (VOCs) which are present site-wide in soil and soil vapor and in the northern portion of the site in groundwater, primarily in the area of the USTs, ASTs and oil-water separators. Semi-volatile organic compounds (SVOCs) and metals were also detected in soil and groundwater and attributed to the presence of historic fill at the site.

Next Steps: When the expedited cleanup activities are completed, a Construction Completion Report will be prepared that documents the activities that were performed.

NYSDEC will keep the public informed throughout the investigation and cleanup of the site.

Brownfield Cleanup Program: New York's Brownfield Cleanup Program (BCP) encourages the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and redeveloped. These uses may include recreation, housing, business or other uses. A brownfield site is any real property where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance adopted by NYSDEC that are applicable based on the reasonably anticipated use of the property, in accordance with applicable regulations.

For more information about the BCP, visit:

<http://www.dec.ny.gov/chemical/8450.html>

We encourage you to share this fact sheet with neighbors and tenants, and/or post this fact sheet in a prominent area of your building for others to see.

Stay Informed With DEC Delivers

Sign up to receive site updates by email:

www.dec.ny.gov/chemical/61092.html

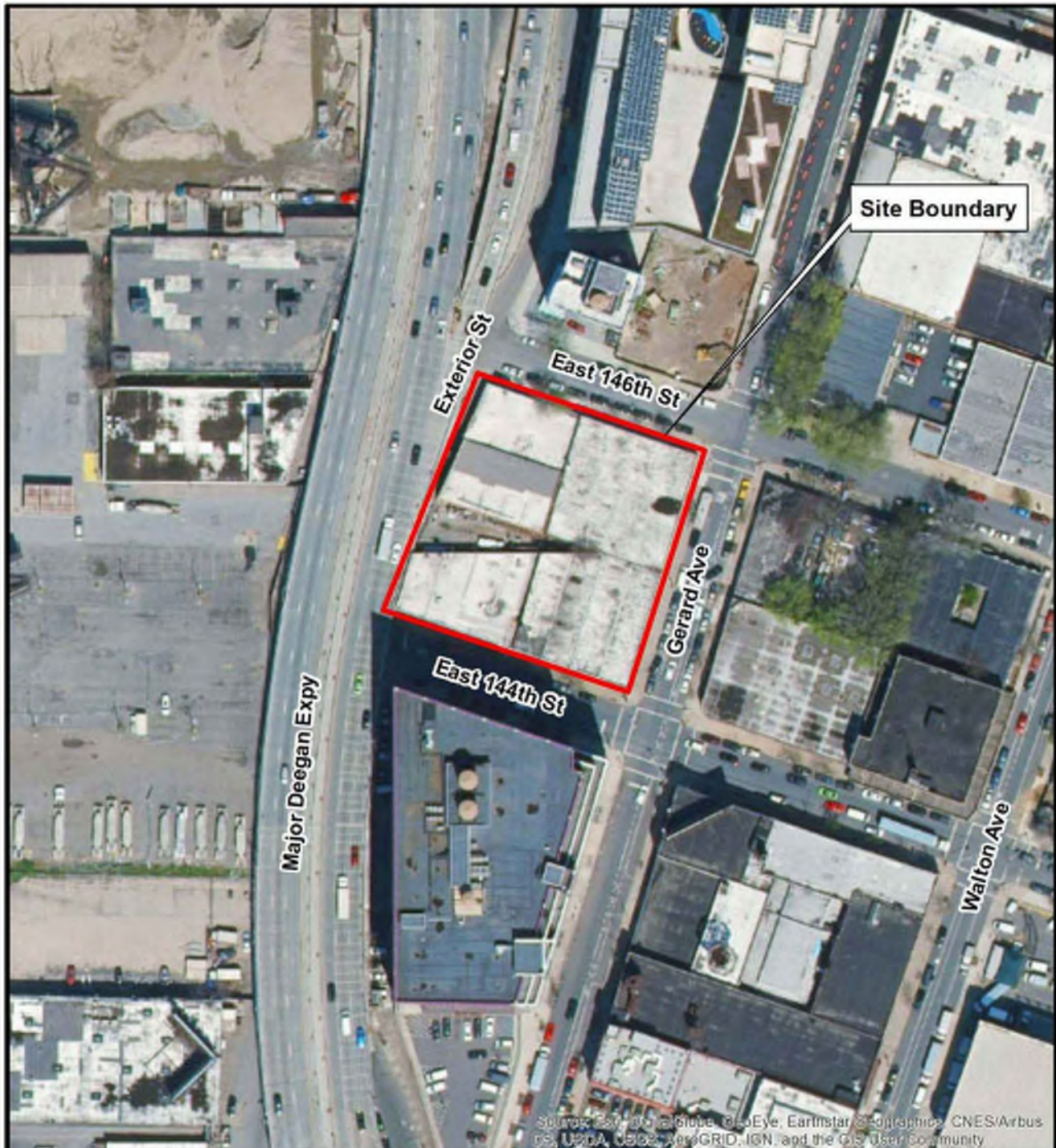
Note: Please disregard if you already have signed up and received this fact sheet electronically.

DECinfo Locator

Interactive map to access DEC documents and public data about the environmental quality of specific sites: <http://www.dec.ny.gov/pubs/109457.html>

BROWNFIELD CLEANUP PROGRAM

Site Location Map



0 75 150
Feet

Figure 1 Site Map

Gerard Avenue and East 146th Street
Bronx, NY
Site No. C203111



Department of
Environmental
Conservation

INTERIM REMEDIAL MEASURE WORK PLAN

for

**GERARD AVENUE AND EAST 146th STREET
404 Exterior Street, 417 and 445 Gerard Avenue,
440 Major Wm Deegan Boulevard
Bronx, New York
NYSDEC BCP Site No. C203111**

Prepared For:

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Prepared By:

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**November 2019
Langan Project No. 170487003**

LANGAN

CERTIFICATION

I, Jason Hayes, P.E. certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measure Work 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).

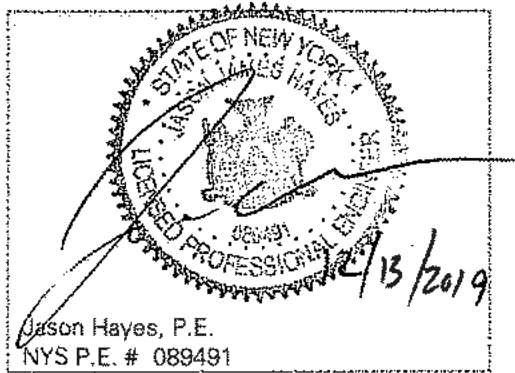


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1.0 INTRODUCTION

1.1 General

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) prepared this Interim Remedial Measure Work Plan (IRMWP) on behalf of 445 Gerard LLC (the Volunteer) for the Gerard Avenue and East 146th Street site at 404 Exterior Street, 417 and 445 Gerard Avenue, and 440 Major Wm Deegan Boulevard (the site) in the Mott Haven neighborhood of the Bronx, New York. The Volunteer intends to remediate a 38,000-square-foot property under the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP), pursuant to the June 27, 2018 Brownfield Cleanup Agreement (BCA) for Site No. C203111. The site is identified as Tax Block 2351, Lots 1, 3, 12 and 20 (see Figure 1).

This IRMWP addresses areas of concern (AOCs) 1 through 10, as defined in the August 2019 Draft Remedial Action Work Plan (RAWP), which was posted for public comment period between October and November 2019. This IRMWP was prepared in accordance with the process and requirements of the BCP and the May 2010 Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10). The IRM will be completed in advance of completing the final remedy, which will be outlined in detail in the RAWP and the Decision Document.

1.2 Site Description

The site encompasses an area of about 38,000 square feet (about 0.87 acres). Lot 1 is improved with a one-story food distribution warehouse with a partial cellar and contains an oil-water separator, one underground storage tank (UST), and one aboveground storage tank (AST). Lot 3 is improved with a vacant one-story warehouse and parking lot, and contains two USTs and an oil-water separator. Lot 12 is improved with a vacant one-story warehouse and contains two USTs and one oil-water separator. Lot 20 is improved with a vacant one-story warehouse with a partial cellar and contains one oil-water separator and four ASTs. The locations of the buildings, tanks, and oil-water separators are shown on Figure 2. The site is bound by East 146th Street to the north, Gerard Avenue to the east, East 144th Street to the south, and Exterior Street to the west.

1.3 Site History

Commercial and industrial facilities have occupied the site since the early 1900s. Lot 1 was occupied by a chemical laboratory/chemical manufacturing facility from 1944 to 1951, paint company from 1956 to 1965, and unspecified manufacturing facility from 1951 to 2007; Lot 3

was occupied by a parking garage from 1935 to 1977; Lot 12 was occupied by a taxi dispatch center (1930s to 1960s), an auto repair shop (1960s to 1980s), and an unspecified manufacturer (1990s to 2012); and Lot 20 was occupied by a public garage (1935-1951), a fire door manufacturer (1970s), a Con Edison garage (1977 to 1993), and a mirror fabrication facility (1993 to 2015). According to previous Phase I Environmental Site Assessments (ESAs) prepared by AEI Consultant and GEI Consultants, operations ceased on Lot 12 after 2016, and on Lot 20 sometime between 2005 and 2016. Lot 3 was most recently occupied by an advertising company (Clear Channel Outdoor) and was vacated sometime between March 2018 and December 2018. Lot 1 is occupied by a food distribution company.

Evidence of petroleum impacts (e.g., staining, odors, and photoionization detector [PID] readings up to 3,300 parts per million [ppm]) were observed in samples collected from borings advanced on lots 1, 3, and 12. Based on field observations, NYSDEC was contacted and Spill No. 1705596 was assigned to Lot 12.

1.4 Remedial Investigation

A Remedial Investigation (RI) was completed between December 20, 2018 and January 17, 2019 and between July 10 and 15, 2019. The RI included:

- Completion of a geophysical survey to identify remnant buried tank structures and associated piping and to provide utility clearance for borings
- Advancement of 28 soil borings and collection of 101 grab soil samples (including seven duplicate samples) (Figure 3)
- Installation of 15 groundwater monitoring wells and collection of 17 groundwater samples (including two duplicate samples) (Figure 4A and 4B)
- Surveying and synoptic gauging of groundwater monitoring wells to determine local groundwater flow direction
- Installation of two soil vapor points and nine sub-slab vapor points, and collection of two soil vapor samples, nine sub-slab vapor samples, and two ambient air samples (Figure 5)

1.4.1 Site Geology

The site is underlain by historic fill to depths down to 24 feet below grade surface (bgs). The fill primarily consists of brown, fine- to medium-grained sand, with varying amounts of silt, clay, gravel, brick, coal, coal ash, slag, concrete, asphalt, glass, plastic, metal, ceramic tile, wood ash, and wood. Native material consisting of fine- to medium-grained sand with varying amounts of

fine gravel and silt, and a clay layer varying in thickness between 1 and 7 feet was observed beneath the fill.

According to the United States Geological Survey (USGS) Bedrock and Engineering Geologic Maps of Bronx County and Parts of New York and Queens County, New York, dated 1992, bedrock lithology in the vicinity of the site consists of rock of the Lower Cambrian Age (Manhattan Schist Formation), rock of the Middle Ordovician Age (Walloomsac Formation), and rock of the Lower Ordovician to Lower Cambrian Age (Inwood Marble). During Langan's September 2017 geotechnical investigation, weathered rock consisting of decomposed mica, schist, quartz, and granite was encountered in several boring locations between 63 and 103 feet bgs. The depth to decomposed bedrock generally increased from east to west across the site footprint.

1.4.2 Hydrogeologic Conditions

Groundwater flow is typically topographically influenced, as shallow groundwater tends to originate in areas of topographic highs and flows toward areas of topographic lows, such as rivers, stream valleys, ponds, and wetlands. A broader, interconnected hydrogeological network often governs groundwater flow at depth or in the bedrock aquifer. Groundwater depth and flow direction are also subject to hydrogeologic and anthropogenic variables such as precipitation, evaporation, extent of vegetation cover, coverage by impervious surfaces, and subsurface structures. Other factors influencing groundwater include depth to bedrock, the presence of anthropogenic fill, and variability in local geology and groundwater sources or sinks.

Groundwater was encountered at depths from el 2.26 to el 3.12¹. Groundwater generally flows west toward the Harlem River.

Groundwater in New York City is not used as a potable water source. Potable water provided to the City of New York is derived from reservoirs in the Croton, Catskill, and Delaware watersheds.

1.4.3 Contaminant Conditions

A source of contamination is the historical and current petroleum bulk storage at the site. USTs, ASTs, and oil water separators will be removed through implementation of this IRMWP. Petroleum impacted soil and groundwater will be removed and/or treated during implementation of the Remedial Action Work Plan (RAWP).

Soil sampling results are shown on Figure 3. Petroleum impacts were generally identified at or below the water table from about 13 to 32 feet bgs in the northern half of the site. Petroleum-

¹ Elevations provided herein reference the North American Vertical Datum of 1988 (NAVD88).

related VOCs were detected above the NYSDEC Title 6 New York Codes, Rules and Regulations (6 NYCRR) Part 375 Unrestricted Use (UU) Soil Cleanup Objectives (SCOs) and/or Restricted Use Restricted-Residential (RURR) SCOs. Semivolatile organic compounds (SVOCs), pesticides, and metals were detected in historic fill across the site at concentrations exceeding the UU and/or RURR SCOs to depths of up to 20 feet bgs. A hazardous concentration of lead was identified in one surficial sample (0 to 2 bgs) from RB06 located in the southern part of Lot 3.

Groundwater sampling results are shown on Figure 4A and 4B. VOCs, SVOCs, and metals were detected at concentrations above the NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values (SGV) for Class GA groundwater.

Soil vapor sampling results are shown on Figure 5. Petroleum-related VOCs were detected in soil vapor. PCE was detected at concentrations above ambient air concentrations in all but one sub-slab soil vapor sample collected across the site. Carbon tetrachloride was detected in one sub-slab soil vapor sample at a concentration above the minimum concentration at which mitigation is recommended, according to NYSDOH Decision Matrices in the 2006 Guidance for Evaluating Soil Vapor Intrusion.

1.5 Proposed Development

The purpose of the project is to remediate a contaminated site by implementing measures that are protective of human health and the environment and to redevelop the site. There is documented petroleum contamination on the site that will complicate the redevelopment. Development plans include demolition of the existing buildings and construction of a mixed-use residential/commercial building that will span the entire city block. The new building is expected to include a partial cellar level. According to the New York City Planning Commission Zoning Map 6a, the site is located in the Lower Concourse Special Mixed Use Paired District (M1-4/R8A). This paired district promotes development and expansion of the longstanding mix of residential, commercial, industrial, and cultural use throughout the area.

2.0 SUMMARY OF INTERIM REMEDIAL MEASURE

The scope of this IRMWP includes the following:

- Decommissioning and removal of five USTs, five ASTs and four oil-water separators
- Excavation and off-site disposal of historic fill and petroleum-impacted soil in the vicinity of the USTs, ASTs and oil-water separators, if encountered
- Backfilling the excavation with clean soil (meeting the lower of Protection of Groundwater [PGW] and RURR SCOs), recycled concrete aggregate (RCA), or virgin crushed stone to restore the site until the RAWP is implemented
- Preparation of the site for remediation including demolition of the existing buildings and abating hazardous building materials (ACM) and lead based paint (LBP), which is required to perform the full-scale remediation
- Preparation of a Construction Completion Report (CCR) to document satisfactory implementation of this IRMWP

Building demolition is not expected to be complete until January 2020. The IRM will be performed in accordance with applicable federal, state, and city regulations. The IRM construction schedule is provided in Appendix A. The Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP) will be implemented during the IRM. A CHASP is provided as Appendix B and the CAMP is provided as Appendix C.

2.1 Objectives and Rationale

The objective of the IRM is to remove sources of petroleum contamination and prevent potential additional environmental impacts to soil, groundwater, and soil vapor through the removal of the USTs, ASTs, oil-water separators, associated fuel lines, pumps, and appurtenances, and surrounding petroleum-impacted soil, to the extent practical.

2.2 Technical Description of IRM

2.2.1 Site Preparation

The proposed work will be completed on Lots 1, 3, 12, and 20. Site preparation to be completed by the contractors for implementation of the IRMWP will include, but not be limited to, acquiring necessary permits, establishment of work zones, implementation of erosion control measures, and implementation of site security measures (i.e. security barricades around work zones and staging areas). The contractor will ensure that necessary permits are obtained before the

commencement of IRM tasks. The appropriate agencies and departments will be contacted prior to commencement of ACM abatement.

2.2.2 Storage Tank and Oil-Water Separator Removal

Four suspect oil-water separators, five suspect USTs, five ASTs, and any USTs encountered during remedial excavation would be decommissioned in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC Commissioner's Policy (CP)-51, and other applicable NYSDEC UST closure requirements. Tanks and oil-water separators are shown on Figure 2. All tanks removed from the site will be cleaned prior to off-site transport. A Petroleum Bulk Storage (PBS) application will be submitted to NYSDEC to register and close the tanks once they are removed.

2.2.3 Soil Removal and Backfill

Historic fill above and around the USTs and grossly-impacted soil, if encountered, will be excavated and temporarily staged in stockpiles in preparation for off-site disposal. Grossly-impacted soil encountered beneath or adjacent to the USTs will be excavated to the extent practical. Material excavated during implementation of the IRMWP will not be reused on site. Following completion of the IRM, the excavation will be backfilled with clean soil (meeting the lower of PGW and RURR SCOs), RCA, or virgin crushed stone until the RAWP is implemented.

2.2.4 Endpoint Sampling

Endpoint samples will be collected at the base of the site-wide excavation as part of the future RAWP implementation. If the tank excavation extends below the base of the proposed site-wide excavation, endpoint samples will be completed at a frequency of one sample per 900 square feet of base and one per 30 linear feet of sidewall for Commissioner's Policy (CP)-51 VOCs and SVOCs, TCL (Target Compound List) Part 375 VOCs, SVOCs, metals, pesticides, herbicides, polychlorinated biphenyls (PCBs) and per- and polyfluoroalkyl substances (PFAS), per NYSDEC Division of Environmental Remediation (DER) policy.

2.2.5 Building Demolition

ACM and LBP will be removed prior to demolition of the existing buildings by a licensed contractor to allow for the removal of USTs, ASTs, and oil water separators. The ACM and LBP will be removed and disposed of by a New York State Department of Labor (NYSDOL) licensed asbestos handling contractor or EPA-certified contractor in accordance with federal, state, and city regulations.

2.3 Remedial Activity Oversight

The Remediation Engineer (RE), Jason Hayes, P.E. of Langan, will oversee implementation of the IRMWP. The RE is responsible for documenting that the contractor performs the work as specified in the IRMWP and for providing the proper documentation to the NYSDEC as part of the CCR described below in Section 3.2. A Langan representative, under the supervision of the RE, will provide oversight during IRMWP implementation. Work conducted in accordance with this IRMWP will be documented in daily field reports, monthly BCP progress reports, and in the CCR.

2.4 Soil/Materials Management

This section describes the approach to handling, transportation, disposal, reuse, and import of materials during IRMWP implementation. A Langan representative, under the supervision of the RE, will monitor and document handling of soil and historic fill material exported from the site to be transported and disposed of in accordance with applicable laws and regulations. A Langan representative, under the supervision of the RE, will screen excavated material, by visual and olfactory methods and with a PID, to identify petroleum-impacted material. Petroleum-contaminated soil, historic fill material, and native soil will be managed separately to avoid co-mingling.

2.4.1 Waste Characterization

A waste characterization investigation was completed in September 2019. Waste characterization samples were submitted to a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory for analysis. Waste characterization samples were analyzed for parameters that are typically required by disposal facilities, including, NYSDEC Part 375-list and New Jersey Department of Environmental Protection (NJDEP)-list VOCs, SVOCs, PCBs, metals, pesticides, herbicides, total petroleum hydrocarbons (TPH) diesel range organics (DRO) and gasoline range organics (GRO), Toxicity Characteristic Leaching Procedure (TCLP) VOCs, SVOCs, pesticides, and metals, ignitability, corrosivity, reactivity, and paint filter. Sampling and analytical methods, sampling frequency, analytical results and QA/QC methods was detailed in the waste characterization report.

2.4.2 Soil Excavation and UST Removal

Soil excavation and UST removal will be conducted using hydraulic excavation machinery. Excavated soil will be either directly loaded into dump trucks for off-site disposal or stockpiled. USTs will be emptied, cleaned, and staged pending off-site disposal.

2.4.3 Soil Screening Methods

During excavation, visual, olfactory, and instrumental soil screening will be performed by a Langan representative under the supervision of the RE. Instrumental screening will be performed using a PID equipped with a 10.6 electron volt (eV) bulb that will be calibrated daily. Grossly-impacted material will be segregated and placed on polyethylene sheeting pending off-site disposal.

2.4.4 Soil Stockpiles

Soil stockpile areas will be constructed for staging of soil, historic fill material, and grossly-impacted material that is not directly loaded into trucks for off-site disposal, in accordance with applicable federal and state laws and regulations, including regulations governing hazardous and solid waste. Separate stockpile areas will be constructed to avoid co-mingling materials of different waste streams. All stockpile areas will meet the following minimum requirements:

- Excavated soil stockpiled above a different waste stream will be placed onto a minimum 10-mil low-permeability liner of sufficient strength and thickness to prevent puncture during use – Different waste streams will be segregated in separate stockpile areas
- Equipment and procedures will be used to place and remove the soil that will minimize the potential to jeopardize the integrity of the liner
- Stockpiles will be covered upon reaching capacity or, if active, at the end of each workday with minimum 10-mil plastic sheeting or tarps that will be securely anchored to the ground
- Each stockpile area will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from any rainwater that has drained off the soils and to mitigate the potential for surface water run-off
- Stockpiles will be inspected at a minimum once each week and after every storm event and any deficiencies will be promptly addressed – Any damaged tarps or coverings will be promptly replaced
- Results of inspections will be recorded in a logbook to be maintained at the site and made available for inspection by NYSDEC upon request

2.4.5 Material Load Out, Transport, and Disposal

Soil, historic fill material, and grossly-impacted material generated during IRMWPs implementation will be handled, transported, and disposed by a licensed hauler in accordance with applicable 6 NYCRR Part 360, General Provisions and 6 NYCRR Part 364, Waste Transporter Permit regulations and other applicable federal, state and local regulations. The waste removal

contractor will provide the appropriate permits, certifications, and written commitments from disposal facilities to accept the material throughout the duration of the project, including the facility's acknowledgement that the site is enrolled in the BCP. Waste manifests will be used to track the material that is transported off-site. Haulers will be appropriately licensed and trucks will be properly placarded. A Langan representative, under the supervision of the RE, will oversee the load-out of excavated material.

The RE will review submittals for proposed disposal facilities before any materials leave the site to verify that the facility has the proper permits and to review their acceptance requirements. A letter from the disposal facility stating it is in receipt of the correspondence and is approved to accept the material shall be provided before any material is transported.

Loaded vehicles leaving the site will be appropriately covered, and manifested in accordance with appropriate federal, state, local, and New York State Department of Transportation (NYSDOT) requirements (or other applicable transportation requirements). If loads contain wet material capable of producing free liquid, truck liners will be used.

Equipment and the sidewalk will be decontaminated using dry methods (i.e., sweeping and shoveling). Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site sediment tracking. Proposed in-bound and out-bound truck routes to the site are shown on Figure 6.

2.4.6 Material Import

The excavation will be backfilled with clean soil (meeting the lower of PGW and RURR SCOs), RCA, or virgin stone. RCA and virgin stone (gravel) will be imported from compliant facilities containing less than 10% by weight passing a No. 80 sieve will not require chemical testing, unless required by NYSDEC under the terms for operation of the facility. Prior to material import, the RE will review documentation from each import facility, including the facility name, address, permit/registration, and site history, if necessary, in accordance with DER-10. Proposed import material will be approved by both the RE and the NYSDEC. Upon arrival, import material will be screened for evidence of contamination (visual, olfactory, and instrumental).

2.5 Dust, Odor, Vapor and Nuisance Control Plan

This dust, odor, organic vapor and nuisance control plan was developed in accordance with the NYSDOH Generic Community Air Monitoring Plan (CAMP) and OSHA standards for construction (29 CFR 1926). Ground-intrusive activities during IRWMP implementation will be monitored for dust, odors, and VOCs by a Langan representative, under the supervision of the RE. Continuous monitoring at the perimeter of the work zones for odor, VOCs, and dust will be required for all

ground intrusive activities, such as soil excavation and handling. The work zone is defined as the general area in which machinery is operating in support of the IRM. A hand-held PID will be used to monitor the work zone during excavation and tank removal. The site perimeter will be monitored for fugitive dust emissions by visual observations and instrumental measurement. The CAMP will include real-time monitoring for total VOCs and particulates (i.e., dust) at the downwind perimeter of the site for protection of the off-site community (off-site receptors may include residences, businesses, and/or off-site workers). Particulate levels will be monitored continuously with real-time field instruments that will meet, at a minimum, the performance standards from DER-10 Appendix 1B. Action levels for site worker respiratory use are set forth in the CHASP, included in Appendix B and the CAMP provided in Appendix C. Action levels for the protection of the community and visitors are detailed below.

Work practices to minimize odors and organic vapors include limiting the time that excavations remain open, wetting exposed soil, minimizing stockpiling of impacted soil, and/or minimizing the handling of impacted soil. Offending odor and organic vapor controls may include the application of foam suppressants or tarps over the odor or petroleum source areas. Foam suppressants may include biodegradable foams that are applied over the source material for short-term control of the odor. If necessary, the excavation will be covered with polyethylene sheeting prior to backfilling to help prevent nuisance odors.

Total VOCs will be monitored with a hand-held PID in accordance with the CHASP and CAMP. If the action level is exceeded and adequate ventilation cannot be provided, work will cease and the potential affected portion of the work area will be evacuated until adequate mechanical ventilation can be implemented to control the hazard. Level C respiratory protection may be donned in accordance with the CHASP if trained personnel are present and the action level is exceeded. The following actions will be taken based on VOC levels measured:

- If total VOC levels exceed 5 parts per million (ppm) above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the hot zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps work activities will resume provided that the total organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average.

- If the total VOC level is above 25 ppm at the perimeter of the hot zone, activities will be shut down.

The following actions will be taken based on visual observations and measured dust levels using a quantitative meter following minimum performance standards from DER-10 Appendix 1B:

- If the downwind particulate level is 100 $\mu\text{g}/\text{m}^3$ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression must be employed. Work may continue with dust suppression techniques provided that downwind PM10 levels do not exceed 150 $\mu\text{g}/\text{m}^3$ above the background level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 $\mu\text{g}/\text{m}^3$ above the background level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM10 concentration to within 150 $\mu\text{g}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

If nuisance odors or vapors exceeding action levels set forth in the IRMWP are identified off-site, work will be halted and the source of odors will be identified and corrected. Work will not resume until all VOCs or nuisance odors have been abated. NYSDEC and NYSDOH will be notified of odor and vapor events and of other complaints about the project. Monitoring the work area for dust, odors and vapor is the responsibility of Langan personnel under the oversight of the PE. Exceedances of dust, odor or vapor action levels that are observed by Langan will immediately be brought to the attention of the contractor. Implementation of odor and vapor controls will be the responsibility of the Contractor. Exceedances and associated mitigation actions will be reported to the NYSDEC.

2.6 Construction Health and Safety Plan

The RE oversaw preparation of a site-specific CHASP for the IRM (Appendix B). The CHASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and personal protective equipment requirements. The CHASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65). The CHASP includes, but is not limited to, the following components listed below:

- Organization and Identification of key personnel
- Training requirements

- Medical surveillance requirements
- List of Site hazards
- Excavation safety
- Work zone descriptions and monitoring procedures
- Personal safety equipment and protective clothing requirements
- Decontamination requirements
- Standard operating procedures
- Contingency Plan
- Material Safety Data Sheets

2.7 Quality Assurance Project Plan

The RE oversaw the preparation of a QAPP, which includes proposed sampling procedures and analytical methods for samples to be collected during IRMWP implementation. The QAPP is provided in Appendix D.

3.0 SCHEDULE

Implementation of the IRMWP is expected to take 80 days following the NYSDEC approval. An IRM construction schedule is included in Appendix A. Following completion of the IRM, the remainder of the site will be remediated at a later time pursuant to an NYSDEC-approved RAWP.

3.1 Notification

The NYSDEC will be notified at least 10 days prior to commencement of work related to the IRM. A pre-construction meeting will be coordinated between the RE, the Remediation Contractor, and the NYSDEC. This meeting will take place prior to the implementation of this IRMWP.

4.0 REPORTING

Upon completion of the IRMWP implementation, a CCR will be prepared and submitted to the NYSDEC. The RE responsible for certifying the CCR will be an individual licensed to practice engineering in the State of New York. Jason J. Hayes, P.E. of Langan will have this responsibility. Should Mr. Hayes become unable to fulfill this responsibility, another suitably qualified New York State professional engineer will take his place. All project reports will be submitted to the NYSDEC electronically. If required, laboratory analytical data will be submitted in an electronic data deliverable (EDD) format that complies with the NYSDEC's electronic data warehouse standards. Alternatively, with NYSDEC approval, IRMWP implementation documentation will be included in the Final Engineering Report (FER) in lieu of the CCR.

4.1 Daily Reports

Daily reports will be prepared for the project file and for review by the NYSDEC Project Manager. Daily reports will include:

- An update of progress made during the reporting day
- Locations of work and quantities of material imported and exported from the site
- References to a site map
- Photographic documentation of site activities
- A summary of any and all complaints with relevant details (names, phone numbers)
- A summary of CAMP findings, including readings exceeding action limits
- An explanation of notable site conditions

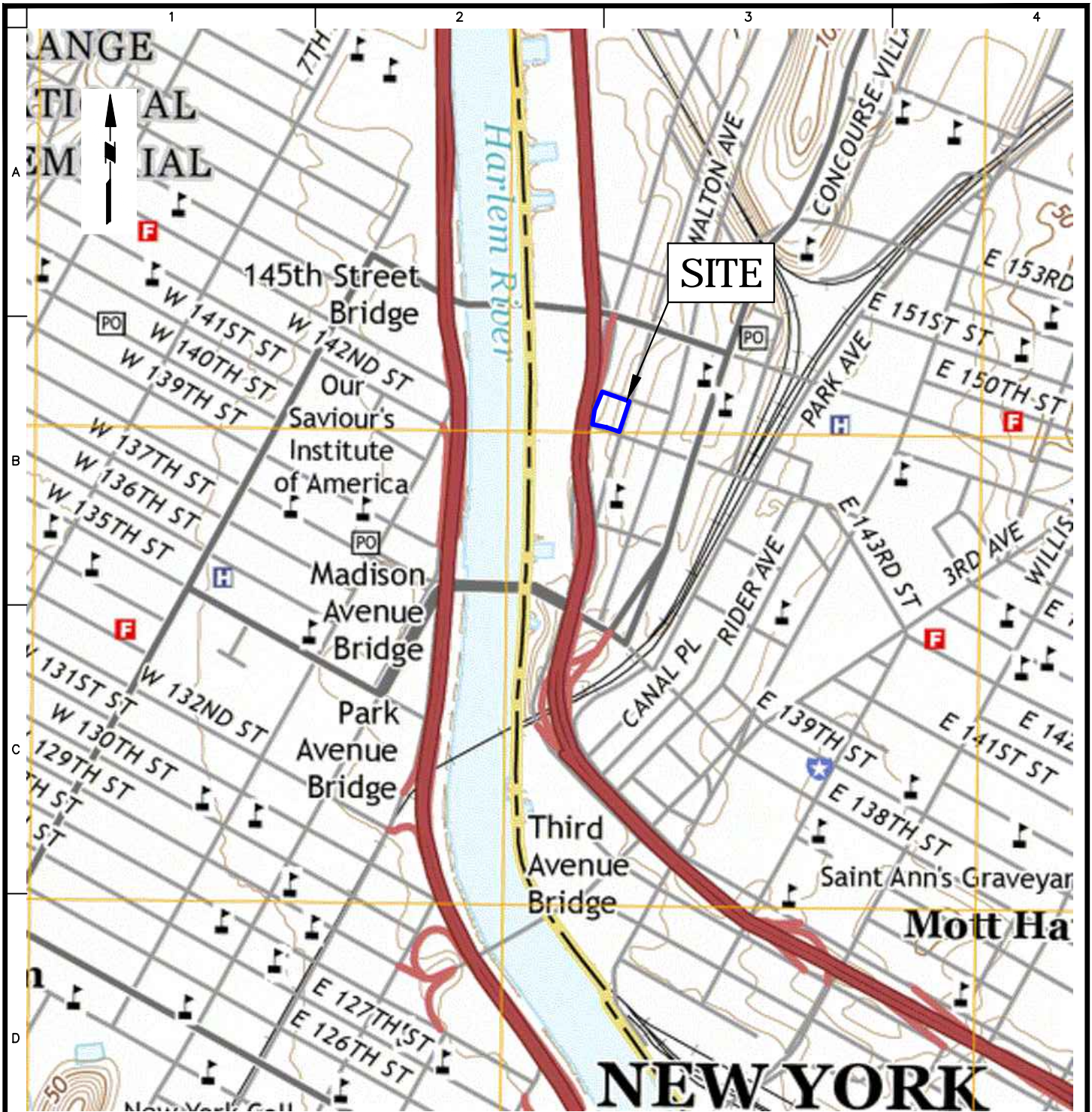
Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the IRMWP, or other sensitive or time critical information; however, such conditions will also be included in the daily reports. Emergency conditions and changes to the IRMWP will be addressed directly to the NYSDEC Project Manager via personal communication. If site conditions warrant, the RE may request to change from daily to weekly reports that include the above information.

4.2 Construction Completion Report

A CCR will be submitted to the NYSDEC Project Manager within 90 days of completing the interim remedial action. Alternatively, with NYSDEC approval, IRMWP implementation documentation will be included in the FER. The CCR will document the implementation of the IRMWP. The CCR will be incorporated into and referenced in the FER for the site when issued. The CCR will provide the following information:

1. The RE will certify that:
 - a. Data generated was useable and met the remedial requirements
 - b. The remedial work conformed to the IRMWP
 - c. Dust, odor, and vapor control measures were implemented during invasive work and conformed with the IRMWP
 - d. Remediation waste was transported and disposed in accordance with the IRMWP
 - e. Source approval and sampling of imported acceptable fill was completed in a manner consistent with the methodology of the IRMWP
2. Description of problems encountered and their resolutions
3. Description of changes in the IRM from the elements provided in the IRMWP and associated design documents and the reasons for them
4. Description of the deviations from the approved IRMWP
5. Listing of waste streams, quantity of materials disposed, and where they were disposed
6. List of the remediation standards applied to the remedial actions
7. Description of source and quality of imported material
8. A tabular summary of all sampling results and all material characterization results and other sampling and chemical analysis performed under the IRMWP
9. Written and photographic documentation of all work performed under the IRM
10. Copies of all the submitted progress reports
11. Certifications, manifests, and bills of lading for excavated materials transported off-site
12. An accounting of the destination of all material removed from the site, including excavated soil, historic fill material, solid waste, hazardous waste, and non-regulated material
13. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of all material imported onto the site.
14. Analytical data will be reported as NYSDEC Analytical Services Protocols (ASP) Category B data deliverable and Data Usability Summary Reports (DUSRs) will be prepared

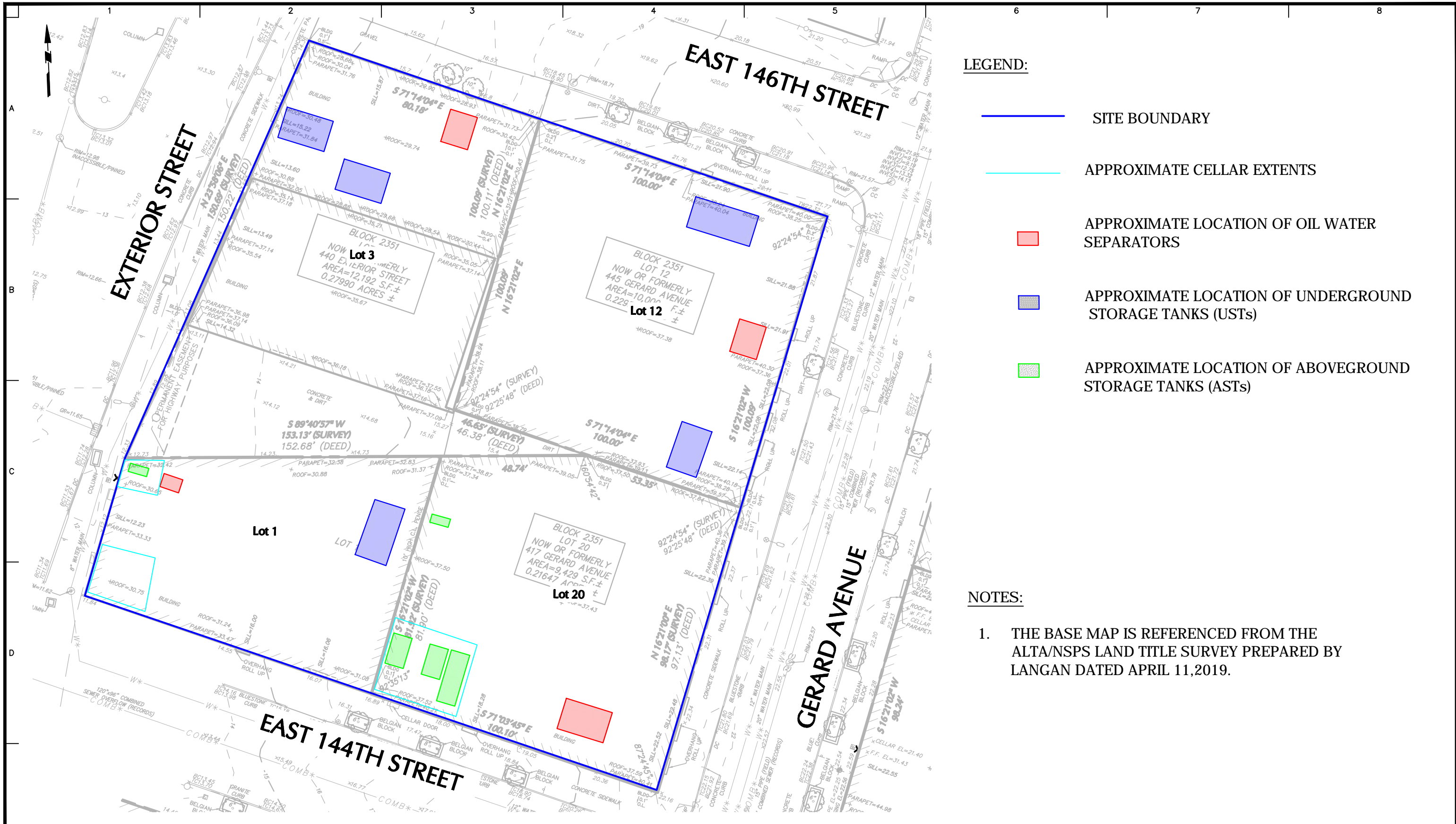
FIGURES



— APPROXIMATE SITE BOUNDARY

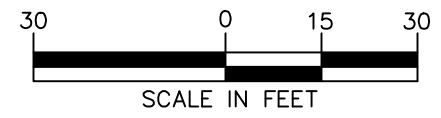
NOTE: BASE MAP IS REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) 7.5 MINUTE SERIES CENTRAL PARK QUADRANGLE MAP, DATED 2016

LANGAN Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com	Project	Figure Title	Project No.	Figure No.
	GERARD AVENUE AND EAST 146TH STREET	SITE LOCATION MAP	170487001	
	BLOCK No. 2351, LOT Nos. 1, 3, 12, & 20		Date	
	BRONX NEW YORK		10/28/2019	
			Drawn By	1
			JG	
			Checked By	
			JL	



- LEGEND:**
- SITE BOUNDARY
 - APPROXIMATE CELLAR EXTENTS
 - APPROXIMATE LOCATION OF OIL WATER SEPARATORS
 - APPROXIMATE LOCATION OF UNDERGROUND STORAGE TANKS (USTs)
 - APPROXIMATE LOCATION OF ABOVEGROUND STORAGE TANKS (ASTs)

- NOTES:**
1. THE BASE MAP IS REFERENCED FROM THE ALTA/NSPS LAND TITLE SURVEY PREPARED BY LANGAN DATED APRIL 11,2019.



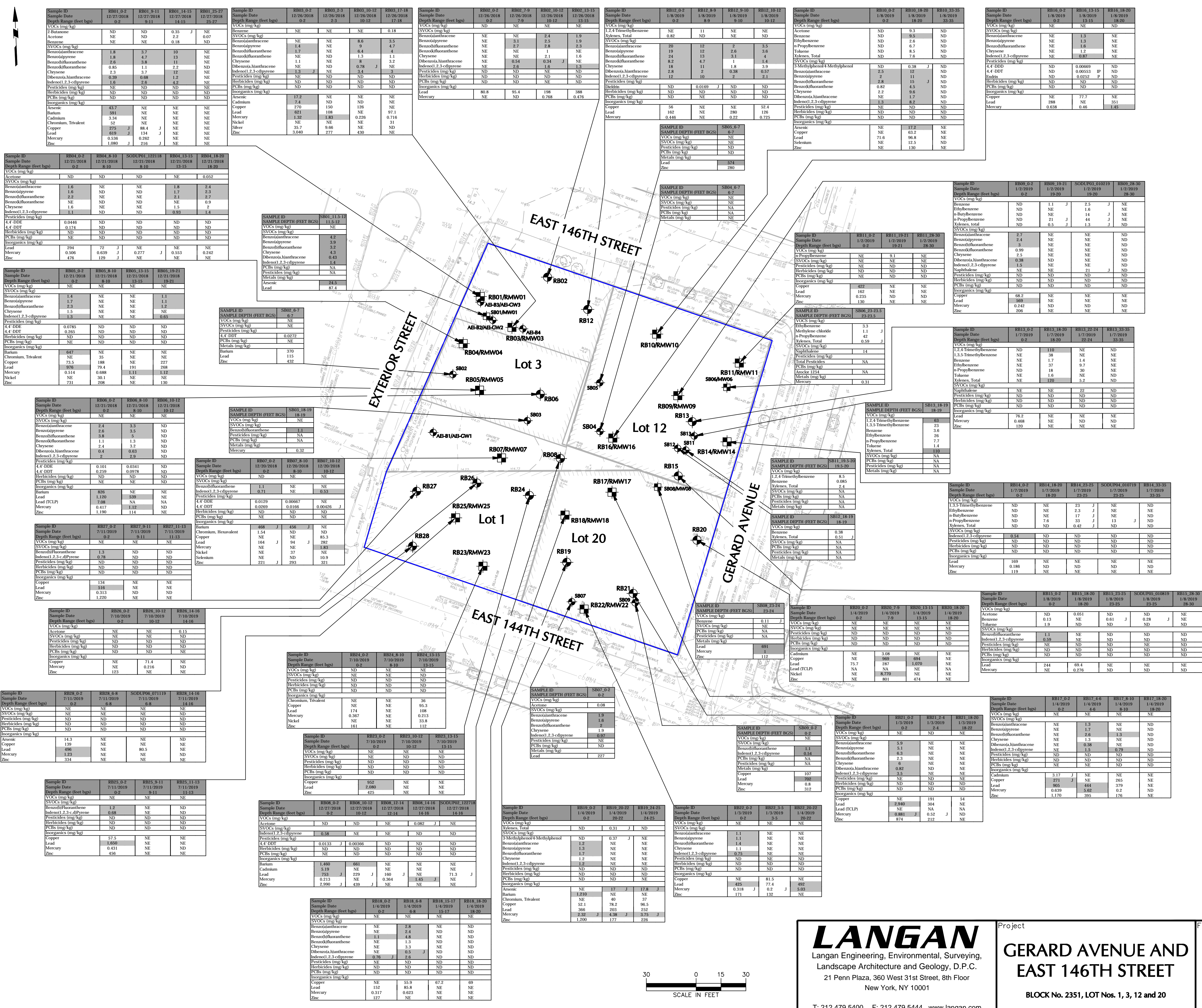
LANGAN Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com	Project	Figure Title	Project No.	Figure No.	
	GERARD AVENUE AND EAST 146TH STREET		170487001		
	BLOCK No. 2351 LOT Nos. 1, 3, 12, & 20 BRONX NEW YORK		SITE LAYOUT PLAN		2
				Date 10/28/2019	
			Drawn By JG		
			Checked By JL		

- LEGEND:**
- SITE BOUNDARY
 - ⊙ RB32 SOIL BORING LOCATION
 - ⊠ RB30/RMW30 SOIL BORING/MONITORING WELL LOCATION
 - ⊙ SB03 APPROXIMATE SI SOIL BORING LOCATION (LANGAN, SEPTEMBER 2017)
 - ⊠ SB01/MW01 APPROXIMATE SI SOIL BORING/MONITORING WELL LOCATION (LANGAN, SEPTEMBER 2017)
 - ⊙ AEI-B2/AEI-CW2 APPROXIMATE PHASE II ESI SOIL BORING/MONITORING WELL LOCATION (AEI, OCTOBER 2015)

- NOTES:**
- THE BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY LANGAN DATED OCTOBER 10, 2017.
 - SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO TITLE 6 OF THE NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE (UU) AND RESTRICTED USE RESTRICTED-RESIDENTIAL (RRU) SOIL CLEANUP OBJECTIVES (SCOs).
 - RESULTS EXCEEDING UU SCOs ARE BOLDED.
 - RESULTS EXCEEDING RRU SCOs ARE SHADED AND BOLDED.
 - ONLY RESULTS WITH DETECTED CONCENTRATIONS EXCEEDING UU AND/OR RRU SCOs ARE SHOWN.
 - ONLY VALIDATED ANALYTICAL DATA ARE SHOWN.
 - SI = SUBSURFACE INVESTIGATION
 - ESI = ENVIRONMENTAL SITE INVESTIGATION
 - mg/kg = MILLIGRAMS PER KILOGRAM
 - VOCS = VOLATILE ORGANIC COMPOUND
 - SVOCs = SEMI-VOLATILE ORGANIC COMPOUND
 - PCBs = POLYCHLORINATED BIPHENYLS
 - NE = NO EXCEEDANCES
 - ND = NOT DETECTED
 - NA = NOT ANALYZED
 - J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT (MDL), BUT BELOW THE REPORTING LIMIT (RL); THEREFORE, THE RESULT IS AN ESTIMATED CONCENTRATION.
 - P = THE RELATIVE PERCENT DIFFERENCE BETWEEN THE RESULTS FOR THE TWO COLUMNS EXCEEDS THE METHOD-SPECIFIED CRITERIA.
 - I = THE LOWER VALUE FOR THE TWO COLUMNS HAS BEEN REPORTED DUE TO OBVIOUS INTERFERENCE.
 - BCS = BELOW GRADE SURFACE
 - TCLP = TOXICITY CHARACTERISTIC LEACHING PROCEDURE

Analyte	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use SCOs
VOCS (mg/kg)		
1,2,4-Trinitrobenzene	3.6	32
1,2,4-Trinitrobenzene	8.4	8.4
2 Butanone	100	100
Acetone	0.05	100
Benzene	0.06	4.8
Chlorobenzene	1	41
Methylene chloride	0.05	100
n-Butylbenzene	12	100
n-Propylbenzene	NE	3.9
Toluene	0.7	100
Xylenes, Total	0.28	100
SVOCs (mg/kg)		
3 Methylphenol 4 Methylphenol	0.33	100
Benzofluoranthene	1	1
Benzo[a]pyrene	1	1
Benzo[b]fluoranthene	0.1	100
Benzo[k]fluoranthene	0.3	3.9
Chrysene	1	1
Dibenz[a,h]anthracene	0.8	0.33
Indeno[1,2,3-cd]pyrene	0.5	0.5
Naphthalene	12	100
Pesticides (mg/kg)		
4,4'-DDE	0.0033	13
4,4'-DDE	0.0033	8.9
4,4'-DDE	0.0033	0.2
Dieldrin	0.0033	0.2
Inorganics (mg/kg)		
Asenic	0.14	11
Barium	356	400
Cadmium	2.5	4.3
Chromium, Hexavalent	1	110
Lead	63	400
Copper	50	270
Lead	63	400
Mercury	0.18	0.81
Nickel	30	310
Selenium	3	180
Zinc	169	1000

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.



LANGAN Project
 Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
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 New York, NY 10001

Figure Title: **GERARD AVENUE AND EAST 146TH STREET SOIL SAMPLE ANALYTICAL RESULTS MAP**

Project No. **170487001** Figure No. **3**

Date: **10/29/2019**

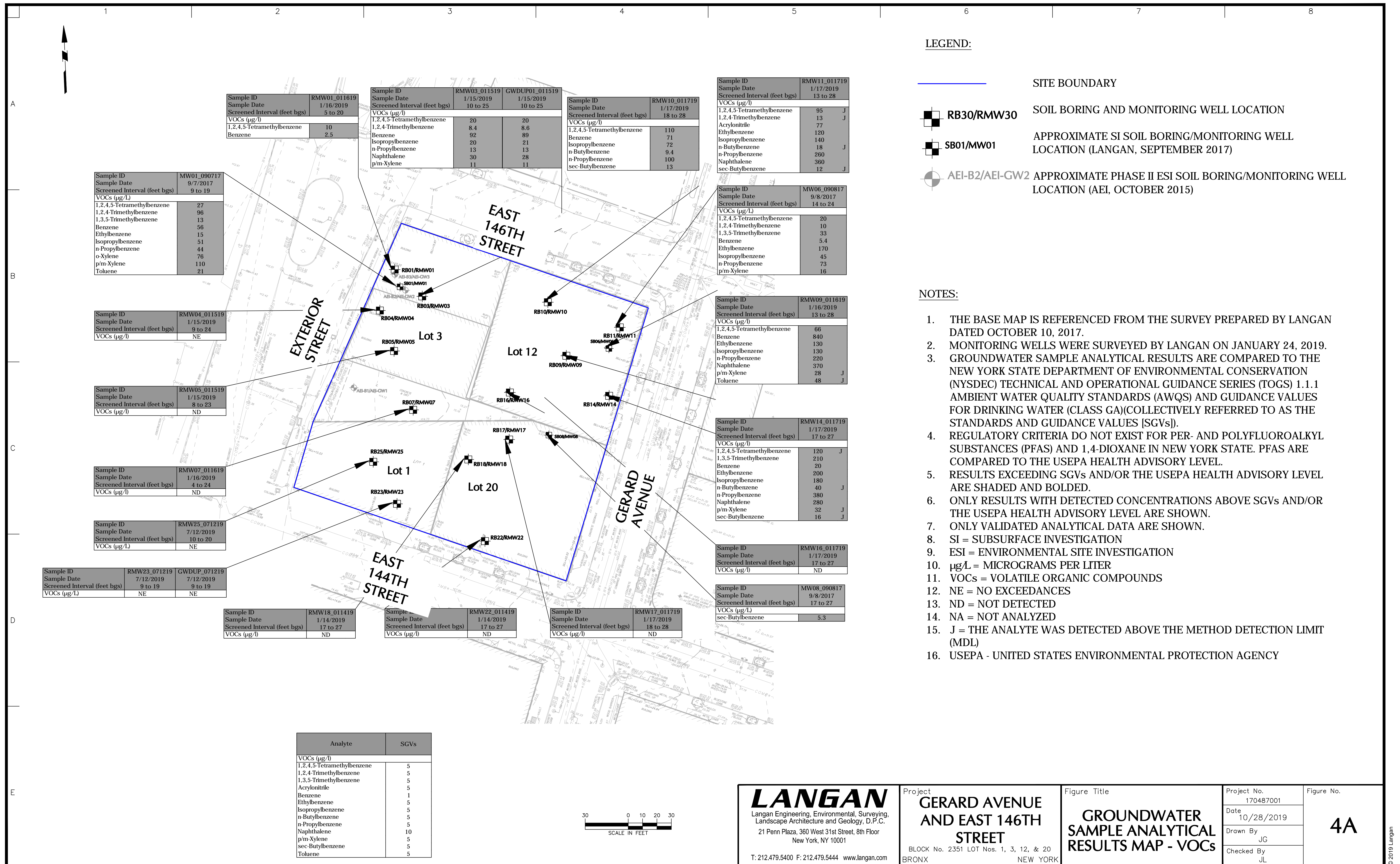
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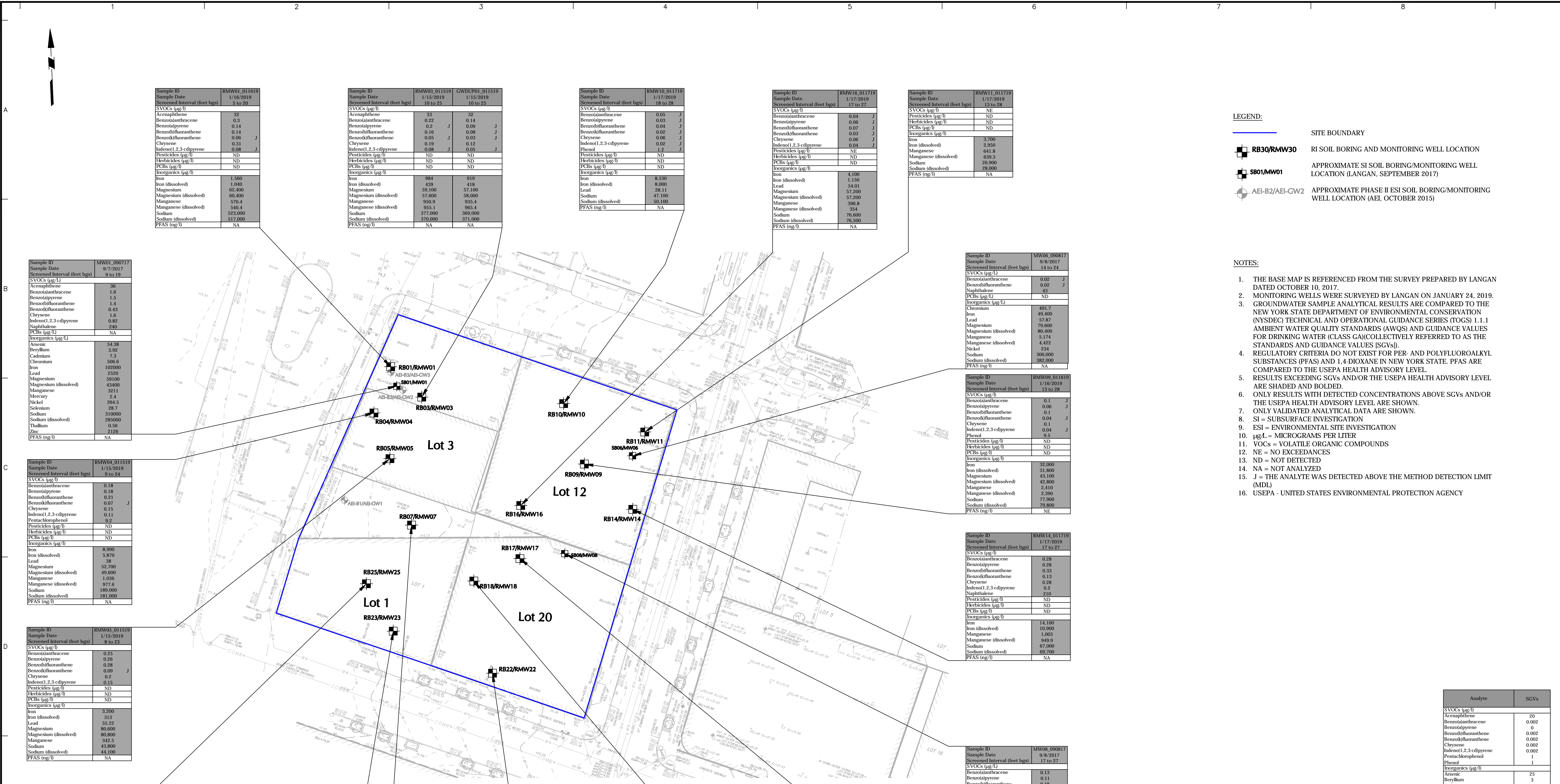
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Project No. **170487001** Figure No. **3**

Scale: 30 0 15 30
 SCALE IN FEET

BRONX





LEGEND:

- RB30/RMW30 RI SOIL BORING AND MONITORING WELL LOCATION
- SB01/MW01 APPROXIMATE SI SOIL BORING/MONITORING WELL LOCATION (LANGAN, SEPTEMBER 2017)
- AEI-B2/AEI-GW2 APPROXIMATE PHASE II ESI SOIL BORING/MONITORING WELL LOCATION (AEI, OCTOBER 2015)

- NOTES:**
1. THE BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY LANGAN DATED OCTOBER 10, 2017.
 2. MONITORING WELLS WERE SURVEYED BY LANGAN ON JANUARY 24, 2019.
 3. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS (AWQS) AND GUIDANCE VALUES FOR DRINKING WATER (CLASS C)/COLLECTIVELY REFERRED TO AS THE STANDARDS AND GUIDANCE VALUES (SGVs).
 4. REGULATORY CRITERIA DO NOT EXIST FOR PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) AND 1,4-DIOXANE IN NEW YORK STATE. PFAS ARE COMPARED TO THE USEPA HEALTH ADVISORY LEVEL.
 5. RESULTS EXCEEDING SGVs AND/OR THE USEPA HEALTH ADVISORY LEVEL ARE SHADDED AND BOLDED.
 6. ONLY RESULTS WITH DETECTED CONCENTRATIONS ABOVE SGVs AND/OR THE USEPA HEALTH ADVISORY LEVEL ARE SHOWN.
 7. ONLY VALIDATED ANALYTICAL DATA ARE SHOWN.
 8. SI = SUBSURFACE INVESTIGATION
 9. ESI = ENVIRONMENTAL SITE INVESTIGATION
 10. $\mu\text{g/L}$ = MICROGRAMS PER LITER
 11. VOCs = VOLATILE ORGANIC COMPOUNDS
 12. NE = NO EXCEEDANCES
 13. ND = NOT DETECTED
 14. NA = NOT ANALYZED
 15. J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT (MDL)
 16. USEPA - UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Analyte	SGVs
SVOCs (ug/l)	
Acenaphthene	20
Benzo(a)anthracene	0.002
Benzo(a)pyrene	0.002
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Chrysene	0.002
Indeno(1,2,3-cd)pyrene	1
Pentachlorophenol	1
Phenol	1
Inorganics (ug/l)	
Arsenic	25
Beryllium	5
Cadmium	5
Chromium	50
Lead	25
Magnesium	35000
Manganese	300
Mercury	0.7
Nickel	100
Selenium	10
Sodium	20000
Thallium	0.5
Zinc	2000
PFAS (ng/l)	
PFOS + PFOA	0.07

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Project

GERARD AVENUE AND EAST 146TH STREET

BLOCK No. 2351, LOT Nos. 1, 3, 12 and 20

Figure Title

GROUNDWATER SAMPLE ANALYTICAL RESULTS MAP - SVOCs, PCBs, PESTICIDES, HERBICIDES, INORGANICS, & PFAS

Project No.

170487001

Figure No.

4B

Date

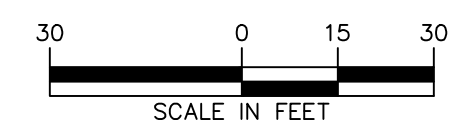
10/28/2019

Drawn By

JG

Checked By

JL



Sample ID	Sample Date	Depth (feet bgs)	RSSV01
	12/31/2018	0.5	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		3.52	
1,3,5-Trimethylbenzene		1.02	
Acetone		4.42	
Benzene		1.02	
Chloromethane		0.483	
Dichlorodifluoromethane		2.7	
Ethylbenzene		3.76	
Isopropanol		1.62	
o-Xylene		5.73	
p/m-Xylene		17.4	
Tetrachloroethene		57.1	
Toluene		2.79	
Trichlorofluoromethane		5.16	
Total VOCs		106.7	
Total BTEX		30.7	

Sample ID	Sample Date	Depth (feet bgs)	AA01_090717
	9/7/2017	NA	
VOCs (µg/m³)			
2,2,4-Trimethylpentane		1.45	
2-Butanone		1.86	
Acetone		13.1	
Benzene		1.02	
Chloromethane		1.41	
Dichlorodifluoromethane		1.42	
Ethanol		16.3	
Heptane		0.893	
Isopropanol		1.68	
Methylene chloride		1.94	
n-Hexane		1.45	
Tetrachloroethene		3.72	
Toluene		4.52	
Trichlorofluoromethane		1.36	
Total VOCs		52.1	
Total BTEX		5.5	

Sample ID	Sample Date	Sample Depth (feet bgs)	SV01_090717
	9/7/2017	9	
VOCs (µg/m³)			
1,3-Butadiene		25.4	
2-Butanone		83.5	
Benzene		141	
Carbon disulfide		240	
Cyclohexane		29.9	
Heptane		3500	
n-Hexane		6340	
Tetrachloroethene		62.4	
Toluene		50.1	
Total VOCs		10472.3	
Total BTEX		191.1	

Sample ID	Sample Date	Depth (feet bgs)	RSV01
	12/31/2019	8	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		19.9	
1,3,5-Trimethylbenzene		5.26	
2-Butanone		6.25	
2-Hexanone		7.42	
4-Ethyltoluene		6.69	
Benzene		3.48	
Carbon disulfide		3.18	
Dichlorodifluoromethane		2.52	
Ethylbenzene		18.3	
Heptane		5.57	
n-Hexane		4.41	
o-Xylene		25.4	
p/m-Xylene		71.7	
Tetrachloroethene		29.6	
Toluene		403	
Total VOCs		612.7	
Total BTEX		521.9	

Sample ID	Sample Date	Depth (feet bgs)	RSSV02
	12/31/2018	1.17	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		8.6	
1,3,5-Trimethylbenzene		3.67	
2-Butanone		3.42	
2-Hexanone		2.56	
4-Ethyltoluene		18.7	
Acetone		1.65	
Cyclohexane		2.62	
Dichlorodifluoromethane		6.56	
Ethylbenzene		16	
Heptane		2.33	
Isopropanol		1.77	
n-Hexane		10.5	
o-Xylene		21.6	
p/m-Xylene		4.94	
Toluene		2.34	
Trichlorofluoromethane		107.3	
Total VOCs		43.6	
Total BTEX		43.6	

Sample ID	Sample Date	Sample Depth (feet bgs)	SV06_090617
	9/6/2017	14	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		32.4	
1,3,5-Trimethylbenzene		8.95	
1,3-Butadiene		2.39	
2-Butanone		83.2	
4-Ethyltoluene		6.05	
Acetone		1.11	
Benzene		18.9	
Carbon disulfide		62.9	
Chloroform		8.01	
Cyclohexane		51.6	
Ethylbenzene		12.7	
Heptane		525	
Isopropanol		4.87	
n-Hexane		930	
o-Xylene		22.3	
p/m-Xylene		42.7	
Styrene		5.15	
Tertiary butyl Alcohol		90.6	
Tetrachloroethene		11.4	
Toluene		46.4	
Total VOCs		2540.9	
Total BTEX		143.0	

Sample ID	Sample Date	Depth (feet bgs)	RAA01
	12/31/2018	NA	
VOCs (µg/m³)			
1,3-Butadiene		0.469	
2,2,4-Trimethylpentane		1.04	
Acetone		11.4	
Benzene		2.05	
Chloromethane		1.17	
Dichlorodifluoromethane		3.45	
Ethanol		28.3	
Isopropanol		4.42	
n-Hexane		1.6	
p/m-Xylene		1.94	
Toluene		4.18	
Trichlorofluoromethane		2.05	
Total VOCs		62.07	
Total BTEX		8.17	

Sample ID	Sample Date	Depth (feet bgs)	RAA02_071519
	7/15/2019	NA	
VOCs (µg/m³)			
2,2,4-Trimethylpentane		1.26	
Acetone		8.36	
Benzene		0.856	
Chloromethane		1.28	
Dichlorodifluoromethane		2.36	
Ethanol		17	
Isopropanol		2	
n-Hexane		0.952	
Toluene		2.25	
Trichlorofluoromethane		1.34	
Total VOCs		31.1	
Total BTEX		37.7	

Sample ID	Sample Date	Depth (feet bgs)	RSV02
	12/31/2019	9	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		20.3	
1,3,5-Trimethylbenzene		5.06	
2,2,4-Trimethylpentane		2	
2-Butanone		65.2	
2-Hexanone		14.8	
4-Ethyltoluene		6.88	
Acetone		13.2	
Benzene		2.95	
Carbon disulfide		6.6	
Chloroform		3.35	
Cyclohexane		1.23	
Dichlorodifluoromethane		2.51	
Ethylbenzene		18.1	
Heptane		6.23	
n-Hexane		6.84	
o-Xylene		25.1	
p/m-Xylene		71.7	
Tetrachloroethene		29.4	
Tetrahydrofuran		2.68	
Toluene		89.7	
Trichlorofluoromethane		1.29	
Total VOCs		395.1	
Total BTEX		207.6	

Sample ID	Sample Date	Depth (feet bgs)	RSSV09_071519
	7/15/2019	0.5	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		62.9	
1,3,5-Trimethylbenzene		17.6	
2,2,4-Trimethylpentane		45.2	
4-Ethyltoluene		12.5	
Acetone		9.83	
Benzene		30.8	
Carbon Disulfide		7.13	
Carbon Tetrachloride		3.03	
Chloromethane		0.956	
Cyclohexane		44.7	
Dichlorodifluoromethane		2.93	
Ethanol		82.7	
Ethylbenzene		46.9	
M.P. Xylene		172	
Methyl Ethyl Ketone (2-Butanone)		18.3	
Methylene Chloride		4.41	
n-Heptane		59.8	
n-Hexane		51.1	
o-Xylene (1,2-Dimethylbenzene)		62.5	
Tert-Butyl Alcohol		11.6	
Tetrachloroethene (PCE)		24.8	
Toluene		219	
Total BTEX		531	
Total VOCs		991	

Sample ID	Sample Date	Depth (feet bgs)	RSSV08_071519
	7/15/2019	0.5	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		38.1	
1,3,5-Trimethylbenzene		10.8	
2,2,4-Trimethylpentane		24	
2-Hexanone		11.8	
4-Ethyltoluene		6.49	
Acetone		19	
Benzene		7.6	
Carbon Disulfide		7.41	
Carbon Tetrachloride		27.2	
Chloroform		3.09	
Cyclohexane		8.64	
Dichlorodifluoromethane		2.97	
Ethanol		509	
Ethylbenzene		19.7	
Isopropanol		2.95	
M.P. Xylene		74.3	
Methyl Ethyl Ketone (2-Butanone)		23.8	
n-Heptane		18.6	
n-Hexane		14.7	
o-Xylene (1,2-Dimethylbenzene)		29.3	
Tert-Butyl Alcohol		9.28	
Tetrachloroethene (PCE)		17.2	
Toluene		63.3	
Total BTEX		194	
Total VOCs		949	

Sample ID	Sample Date	Depth (feet bgs)	RSSV07
	12/31/2019	0.83	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		4.42	
1,3,5-Trimethylbenzene		1.43	
4-Ethyltoluene		1.11	
Acetone		6.72	
Dichlorodifluoromethane		2.64	
Ethylbenzene		7.6	
o-Xylene		7.6	
p/m-Xylene		267	
Tetrachloroethene		4.88	
Toluene		1.75	
Trichlorofluoromethane		1.6	
Total VOCs		443.6	
Total BTEX		420.8	

Sample ID	Sample Date	Depth (feet bgs)	RSSV06
	1/9/2019	0.83	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		7.37	
1,3,5-Trimethylbenzene		7.87	
Acetone		19.4	
Ethylbenzene		11.8	
Heptane		16.7	
o-Xylene		26	
p/m-Xylene		43.4	
Tetrachloroethene		15.1	
Toluene		8.82	
Total VOCs		156.5	
Total BTEX		90.02	

Sample ID	Sample Date	Depth (feet bgs)	RSSV05
	1/9/2019	0.33	
VOCs (µg/m³)			
1,2,4-Trimethylbenzene		4.39	
Acetone		7.27	
Benzene		0.757	
Dichlorodifluoromethane		2.69	
Ethylbenzene		2.49	
o-Xylene		2.45	
p/m-Xylene		9.3	
Tetrachloroethene		2.16	
Toluene		9.12	
Trichlorofluoromethane		1.6	
Total VOCs		42.23	
Total BTEX		24.12	

- SITE BOUNDARY
- ▼ RSV01 SOIL VAPOR SAMPLE LOCATION
- ▲ RSSV07 SUBSLAB SOIL VAPOR SAMPLE LOCATION
- ◆ RAA01 AMBIENT AIR SAMPLE LOCATION
- ◆ AA01 APPROXIMATE SI AMBIENT AIR SAMPLE LOCATION (LANGAN, SEPTEMBER 2017)
- ▼ SV06 APPROXIMATE SI SOIL VAPOR SAMPLE LOCATION (LANGAN, SEPTEMBER 2017)
- ▲ SSV2 APPROXIMATE PHASE II ESI SUB-SLAB SOIL VAPOR SAMPLE LOCATION (AEL, OCTOBER 2015)
- ▼ SG1 APPROXIMATE PHASE II ESI SOIL VAPOR SAMPLE LOCATION (AEL, OCTOBER 2015)

NOTES:

1. THE BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY LANGAN DATED OCTOBER 10, 2017.
2. AMBIENT AIR AND SOIL VAPOR SAMPLE ANALYTICAL RESULTS ARE COMPARED TO NEW YORK STATE DEPARTMENT OF HEALTH (NYSDOH) AIR GUIDELINE VALUES (AGVs).
3. RESULTS EXCEEDING THE NYSDOH AGVs ARE SHADED AND BOLD.
4. ONLY RESULTS WITH DETECTED CONCENTRATIONS ARE SHOWN.
5. ONLY VALIDATED ANALYTICAL DATA ARE SHOWN.
6. SI = SUBSURFACE INVESTIGATION
7. ESI = ENVIRONMENTAL SITE INVESTIGATION
8. NA = NOT APPLICABLE
9. µg/m³ = MICROGRAMS PER CUBIC METER
10. BGS = BELOW GRADE SURFACE
11. VOCs = VOLATILE ORGANIC COMPOUNDS
12. BTEX = BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES.
13. SUB-SLAB SOIL VAPOR SAMPLES WERE COLLECTED FROM 2" BENEATH THE BOTTOM OF THE BUILDING SLABS.
14. THE AMBIENT AIR SAMPLE WAS COLLECTED APPROXIMATELY 5 FEET ABOVE THE GROUND.

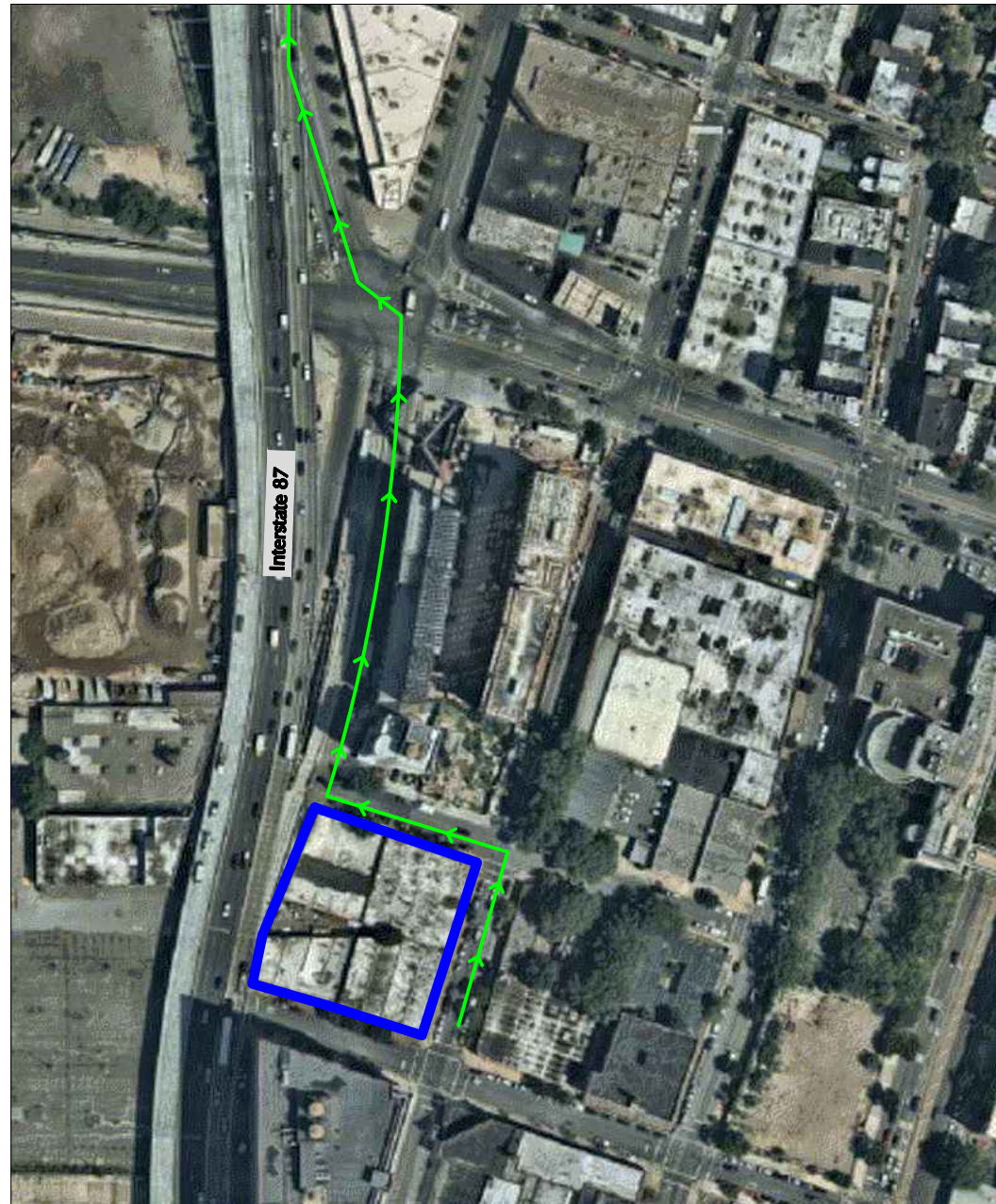
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Project **GERARD AVENUE AND EAST 146TH STREET**
BLOCK No. 2351 LOT Nos. 1, 3, 12, & 20
BRONX NEW YORK







Figure Title **SOIL VAPOR SAMPLE ANALYTICAL RESULTS MAP**

Project No. 170487001
Date 10/28/2019
Drawn By JG
Checked By JL

Figure No. **5**



LEGEND:

-  SITE BOUNDARY
-  PROPOSED TRUCK ROUTE
-  LOCAL TRUCK ROUTE
-  THROUGH TRUCK ROUTE ON EXPRESSWAY
-  HIGHWAY EXIT
-  COMMERCIAL VEHICLES PROHIBITED

NOTES:

1. TRUCK ROUTE MAP AND LEGEND ADAPTED FROM THE NEW YORK CITY DEPARTMENT OF TRANSPORTATION (NYCDOT) 2015 NEW YORK CITY TRUCK ROUTE MAP.
2. AERIAL MAP FROM NEARMAP.COM, IMAGE DATED JULY 31, 2017
3. SITE ACCESS GATE LOCATION MAY CHANGE BASED ON CONSTRUCTION LOGISTICS.
4. FIGURE IS NOT TO SCALE.

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

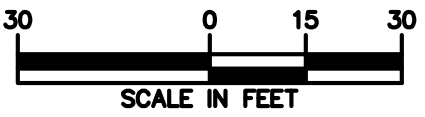
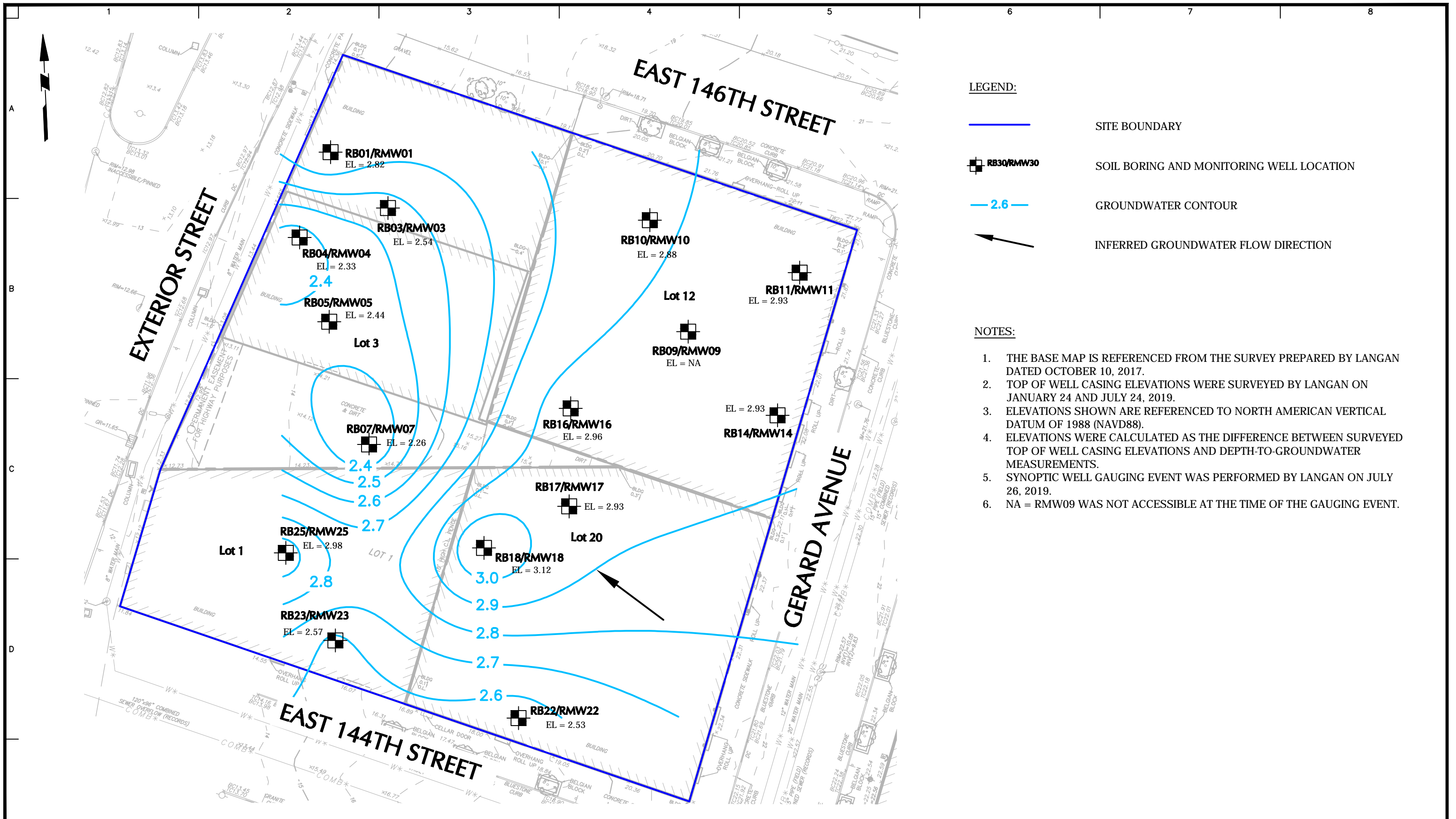
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Project
**GERARD AVENUE
 AND EAST 146TH
 STREET**
 BLOCK No. 2351 LOT Nos. 1, 3, 12, & 20
 BRONX NEW YORK

Figure Title
**TRUCK ROUTE
 MAP**

Project No.
 170487001
 Date
 10/29/19
 Drawn By
 JG
 Checked By
 JL

Figure No.
6



LANGAN Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com	Project	GERARD AVENUE AND EAST 146TH STREET	Figure Title	GROUNDWATER ELEVATION CONTOUR MAP	Project No.	170487001	Figure No.	7 Sheet 7 of 7
		BLOCK No. 2351 LOT Nos. 1, 3, 12, & 20 BRONX NEW YORK			Date	11/20/2019		
					Drawn By	JG		
					Checked By	JL		

APPENDIX A

IRM CONSTRUCTION SCHEDULE

Remediation Schedule
Gerard Avenue and East 146th Street
Bronx, New York
Langan Project No. 170487001
BCP Site ID: C203111

Item #	Action	2019			2020											
		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	IRMWP Preparation															
2	NYSDEC Review and Approval of IRMWP															
3	Site Demolition and Tank Removal															
4	Remedial Action Work Plan Implementation															
5	Balance of Construction															
6	FER, SMP and EE															
7	Certificate of Completion (12/31/20)															

Notes:

1. FER - Final Engineering Report
2. SMP - Site Management Plan
3. EE - Environmental Easement
4. NYSDEC = New York State Department of Environmental Conservation
5. IRMWP = Interim Remedial Measure Work Plan

APPENDIX B

CONSTRUCTION HEALTH AND SAFETY PLAN (CHASP)

CONSTRUCTION HEALTH AND SAFETY PLAN

FOR

GERARD AVENUE AND EAST 146TH STREET

**404 Exterior Street, 417 and 445 Gerard Avenue,
440 Major Wm Deegan Boulevard
Bronx, New York
NYSDEC BCP Site No. C203111**

Prepared For

**445 Gerard LLC
c/o The Domain Companies
11 Park Place, Suite 1705
New York, NY 10007**

Prepared By:

**Langan Engineering, Environmental, Surveying
Landscape Architecture, and Geology, D.P.C.
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001**

LANGAN

**October 2019
Langan Project No. 170487001**

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Attachment B	Decontamination Procedures
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Attachment D	Calibration Log
Attachment E	Material Data Safety Sheets / Safety Data Sheets*
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Attachment H	Tailgate Safety Meeting Log

* Items to be posted prominently on site, or made readily available to personnel.

1.0 INTRODUCTION

1.1 General

This HEALTH AND SAFETY PLAN (HASP) was developed to address disturbance of known and reasonably anticipated subsurface contaminants and comply with Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.120(b)(4), *Hazardous Waste Operations and Emergency Response* during anticipated site work 404 Exterior Street, 417 & 445 Gerard Avenue, in the borough of Bronx, New York (Tax Map Block 2351, Lots 1, 3, 12 and 20) ("the Site"). This HASP provides the minimum requirements for implementing site operations during future remedial measure activities. All contractors performing work on this site shall implement their own HASP that, at a minimum, adheres to this HASP. The contractor is responsible for their own health and safety and that of their subcontractors. Langan personnel will implement this HASP while onsite.

The management of the day-to-day site activities and implementation of this HASP in the field is the responsibility of the site Langan Field Team Leader (FTL). Assistance in the implementation of this HASP can also be obtained from the site Langan Health and Safety Officer (HSO) and the Langan Health and Safety Manager (HSM). Contractors operating on the site shall designate their own FTL, HSO and HSM. The content of this HASP may change or undergo revision based upon additional information made available to health and safety personnel, monitoring results, or changes in the work plan.

1.2 Site Location and Background

The site is located at 404 Exterior Street, 417 and 445 Gerard Avenue, and 440 Major Wm Deegan Boulevard, in the Mott Haven neighborhood of the Bronx, New York and is identified as Block 2351, Lots 1, 3, 12, and 20, on the Bronx Borough Tax Map. The site encompasses an area of about 38,000 square feet (about 0.87 acres) and is improved with a one-story warehouse with a partial cellar operated by a food distribution company (Lot 1), a vacant one-story warehouse and parking lot (Lot 3); a vacant one-story warehouse (Lot 12); and a vacant one-story warehouse with a partial cellar (Lot 20). The site is bound by East 146th Street to the north, Gerard Avenue to the east, East 144th Street to the south, and Exterior Street to the west.

Commercial and industrial facilities have occupied the site since the early 1900s. Lot 1 was occupied by a chemical laboratory/chemical manufacturing facility from 1944 to 1951, paint company from 1956 to 1965, and unspecified manufacturing facility from 1951 to 2007; Lot 3 was occupied by a parking garage from 1935 to 1977; Lot 12 was occupied by a taxi dispatch center (1930s to 1960s), an auto repair shop (1960s to 1980s), and an unspecified manufacturer (1990s to 2012); and Lot 20 was occupied by a public garage (1935-1951), a fire door

manufacturer (1970s), a Con Edison garage (1977 to 1993), and a mirror fabrication facility (1993 to 2015). According to previous Phase I Environmental Site Assessments (ESAs) prepared by AEI Consultant and GEI Consultants, operations ceased on Lot 12 after 2016, and on Lot 20 sometime between 2005 and 2016. Lot 3 was most recently occupied by an advertising company (Clear Channel Outdoor) and was vacated sometime between March 2018 and the beginning of the RI in December 2018. Lot 1 is occupied by a food distribution company.

- Lot 1: one underground storage tank (UST) of unknown size and contents and one aboveground storage tank (AST) of unknown size
- Lot 3: one 550-gallon gasoline underground storage tank (UST); one gasoline UST of unknown size
- Lot 12: Three gasoline USTs of unknown size; one UST of unknown size
- Lot 20: Four ASTs - two 275-gallon, one 12-gallon, and one of unknown size; two 550-gallon gasoline USTs;

Based on the previous subsurface investigations, the primary contaminants of concern for the site include petroleum, petroleum-related volatile organic compounds (VOCs), chlorinated VOCs, semivolatile organic compounds (SVOCs), and lead. A site location map is included as Figure 1.

1.3 Summary of Work Tasks

1.3.1 Hazardous Materials Abatement

Langan will retain a licensed hazardous materials abatement contractor to perform hazardous abatement in the buildings as specified in the work plan. Locations and specifications are outlined in the general inventory of universal and miscellaneous hazardous materials observed in the building during previous investigations. These include but not limited to the following: polychlorinated biphenyl (PCB)-containing fluorescent light fixtures such as light ballasts; stained surfaces that may have been impacted by oils or PCB-containing material; mercury switches; thermostats; meters, valves, and other mercury containing instruments; oil-filled electric machines (motors, pumps, etc.), fluorescent and other universal waste lamps, storage tanks for oil or chemicals chlorofluorocarbon (CFC) and any other refrigerant-containing appliances; batteries such as Lead-Acid, Nickel Cadmium, Lithium and Silver Oxide Batteries; fire extinguishers and fire suppressions chemicals; water treatment chemicals associated with heating/cooling; containers (e.g., drums) with fluids or articles; waste materials and other similar items that warrant special handling, tritium containing Exit signs, smoke detectors, etc. The abatement contractor shall furnish all labor and materials, equipment and incidentals required for the proper decontamination, removal and closure of hazardous materials in accordance with

federal, state and local regulations.

Langan will observed and document the abatement as specified in the work plan. Unless certified in hazardous abatement and fit test for a respirator in the last year (as documented with a fit testing card), Langan will not enter any area undergoing hazardous abatement.

1.3.2 Asbestos Abatement

Langan will retain a licensed asbestos abatement contractor to perform asbestos abatement of buildings as specified in the work plan. Locations and specifications are outlined in the general inventory of universal and miscellaneous asbestos materials observed in the building during previous investigations. The abatement contractor shall furnish all labor and materials, equipment and incidentals required for the proper decontamination, removal and closure of asbestos materials in accordance with federal, state and local regulations.

Langan will observed and document the abatement as specified in the work plan. Unless certified in asbestos abatement and fit test for a respirator in the last year (as documented with a fit testing card), Langan will not enter any area undergoing asbestos abatement.

1.3.3 Lead-Based Paint (LBP) Abatement

Langan will retain a licensed LBP abatement contractor to perform LBP abatement of buildings as specified in the work plan. Locations and specifications are outlined in the general inventory of universal and miscellaneous LBP materials observed in the building during previous investigations. The abatement contractor shall furnish all labor and materials, equipment and incidentals required for the proper decontamination, removal and closure of LBP materials in accordance with federal, state and local regulations.

Langan will observed and document the abatement as specified in the work plan. Unless certified in LBP abatement and fit test for a respirator in the last year (as documented with a fit testing card), Langan will not enter any area undergoing LBP abatement.

1.3.4 PCBs Caulk/Expansion Joint Abatement

Langan will retain a licensed PCB abatement contractor to perform PCB abatement of building PCB containing caulk and expansions joint material as specified in the work plan. Locations and specifications are outlined in the general inventory of universal and miscellaneous PCB containing caulk and expansion joint materials observed in the building during previous investigations. The abatement contractor shall furnish all labor and materials, equipment and incidentals required for the proper decontamination, removal and closure of PCB caulk and expansion joint materials in

accordance with federal, state and local regulations.

Langan will observe and document the abatement as specified in the work plan. Unless certified in PCB abatement and fit test for a respirator in the last year (as documented with a fit testing card), Langan will not enter any area undergoing PCB abatement.

1.3.5 Demolition of the Unoccupied Building

The demolition contractor shall furnish all labor and materials, equipment and incidentals required for the proper demolition of the building located north of the UST area. This activity is independent of the Langan work scope.

1.3.6 Excavation and Soil Screening

As part of excavation activities, Langan personnel will screen excavated material for visual, olfactory, and instrumental indicators suggestive of a potential chemical or petroleum release. Instrument screening for the presence of volatile organic compounds (VOCs) may be performed with a calibrated photoionization detector (PID). Contractors will excavate for utilities, foundation components and potential grading using heavy equipment and hand tools. Contractors will notify Langan personnel if they identify indications suggestive of a potential chemical or petroleum release. Contaminated material shall be handled and properly disposed in accordance with federal, state and city regulations, criteria and guidelines.

1.3.7 Soil Screening

As part of future excavation activities, Langan personnel will report when they have observed visual and olfactory indications of possible soil impact. When necessary, Langan personnel will also report concentrations of volatile organic vapors (VOCs) above background using a properly calibrated hand held photoionization detector (PID, or equivalent).

1.3.8 Stockpiling

As part of excavation activities, potentially impacted soil may be stockpiled pending laboratory analysis and determining proper off-site disposal. Visibly contaminated soil, if encountered, shall be segregated and stockpiled on at least 10 millimeters of plastic sheeting; reusable soil and fill shall be segregated and stockpiled separately from unusable fill, concrete and other debris; the stockpiles shall be kept covered with 6 millimeters thick plastic sheeting; the plastic sheeting covering the stockpiles shall be anchored firmly in place by weights, stakes, or both; the Contractor shall maintain the plastic sheeting.

1.3.12 Characterization of Excavated Material

When required by the work plan, Langan personnel will characterize excavated soil or clean backfill in accordance with Langan standards.

1.3.13 In-Situ Groundwater Treatment

Langan proposes an in-situ treatment of impacted groundwater by injecting activated persulfate, liquid-activated carbon, and oxygen release compound oxygen into new or existing wells located in on the site. The release of dissolved oxygen supports a number of biological oxidation pathways that would be expected to result in the breakdown of petroleum-related VOCs. Langan will oversee the treatability/feasibility study and based on the data derived, design and document the installation and start-up of the in-situ groundwater treatment system.

1.3.14 Groundwater Sampling

Groundwater samples may be collected from one or more of the existing on-site monitoring wells in accordance with the Langan Low Flow Groundwater Sampling SOP (SOP #12). Groundwater samples will be submitted to an NYSDOH ELAP-certified laboratory and analyzed for constituents as specified in the work plan.

1.3.15 Excavation Backfill

Areas of the site that were over-excavated may be backfilled to development grade (i.e., the grade required to complete construction of the foundation and sidewalk extension). Imported material will consist of clean fill that meets the 6 New York Codes, Rules and Regulations (NYCRR) Part 375-6.8(a) Unrestricted Use Soil Cleanup Objectives (UU SCOs) or other acceptable fill material such as virgin stone from a permitted mine or quarry or recycled concrete aggregate (RCA), from a New York State Department of Environmental Conservation (NYSDEC)-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of RCA acquisition. Imported RCA must be derived from recognizable and uncontaminated concrete. RCA is not acceptable for, and will not be used as, site cover or drainage material.

1.3.16 Decommissioning and Removal of Storage Tanks, Oil/Water Separators & Piping

When encountered, Langan retain a licensed petroleum storage tank removal contractor to excavate and remove all underground storage tanks (USTs), above ground storage tanks (ASTs), oil/water separators and related piping. The tank decommissioning and removal contractor shall furnish all labor and materials, equipment and incidentals required for the proper

decontamination, removal and closure of any tanks in accordance with federal, state and local regulations. Langan personnel will monitor VOCs with a calibrated PID downwind from the UST excavation and record the PID readings.

1.3.17 Construction Activity Inspections and Observations

Langan may observe construction activities including the installation of piles, caissons and rock anchors. In addition, Langan may observe and record data from a lateral load test. These activities are to be done in accordance with the work plan. The installation and assembly activities performed by the contractor in accordance with the construction documents, remedial plan, and special inspection requirements administered by the New York City Department of Buildings. Materials used for construction will be inspected by Langan for conformance to the design documents.

1.3.19 Storm water Pollution Prevention Inspection

In accordance with the work plan, Langan personnel with Storm Water Pollution Prevention (SWPPP) inspection credentials will conduct SWPPP inspections.

2.0 IDENTIFICATION OF KEY PERSONNEL/HEALTH AND SAFETY PERSONNEL

The following briefly describes the health and safety (H&S) designations and general responsibilities that may be employed for this site. The titles have been established to accommodate the project needs and requirements and ensure the safe conduct of site activities. The H&S personnel requirements for a given work location are based upon the proposed site activities.

2.1 Langan Project Manager

The Langan Environmental Project Managers (PM) is Julia Leung. The Geotechnical Project Manager is James Delimitros. Their responsibilities include:

- Ensuring that this HASP is developed, current, and approved prior to on-site activities.
- Ensuring that all the tasks in the project are performed in a manner consistent with Langan's comprehensive *Health and Safety Program for Hazardous Waste Operations* and this HASP.

2.2 Langan Corporate Health and Safety Manager

The Langan Corporate Health and Safety Manager (HSM) is Tony Moffa. His responsibilities

include:

- Updating the *Construction Health and Safety Program for Hazardous Waste Operations*.
- Assisting the site Health and Safety Officer (HSO) with development of the HASP, updating HASP as dictated by changing conditions, jobsite inspection results, etc. and approving changes to this HASP.
- Assisting the HSO in the implementation of this HASP and conducting Jobsite Safety Inspections and assisting with communication of results and correction of shortcomings found.
- Maintaining records on personnel (medical evaluation results, training and certifications, accident investigation results, etc.).

2.3 Langan Site Health & Safety Officer

The Langan site HSO is William Bohrer. His responsibilities include:

- Participating in the development and implementation of this HASP.
- When on-site, assisting the Langan Field Team Leader in conducting Tailgate Safety Meetings and Jobsite Safety Inspections and correcting any shortcomings in a timely manner.
- Ensuring that proper PPE is available, worn by employees, and properly stored and maintained.
- Controlling entry into and exit from the site contaminated areas or zones.
- Monitoring employees for signs of stress, such as heat stress, fatigue, and cold exposure.
- Monitoring site hazards and conditions.
- Knowing (and ensuring that all site personnel also know) emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.
- Resolving conflicts that may arise concerning safety requirements and working conditions.
- Reporting all incidents, injuries and near misses to the Langan Incident/Injury Hotline immediately and the client representative.

2.4 Langan Field Team Leader Responsibilities

The Langan Field Team Leader (FTL) is to be determined prior to the start of the start of field activities. The Field Team Leader's responsibilities include:

- The management of the day-to-day site activities and implementation of this HASP in the field.

- Participating in and/or conducting Tailgate Safety Meetings and Jobsite Safety Inspections and correcting any shortcomings in a timely manner.
- When a Community Air Monitoring Operating Program (CAMP) is part of the scope, the FTL will set up and maintaining community air monitoring activities and instructing the responsible contractor to implement organic vapor or dust mitigation when necessary.
- Overseeing the implementation of activities specified in the work plan.

2.5 Contractor Responsibilities

The contractor shall develop and implement their own HASP for their employees, lower-tier subcontractors, and consultants. The contractor is responsible for their own health and safety and that of their subcontractors. Contractors operating on the site shall designate their own FTL, HSO and HSM. The contractor's HASP will be at least as stringent as this Langan HASP. The contractor must be familiar with and abide by the requirements outlined in their own HASP. A contractor may elect to adopt Langan's HASP as its own provided that it has given written notification to Langan, but where Langan's HASP excludes provisions pertinent to the contractor's work (i.e., confined space entry); the contractor must provide written addendums to this HASP. Additionally, the contractor must:

- Ensure their employees are trained in the use of all appropriate PPE for the tasks involved;
- Notify Langan of any hazardous material brought onto the job site or site related area, the hazards associated with the material, and must provide a material safety data sheet (MSDS) or safety data sheet (SDS) for the material;
- Have knowledge of, understand, and abide by all current federal, state, and local health and safety regulations pertinent to the work;
- Ensure their employees handling hazardous materials, if identified at the Site, have received current training in the appropriate levels of 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response* (HAZWOPER) if hazardous waste is identified at the Site;
- Ensure their employees handling hazardous materials, if identified at the Site, have been fit-tested within the year on the type respirator they will wear; and
- Ensure all air monitoring is in place pertaining to the health and safety of their employees as required by OSHA 1910.120; and
- All contractors must adhere to all federal, state, and local regulatory requirements.

3.0 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSES

A Task-Hazard Analysis (Table 1) was completed for general construction hazards that may be encountered at the Site. The potential contaminants that might be encountered during the field activities and the exposure limits are listed in Table 2 complete inventory of MSDS/SDS for

chemical products used on site is included as Attachment E.

3.1 Specific Task Safety Analysis

3.1.1 Hazardous Materials Abatement

Langan employees shall not enter areas undergoing hazardous materials abatement unless they have received specific training in hazardous materials abatement and have the correct PPE to do so. In addition, the Langan employee must have with them certification that they have received respirator fit testing within 1 year of the abatement activity and are donning the specific respirator document to fit them during fit testing.

3.1.2 Asbestos Abatement

Langan employees shall not enter areas undergoing asbestos materials abatement unless they have received specific training in asbestos materials abatement and have the correct PPE to do so. In addition, the Langan employee must have with them certification that they have received respirator fit testing within 1 year of the abatement activity and are donning the specific respirator document to fit them during fit testing.

3.1.3 Lead-Based Paint (LBP) Abatement

Langan employees shall not enter areas undergoing LBP materials abatement unless they have received specific training in LBP materials abatement and have the correct PPE to do so. In addition, the Langan employee must have with them certification that they have received respirator fit testing within 1 year of the abatement activity and are donning the specific respirator document to fit them during fit testing.

3.1.4 PCBs Caulk/Expansion Joint Abatement

Langan employees shall not enter areas undergoing PCB containing caulk and expansion joint materials abatement unless they have received specific training in PCB containing caulk and expansion joint materials abatement and have the correct PPE to do so. In addition, the Langan employee must have with them certification that they have received respirator fit testing within 1 year of the abatement activity and are donning the specific respirator document to fit them during fit testing.

3.1.5 Soil Screening

Sampling the soil requires the donning of chemical resistant gloves in addition to the standard PPE. Langan personnel are not to operate drilling or excavation equipment nor open sampling

devices (acetate liners, sonic sample bags, etc.). These tasks are to be completed by the driller or excavation contractor.

3.1.8 Removal of Storage Tanks

If UST excavation and removal activity is initiated, Langan personnel will conduct air monitoring for lower explosion limit (LEL) conditions within the UST excavation itself. This task is to be performed using calibrated air monitoring equipment designed to sound an audio alarm when atmospheric concentrations of VOC are within 10% of the LEL. In normal atmospheric oxygen concentrations, the LEL monitoring may be done with a Wheatstone bridge/catalytic bead type sensor (i.e. MultiRAE). However in oxygen depleted atmospheres (confined space), only an LEL designed to work in low oxygen environments may be used. Best practices require that the LEL monitoring unit be equipped with a long sniffer tube to allow the LEL unit to remain outside the UST excavation. Langan personnel are not to enter the UST excavation nor enter an excavated UST.

In addition to monitoring LEL, Langan personnel will monitor atmospheric VOC concentrations directly downwind of the UST excavation in accordance with standard CAMP procedures using calibrated air monitoring equipment.

3.1.9 Indoor Excavation

The work scope may require indoor work or work in locations where there may not be adequate ventilation sufficient to safely operate any rig or excavation equipment powered by an internal combustion engine. Where possible, all such work should be done by equipment powered by electricity. If such equipment is used and must be directly wired to the buildings electrical system or to an independent system, this work must be completed by a licensed electrician in accordance with all electrical codes applicable to the work.

Indoor work which is to be completed with equipment powered by an internal combustion engine must incorporate air monitoring of carbon monoxide (CO) using calibrated air monitoring equipment (MultiRAE or equivalent). In addition, the work plan should incorporate mitigation for venting engine exhaust fumes directly to the outdoors and for circulating fresh air into the work area.

The OSHA Time Weighted Average (TWA) Permissible Exposure Limit (PEL) for CO from 50 to 35 parts per million (ppm). Langan will monitor CO with a suitable monitoring device. If CO levels exceed 5 ppm, Langan will instruct contractors to begin mitigation measures. These measures are at a minimum:

- Increase air circulation using industrial size fans to bring additional fresh air into the

- building or vent exhaust to the outside;
- Modify the passive exhaust method being used to increase venting circulation by using wider diameter tubing or sealing tubing connections; or
- Modify the work schedule where the rig is turned off to allow time for CO levels to fall back to background

All work must cease if CO levels reach 35 ppm. The Langan engineer is to report to the PM and H&S officer when an action level is reached.

3.1.10 Construction Dewatering

Langan may sample dewatering treatment system liquids from either the direct discharge standpipe or from a sample port or valve built into the storage tank, Langan will don the necessary PPE including nitrile gloves and if necessary, facial splash guard. Sample ports and valves may only be sampled if they are accessible at ground level. Sampling from heights over 6 feet is prohibited unless Langan field personnel are fully accredited in fall protection and is wearing approved fall protection safety apparatus. The discharge samples will be submitted to an ELAP-certified laboratory for analysis in accordance with the work plan.

3.1.11 Construction Activity Inspection

The contractor will operate equipment used to install sheet piles, caissons and rock anchors. In addition, the contractor will assemble and install the equipment to perform lateral load-test. Langan personnel will inspect in accordance with specification in the work plan and record the data the work plan requires. The installation of the sheet piles, caissons and rock anchors is to be done exclusively by the contractor following their own health and safety specifications outlined in their HASPs. Other activities assigned to Langan as part of construction activities are limited to inspection and observations as specified in the work plan. Langan personnel are not to operate or assist in the operation of equipment used in construction activities unless defined as part of an inspection or observation in the work plan.

3.1.12 Backfilling of Excavated Areas to Development Grade

The backfilling contractor will provide their employees with equivalent PPE to protect them from the specific hazards likely to be encountered on-site. Selection of the appropriate PPE must take into consideration: (1) identification of the hazards or suspected hazards; (2) potential exposure routes; and, (3) the performance of the PPE construction (materials and seams) in providing a barrier to these hazards. Langan personnel may survey backfilling material with a calibrated PID; however, as they are not permitted to climb the material delivery truck, the contractor must provide samples from each truck as required.

3.1.14 Storm water Pollution Prevention Inspection

When performing SWPPP inspections, Langan personnel will don all required PPE and maintain awareness to site traffic and site activities. If using a cell phone or tablet application to record the pertinent data, the engineer will do so in an area protected from site traffic and activities. Certain types of inspections may require additional PPE and safety training including fall protection or the donning of a personal flotation device (PFD) when near open water.

3.2 Radiation Hazards

No radiation hazards are known or expected at the site.

3.3 Physical Hazards

Physical hazards, which may be encountered during site operations for this project, are detailed in Table 1.

3.3.1 Explosion

No explosion hazards are expected for the scope of work at this site.

3.3.2 Heat Stress

The use of Level C protective equipment, or greater, may create heat stress. Monitoring of personnel wearing personal protective clothing should commence when the ambient temperature is 72°F or above. Table 6 presents the suggested frequency for such monitoring. Monitoring frequency should increase as ambient temperature increases or as slow recovery rates are observed. Refer to the Table 7 to assist in assessing when the risk for heat related illness is likely. To use this table, the ambient temperature and relative humidity must be obtained (a regional weather report should suffice). Heat stress monitoring should be performed by the HSO or the FTL, who shall be able to recognize symptoms related to heat stress.

To monitor the workers, be familiar with the following heat-related disorders and their symptoms:

- **Heat Cramps:** Painful spasm of arm, leg or abdominal muscles, during or after work
- **Heat Exhaustion:** Headache, nausea, dizziness; cool, clammy, moist skin; heavy sweating; weak, fast pulse; shallow respiration, normal temperature
- **Heat Stroke:** Headache, nausea, weakness, hot dry skin, fever, rapid strong pulse, rapid deep respirations, loss of consciousness, convulsions, coma. *This is a life threatening condition.*

Do not permit a worker to wear a semi-permeable or impermeable garment when they are showing signs or symptoms of heat-related illness.

To monitor the worker, measure:

- **Heart rate:** Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 100 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rate still exceeds 100 beats per minute at the next rest period, shorten the following work cycle by one-third. A worker cannot return to work after a rest period until their heart rate is below 100 beats per minute.
- **Oral temperature:** Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking). If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period. A worker cannot return to work after a rest period until their oral temperature is below 99.6°F. If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following cycle by one-third. Do not permit a worker to wear a semi-permeable or impermeable garment when oral temperature exceeds 100.6°F (38.1°C).

Prevention of Heat Stress - Proper training and preventative measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress the following steps should be taken:

- Adjust work schedules.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, i.e., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
 - Maintain water temperature 50° to 60°F (10° to 16.6°C).
 - Provide small disposal cups that hold about four ounces (0.1 liter).

- Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
- Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
- Train workers to recognize the symptoms of heat related illness.

3.3.3 Cold-Related Illness

If work on this project begins in the winter months, thermal injury due to cold exposure can become a problem for field personnel. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally called frostbite.

- **Hypothermia** - Hypothermia is defined as a decrease in the patient core temperature below 96°F. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interference with any of these mechanisms can result in hypothermia, even in the absence of what normally is considered a "cold" ambient temperature. Symptoms of hypothermia include: shivering, apathy, listlessness, sleepiness, and unconsciousness.
- **Frostbite** - Frostbite is both a general and medical term given to areas of local cold injury. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20°F. Symptoms of frostbite are: a sudden blanching or whitening of the skin; the skin has a waxy or white appearance and is firm to the touch; tissues are cold, pale, and solid.

Prevention of Cold-Related Illness - To prevent cold-related illness:

- Educate workers to recognize the symptoms of frostbite and hypothermia
- Identify and limit known risk factors:
- Assure the availability of enclosed, heated environment on or adjacent to the site.
- Assure the availability of dry changes of clothing.
- Assure the availability of warm drinks.
- Start (oral) temperature recording at the job site:
- At the FSO or Field Team Leader's discretion when suspicion is based on changes in a worker's performance or mental status.
- At a worker's request.
- As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind-chill less than 20°F, or wind-chill less than 30°F with precipitation).
- As a screening measure whenever anyone worker on the site develops hypothermia.

Any person developing moderate hypothermia (a core temperature of 92°F) cannot return to

work for 48 hours.

3.3.4 Noise

Work activities during the proposed activities may be conducted at locations with high noise levels from the operation of equipment. Hearing protection will be used as necessary.

3.3.5 Hand and Power Tools

The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. All hand and power tools should be inspected for health and safety hazards prior to use. If deemed unserviceable/un-operable, notify supervisor and tag equipment out of service. Ground Fault Circuit Interrupters (GFCIs) are required for all power tools requiring direct electrical service.

3.3.6 Slips, Trips and Fall Hazards

Care should be exercised when walking at the site, especially when carrying equipment. The presence of surface debris, uneven surfaces, pits, facility equipment, and soil piles contribute to tripping hazards and fall hazards. To the extent possible, all hazards should be identified and marked on the site, with hazards communicated to all workers in the area.

3.3.7 Utilities (Electrocution and Fire Hazards)

3.3.7.1 Utility Clearance

The possibility of encountering underground utilities poses fire, explosion, and electrocution hazards. All excavation work will be preceded by review of available utility drawings and by notification of the subsurface work to the N.Y. One –Call–Center.

3.3.7.2 Lockout-Tagout

The potential adverse effects of electrical hazards include burns and electrocution, which could result in death. Therefore, there is a procedure that establishes the requirements for the lockout/tagout (LOTO) of energy isolating devices in accordance with the OSHA electrical lockout and tagging requirements as specified in 29 CFR 1926.417. This procedure will be used to ensure that all machines and equipment are isolated from potentially hazardous energy. If possible, equipment that could cause injury due to unexpected energizing, start-up, or release of stored energy will be locked/tagged, before field personnel perform work activities.

Depending upon the specific work task involved, Langan’s SSC or FTL will serve as the authorized

lockout/tagout coordinator, implement the lockout/tagout procedure and will be responsible to locate, lock and tag valves, switches, etc.

SPECIAL NOTE: Project personnel will assume that all electrical equipment at surface, subsurface and overhead locations is energized, until equipment has been designated and confirmed as de-energized by a utility company representative. Langan will notify the designated utility representative prior to working adjacent to this equipment and will verify that the equipment is energized or de-energized in the vicinity of the work location.

No project work shall be performed by Langan personnel or subcontractors on or near energized electrical lines or equipment unless hazard assessments are completed in writing, reviewed by Langan's SSHO, and clearly communicated to the field personnel.

The FTL shall conduct a survey to locate and identify all energy isolating devices. They shall be certain which switches, valves or other isolating devices apply to the equipment. The lockout/tagout procedure involves, but is not limited to, electricity, motors, steam, natural gas, compressed air, hydraulic systems, digesters, sewers, etc.

3.3.8 Physical Hazard Considerations for Material Handling

There are moderate to severe risks associated with moving heavy objects at the Site. The following physical hazards should be considered when handling materials at the Site:

- Heavy objects will be lifted and moved by mechanical devices rather than manual effort whenever possible.
- The mechanical devices will be appropriate for the lifting of moving task and will be operated only by trained and authorized personnel.
- Objects that require special handling or rigging will only be moved under the guidance of a person who has been specifically trained to move such objects.
- Lifting devices will be inspected, certified, and labeled to confirm their weight capacities. Defective equipment will be taken out of service immediately and repaired or destroyed.
- The wheels of any trucks being loaded or unloaded will be chocked to prevent movement. Outriggers will be fully extended on a flat, firm surface during operation.
- Personnel will not pass under a raised load, nor will a suspended load be left unattended.
- Personnel will not be carried on lifting equipment, unless it is specifically designed to carry passengers.
- All reciprocating, rotating, or other moving parts will be guarded at all times.

- Accessible fire extinguishers, currently (monthly) inspected, will be available in all mechanical lifting devices.
- Verify all loads/materials are secure before transportation.

Material handling tasks that are unusual or require specific guidance will need a written addendum to this HASP. The addendum must identify the lifting protocols before the tasks are performed. Upon approval, the plan must be reviewed with all affected employees and documented. Any deviation from a written plan will require approval by the Langan HSM.

3.3.9 Hearing Conservation

Under the construction industry standard, the maximum permissible occupational noise exposure is 90 dbA (8-hour TWA), and noise levels in excess of 90 dbA must be reduced through feasible administrative and engineering controls. (20 CFR 1926.52). Hearing protection is required when working within 15 feet of vacuum extraction equipment and drill rigs.

3.3.10 Open Water

Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jackets or buoyant work vests. Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used.

And should a worker fall into the water, OSHA requires (29 CFR 1926.106(c)) that ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. The distance between ring buoys shall not exceed 200 feet. Another remedial action required by OSHA (29 CFR 1926.106(d)) is the use of lifesaving skiffs.

OSHA requires that at least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water and must include the following provisions.

- The skiff must be in the water or capable of being quickly launched by one person.
- At least one person must be present and specifically designated to respond to water emergencies and operate the skiff at all times when there are employees above water.
- When the operator is on break another operator must be designated to provide requisite coverage when there are employees above water.
- The designated operator must either have the skiff staffed at all times or have someone remain in the immediate area such that the operator can quickly reach the skiff and perform rescue services.
- The skiff operator maybe assigned other tasks provided the tasks do not interfere with the operator's ability to quickly reach the skiff.

- A communication system, such as a walkie-talkie, must be used to inform the skiff operator of an emergency and to inform the skiff operator where the skiff is needed.
- The skiff must be equipped with both a motor and oars.

With regard to the number of skiffs required and the appropriate maximum response time, the following factors must be evaluated:

- The number of work locations where there is a danger of falling into water;
- The distance to each of those locations;
- Water temperature and currents;
- Other hazards such as, but not limited to, rapids, dams, and water intakes;

Other regulations that present S&H practices and PPE for work on or near water include: 29 CFR 1910, Subpart T (401 – 440)

3.4 Biological Hazards

3.4.1 Animals

There is a possibility of encountering wildlife including reptiles, rodents and other small and medium size mammals. The Langan personnel is to avoid interacting with any wildlife.

3.4.2 Insects

Ticks and other biting or stinging insects may to be encountered during site operations. Langan personnel should take necessary precautions including donning long sleeve shirts and insecticide to prevent bites and stings. After field work, Langan personnel should perform a complete visual inspection of their clothing to insure they are not inadvertently harboring ticks. If they do observe a tick bite, they are to contact the HSM or HSO and report the event.

3.4.3 Plants

Poisonous plants may to be encountered during site operations. Langan personnel should take necessary precautions including donning long sleeve shirts and applying preventative poison Ivy/Sumac lotion to prevent or limit effects of exposure. If after field work, Langan employees do observe a reaction to poisonous plant exposure, they are to contact the HSM or HSO and report the event.

3.5 Additional Safety Analysis

3.5.1 Presence of Non-Aqueous Phase Liquids (NAPL)

There is potential for exposure to NAPL at this site. Special care and PPE should be considered when NAPL is observed as NAPL is a typically flammable fluid and releases VOCs known to be toxic and/or carcinogenic. If NAPL is present in a monitoring well, vapors from the well casing may contaminate the work area breathing zone with concentrations of VOCs potentially exceeding health and safety action levels. In addition, all equipment used to monitor or sample NAPL (or ground water from wells containing NAPL) must be intrinsically safe. Equipment that directly contacts NAPL must also be resistant to organic solvents.

At a minimum, a PID should be used to monitor for VOCs when NAPL is observed. If NAPL is expected to be observed in an excavation or enclosed area, air monitoring must be started using calibrated air monitoring equipment designed to sound an audio alarm when atmospheric concentrations of VOC are within 10% of the LEL. In normal atmospheric oxygen concentrations, the LEL monitoring may be done with a Wheatstone bridge/catalytic bead type sensor (i.e. MultiRAE). However in oxygen depleted atmospheres (confined space), only an LEL designed to work in low oxygen environments may be used. Best practices require that the LEL monitoring unit be equipped with a long sniffer tube to allow the LEL unit to remain outside the UST excavation.

When NAPL is present, Langan personnel are required to use disposable nitrile gloves at all times to prevent skin contact with contaminated materials. They should also consider having available a respirator and protective clothing (Tyvek® overalls), especially if NAPL is in abundance and there are high concentrations of VOCs.

All contaminated disposables including PPE and sampling equipment must be properly disposed of in labeled 55-gallon drums

3.6 Job Safety Analysis

A Job Safety Analysis (JSA) is a process to identify existing and potential hazards associated with each job or task so these hazards can be eliminated, controlled or minimized. A JSA will be performed at the beginning of each work day, and additionally whenever an employee begins a new task or moves to a new location. All JSAs must be developed and reviewed by all parties involved. A blank JSA form and documentation of completed JSAs are in Attachment G.

4.0 PERSONNEL TRAINING

4.1 Basic Training

Completion of an initial 40-hour HAZWOPER training program as detailed in OSHA's 29 CFR 1910.120(e) is required for all employees working on a site engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances, health hazards, or safety hazards as defined by 29 CFR 1910.120(a). Annual 8-hour refresher training is also required to maintain competencies to ensure a safe work environment. In addition to these training requirements, all employees must complete the OSHA 10 hour Construction Safety and Health training and supervisory personnel must also receive eight additional hours of specialized management training. Training records are maintained by the HSM.

4.2 Initial Site-Specific Training

Training will be provided to specifically address the activities, procedures, monitoring, and equipment for site operations at the beginning of each field mobilization and the beginning of each discrete phase of work. The training will include the site and facility layout, hazards, and emergency services at the site, and will detail all the provisions contained within this HASP. For a HAZWOPER operation, training on the site must be for a minimum of 3 days. Specific issues that will be addressed include the hazards described in Section 3.0.

4.3 Tailgate Safety Briefings

Before starting work each day or as needed, the Langan HSO will conduct a brief tailgate safety meeting to assist site personnel in conducting their activities safely. Tailgate meetings will be documented in Attachment H. Briefings will include the following:

- Work plan for the day;
- Review of safety information relevant to planned tasks and environmental conditions;
- New activities/task being conducted;
- Results of Jobsite Safety Inspection Checklist;
- Changes in work practices;
- Safe work practices; and
- Discussion and remedies for noted or observed deficiencies.

5.0 MEDICAL SURVEILLANCE

All personnel who will be performing field work involving potential exposure to toxic and hazardous substances (defined by 29 CFR 1910.120(a)) will be required to have passed an initial baseline medical examination, with follow-up medical exams thereafter, consistent with 29 CFR 1910.120(f). Medical evaluations will be performed by, or under the direction of, a physician board-certified in occupational medicine.

Additionally, personnel who may be required to perform work while wearing a respirator must receive medical clearance as required under CFR 1910.134(e), *Respiratory Protection*. Medical evaluations will be performed by, or under the direction of, a physician board-certified in occupational medicine. Results of medical evaluations are maintained by the HSM.

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 Levels of Protection

Langan will provide PPE to Langan employees to protect them from the specific hazards they are likely to encounter on-site. Direct hired contractors will provide their employees with equivalent PPE to protect them from the specific hazards likely to be encountered on-site. Selection of the appropriate PPE must take into consideration: (1) identification of the hazards or suspected hazards; (2) potential exposure routes; and, (3) the performance of the PPE construction (materials and seams) in providing a barrier to these hazards.

Based on anticipated site conditions and the proposed work activities to be performed at the site, Level D protection will be used. The upgrading/downgrading of the level of protection will be based on continuous air monitoring results as described in Section 6.0 (when applicable). The decision to modify standard PPE will be made by the site HSO or FTL after conferring with the PM. The levels of protection are described below.

Level D Protection (as needed)

- Safety glasses with side shields or chemical splash goggles
- Safety boots/shoes
- Coveralls (Tyvek® or equivalent)
- Hard hat
- Long sleeve work shirt and work pants
- Nitrile gloves
- Hearing protection
- Reflective safety vest

Level D Protection (Modified, as needed)

- Safety glasses with sideshields or chemical splash goggles
- Safety boots/shoes (toe-protected)
- Disposable chemical-resistant boot covers
- Coveralls (polycoated Tyvek or equivalent to be worn when contact with wet contaminated soil, groundwater, or non-aqueous phase liquids is anticipated)

- Hard hat
- Long sleeve work shirt and work pants
- Nitrile gloves
- Hearing protection (as needed)
- Personal floatation device (for work within 5 ft of the water)
- Reflective traffic vest

Level C Protection (as needed)

- Full or Half face, air-purifying respirator, with NIOSH approved HEPA filter
- Inner (latex) and outer (nitrile) chemical-resistant gloves
- Safety glasses with side shields or chemical splash goggles
- Chemical-resistant safety boots/shoes
- Hard hat
- Long sleeve work shirt and work pants
- Coveralls (Tyvek® or equivalent)
- Hearing protection (as needed)
- Reflective safety vest

The action levels used in determining the necessary levels of respiratory protection and upgrading to Level C are summarized in Table 4. The written Respiratory Protection Program is maintained by the HSM and is available if needed. The monitoring procedures and equipment are outlined in Section 6.0 (when applicable).

6.2 Respirator Fit-Test

All Langan employees who may be exposed to hazardous substances at the work site are in possession of a full or half face-piece, air-purifying respirator and have been successfully fit-tested within the past year. Fit-test records are maintained by the HSM.

6.3 Respirator Cartridge Change-Out Schedule

Respiratory protection is required to be worn when certain action levels (table 2) are reached. A respirator cartridge change-out schedule has been developed in order to comply with 29 CFR 1910.134. The respirator cartridge change-out schedule for this project is as follows:

- Cartridges shall be removed and disposed of at the end of each shift, when cartridges become wet or wearer experiences breakthrough, whichever occurs first.
- If the humidity exceeds 85%, then cartridges shall be removed and disposed of after 4 hours of use.

Respirators shall not be stored at the end of the shift with contaminated cartridges left on. Cartridges shall not be worn on the second day, no matter how short the time period was the previous day they were used.

7.0 AIR QUALITY MONITORING AND ACTIONS LEVELS

7.1 Monitoring During Site Operations

Atmospheric air monitoring results may be collected and used to provide data to determine when exclusion zones need to be established and when certain levels of personal protective equipment are required. For all instruments there are Site-specific action level criteria which are used in making field health and safety determinations. Other data, such as the visible presence of contamination or the steady state nature of air contaminant concentration, are also used in making field health and safety decisions. Therefore, the HSO may establish an exclusion zone or require a person to wear a respirator even though atmospheric air contaminant concentrations are below established HASP action levels.

During site work involving disturbance of petroleum-impacted or fill material, real time air monitoring may be conducted for volatile organic compounds (VOCs). A photoionization detector (PID) and/or flame ionization detector (FID) will be used to monitor concentrations of VOCs at personnel breathing-zone height. Air monitoring will be the responsibility of the HSO or designee. Air monitoring may be conducted during intrusive activities associated with the completion of excavation, debris removal, and soil grading. All manufacturers' instructions for instrumentation and calibration will be available onsite.

Subcontractors' air monitoring plans must be equal or more stringent as the Langan plan.

An air monitoring calibration log is provided in Attachment D of this HASP.

7.1.1 Volatile Organic Compounds

Monitoring with a PID, such as a MiniRAE 2000 (10.6v) or equivalent may occur during intrusive work in the AOCs. Colorimetric Indicator Tubes for benzene may be used as backup for the PID, if measurements remain above background monitor every 2 hours. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (odors, visible gases, etc.) since the last measurement. If VOC levels are observed above 5 ppm for longer than 5 minutes or if the site PPE is upgraded to Level C, the HSO will begin monitoring the site perimeter at a location downwind of the AOC every 30 minutes in addition to the employee breathing zone. Instrument action levels for monitored gases are provided in Table 4.

7.1.2 Metals

Based upon the site historical fill, there is a potential for the soils to contain PAHs and metals. During invasive procedures which have the potential for creating airborne dust, such as excavation of dry soils, a real time airborne dust monitor such as a Mini-Ram may be used to monitor for air particulates. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (appearance of visible dust) since the last measurement. If dust levels are observed to be greater than 0.100 mg/m³ or visible dust is observed for longer than 15 minutes or if the site PPE is upgraded to Level C, the HSO will begin monitoring the site perimeter at a location downwind of the AOC every 30 minutes in addition to the employee breathing zone. Instrument action levels for dust monitoring are provided in Table 4.

7.2 Monitoring Equipment Calibration and Maintenance

Instrument calibration shall be documented and included in a dedicated safety and health logbook or on separate calibration pages of the field book. All instruments shall be calibrated before and after each shift. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

All instruments shall be operated in accordance with the manufacturers' specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on site by the HSO for reference.

7.3 Determination of Background Levels

Background (BKD) levels for VOCs and dust will be established prior to intrusive activities within the AOC at an upwind location. A notation of BKD levels will be referenced in the daily monitoring log. BKD levels are a function of prevailing conditions. BKD levels will be taken in an appropriate upwind location as determined by the HSO.

Table 4 lists the instrument action levels.

8.0 COMMUNITY AIR MONITORING PROGRAM

Community air monitoring may be conducted in compliance with the NYSDOH Generic CAMP outlined below:

Monitoring for dust and odors will be conducted during all ground intrusive activities by the FTL. Continuous monitoring on the perimeter of the work zones for odor, VOCs, and dust may be required for all ground intrusive activities such as soil excavation and handling activities. The

work zone is defined as the general area in which machinery is operating in support of remediation activities. A portable PID will be used to monitor the work zone and for periodic monitoring for VOCs during activities such as soil and groundwater sampling and soil excavation. The site perimeter will be monitored for fugitive dust emissions by visual observations as well as instrumentation measurements (if required). When required, particulate or dust will be monitored continuously with real-time field instrumentation that will meet, at a minimum, the performance standards from DER-10 Appendix 1B.

If VOC monitoring is required, the following actions will be taken based on VOC levels measured:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the hot zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps work activities will resume provided that the total organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average.
- If the total VOC level is above 25 ppm at the perimeter of the hot zone, activities will be shut down.

If dust monitoring with field instrumentation is required, the following actions will be taken based on instrumentation measurements:

- If the downwind particulate level is 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression must be employed. Work may continue with dust suppression techniques provided that downwind PM10 levels do not exceed 150 $\mu\text{g}/\text{m}^3$ above the background level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 $\mu\text{g}/\text{m}^3$ above the background level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM10 concentration to within 150 $\mu\text{g}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

8.1 Vapor Emission Response Plan

This section applies if VOC monitoring is required. If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the hot zone, boring and well installation, and excavation activities will be halted or odor controls will be employed, and monitoring continued. When work shut-down occurs, downwind air monitoring as directed by the HSO or FTL will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

If the organic vapor level decreases below 5 ppm above background, sampling and boring and well installation can resume, provided:

- The organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest residential or commercial structure, whichever is less, is below 1 ppm over background, and
- More frequent intervals of monitoring, as directed by the HSO or FTL, are conducted.

8.2 Major Vapor Emission

This section applies if VOC monitoring is required. If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work site, or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted or odor controls must be implemented.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the hot zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If either of the following criteria is exceeded in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be implemented.

- Sustained organic vapor levels approaching 5 ppm above background for a period of more than 30 minutes, or
- Organic vapor levels greater than 5 ppm above background for any time period.

8.3 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

- The local police authorities will immediately be contacted by the HSO or FTL and advised of the situation;
- Frequent air monitoring will be conducted at 30-minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the HSO or FTL; and
- All Emergency contacts will go into effect as appropriate.

8.4 Dust Suppression Techniques

Preventative measures for dust generation may include wetting site fill and soil, construction of an engineered construction entrance with gravel pad, a truck wash area, covering soils with tarps, and limiting vehicle speeds to five miles per hour.

Work practices to minimize odors and vapors include limiting the time that the excavations remain open, minimizing stockpiling of contaminated-source soil, and minimizing the handling of contaminated material. Offending odor and organic vapor controls may include the application of foam suppressants or tarps over the odor or VOC source areas. Foam suppressants may include biodegradable foams applied over the source material for short-term control of the odor and VOCs.

If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: direct load-out of soils to trucks for off-site disposal; use of chemical odorants in spray or misting systems; and, use of staff to monitor odors in surrounding neighborhoods.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

9.0 WORK ZONES AND DECONTAMINATION

9.1 Site Control

Work zones are intended to control the potential spread of contamination throughout the site and to assure that only authorized individuals are permitted into potentially hazardous areas.

Any person working in an area where the potential for exposure to site contaminants exists will only be allowed access after providing the HSO with proper training and medical documentation.

Exclusion Zone (EZ) - All activities which may involve exposure to site contaminants, hazardous materials and/or conditions should be considered an EZ. Decontamination of field equipment will also be conducted in the Contaminant Reduction Zone (CRZ) which will be located on the perimeter of the EZ. The EZ and the CRZ will be clearly delineated by cones, tapes or other means. The HSO may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the HSO allowing adequate space for the activity to be completed, field members and emergency equipment.

9.2 Contamination Zone

9.2.1 Personnel Decontamination Station

Personal hygiene, coupled with diligent decontamination, will significantly reduce the potential for exposure.

9.2.2 Minimization of Contact with Contaminants

During completion of all site activities, personnel should attempt to minimize the chance of contact with contaminated materials. This involves a conscientious effort to keep "clean" during site activities. All personnel should minimize kneeling, splash generation, and other physical contact with contamination as PPE is intended to minimize accidental contact. This may ultimately minimize the degree of decontamination required and the generation of waste materials from site operations.

Field procedures will be developed to control over spray and runoff and to ensure that unprotected personnel working nearby are not affected.

9.2.3 Personnel Decontamination Sequence

Decontamination may be performed by removing all PPE used in EZ and placing it in drums/trash cans at the CRZ. Baby wipes should be available for wiping hands and face. Drums/trash cans will be labeled by the field crews in accordance with all local, state, and federal requirements. Management plans for contaminated PPE, and tools are provided below.

9.2.4 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination and wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment. If the injured person can be moved, he/she will be decontaminated by site personnel as described above before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury

(a back or neck injury), provisions shall be made to ensure that emergency response personnel will be able to respond to the victim without being exposed to potentially hazardous atmospheric conditions. If the potential for inhalation hazards exist, such as with open excavation, this area will be covered with polyethylene sheeting to eliminate any potential inhalation hazards. All emergency personnel are to be immediately informed of the injured person's condition, potential contaminants, and provided with all pertinent data.

9.2.5 Hand-Held Equipment Decontamination

Hand-held equipment includes all monitoring instruments as stated earlier, samples, hand tools, and notebooks. The hand-held equipment is dropped at the first decontamination station to be decontaminated by one of the decontamination team members. These items must be decontaminated or discarded as waste prior to removal from the CRZ.

To aid in decontamination, monitoring instruments can be sealed in plastic bags or wrapped in polyethylene. This will also protect the instruments against contaminants. The instruments will be wiped clean using wipes or paper towels if contamination is visually evident. Sampling equipment, hand tools, etc. will be cleaned with non-phosphorous soap to remove any potentially contaminated soil, and rinsed with deionized water. All decontamination fluids will be containerized and stored on-site pending waste characterization sampling and appropriate off-site disposal.

9.2.6 Heavy Equipment Decontamination

All heavy equipment and vehicles arriving at the work site will be free from contamination from offsite sources. Any vehicles arriving to work that are suspected of being impacted will not be permitted on the work site. Potentially contaminated heavy equipment will not be permitted to leave the EZ unless it has been thoroughly decontaminated and visually inspected by the HSO or his designee.

9.3 Support Zone

The support zone or cold zone will include the remaining areas of the job site. Break areas and support facilities (include equipment storage and maintenance areas) will be located in this zone. No equipment or personnel will be permitted to enter the cold zone from the hot zone without passing through the decontamination station in the warm zone (if necessitated). Eating, smoking, and drinking will be allowed only in this area.

9.4 Communications

The following communications equipment will be utilized as appropriate.

- Telephones - A cellular telephone will be located with the HSO for communication with the HSM and emergency support services/facilities.
- Hand Signals - Hand signals shall be used by field teams, along with the buddy system. The entire field team shall know them before operations commence and their use covered during site-specific training. Typical hand signals are the following:

Hand Signal	Meaning
Hand gripping throat	Out of air; cannot breathe
Grip partners wrists or place both hands around waist	Leave immediately without debate
Hands on top of head	Need assistance
Thumbs up	OK; I'm alright; I understand
Thumbs down	No; negative
Simulated "stick" break with fists	Take a break; stop work

9.5 The Buddy System

When working in teams of two or more, workers will use the "buddy system" for all work activities to ensure that rapid assistance can be provided in the event of an emergency. This requires work groups to be organized such that workers can remain close together and maintain visual contact with one another. Workers using the "buddy system" have the following responsibilities:

- Provide his/her partner with assistance.
- Observe his/her partner for signs of chemical or heat exposure.
- Periodically check the integrity of his/her partner's PPE.
- Notify the HSO or other site personnel if emergency service is needed.

10.0 NEAREST MEDICAL ASSISTANCE

The address and telephone number of the nearest hospital:

Harlem Hospital Center
506 Lenox Avenue
New York, New York
212-939-1000

Map with directions to the hospital are shown in Figure 2. This information will either be posted prominently at the site or will be available to all personnel all of the time. Further, all field

personnel, including the HSO & FTL, will know the directions to the hospital.

11.0 STANDING ORDERS/SAFE WORK PRACTICES

The standing orders, which consist of a description of safe work practices that must always be followed while on-site by Langan employees and contractors, are shown in Attachment A. The site HSO and FTL each have the responsibility for enforcing these practices. The standing orders will be posted prominently at the site, or are made available to all personnel at all times. Those who do not abide by these safe work practices will be removed from the site.

12.0 SITE SECURITY

No unauthorized personnel shall be permitted access to the work areas.

13.0 UNDERGROUND UTILITIES

As provided in Langan's Underground Utility Clearance Guidelines, the following safe work practices should be followed by Langan personnel and the contractor before and during subsurface work in accordance with federal, state and local regulations:

- Obtain available utility drawings from the property owner/client or operator.
- Provide utility drawings to the project team.
- In the field, mark the proposed area of subsurface disturbance (when possible).
- Ensure that the utility clearance system has been notified.
- Ensure that utilities are marked before beginning subsurface work.
- Discuss subsurface work locations with the owner/client and contractors.
- Obtain approval from the owner/client and operators for proposed subsurface work locations.
- Use safe digging procedures when applicable.
- Stay at least 10 feet from all equipment performing subsurface work.

14.0 SITE SAFETY INSPECTION

The Langan HSO or alternate will check the work area daily, at the beginning and end of each work shift or more frequently to ensure safe work conditions. The HSO or alternate must complete the Jobsite Safety Inspection Checklist, found in Attachment F. Any deficiencies shall be shared with the FTL, HSM and PM and will be discussed at the daily tailgate meeting.

15.0 HAND AND POWER TOOLS

All hand- and electric-power tools and similar equipment shall be maintained in a safe operating

condition. All electric-power tools must be inspected before initial use. Damaged tools shall be removed immediately from service or repaired. Tools shall be used only for the purpose for which they were designed. All users must be properly trained in their safe operation.

16.0 EMERGENCY RESPONSE

16.1 General

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff is essential. Specific elements of emergency support procedures that are addressed in the following subsections include communications, local emergency support units, and preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency site evacuation procedures. In case of emergency, in addition to 911, call *Incident Intervention®* at 1-888-479-7787 to report their injuries. For all other communications, contact the Langan Incident Hotline at **(800) 9-LANGAN** (800-952-6426) extension 4699 as soon as possible.

Should outside assistance be needed for accidents, fire, or release of hazardous substances, the emergency numbers will be available and posted at the site (Table 5) where a readily accessible telephone is made available for emergency use.

Also, in the event of an incident where a team member becomes exposed or suffers from an acute symptom from contact with site materials and has to be taken to a hospital, a short medical data sheet (Attachment T) for that individual will be made available to the attending physician. The medical data sheet will include the following:

- Name, address, home phone
- Age, height, weight
- Name of person to be notified in case of an accident
- Allergies
- Particular sensitivities
- Does he/she wear contact lenses
- Short checklist of previous illness
- Name of personal physician and phone
- Name of company physician and phone
- Prescription and non-prescription medications currently used.

A sample medical data sheet is included in Attachment T.

16.2 Responsibilities

16.2.1 Health and Safety Officer (HSO)

The HSO is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The HSO is responsible for ensuring the HSM are notified of all incidents, all injuries, near misses, fires, spills, releases or equipment damage. The HSO is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the HSM can notify OSHA within the required time frame.

16.2.2 Emergency Coordinator

The HSO or their designated alternate will serve as the Emergency Coordinator. The Emergency Coordinator is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. They are also responsible for ensuring the HSM are notified of all incidents, all injuries, near misses, fires, spills, releases or equipment damage. The Emergency Coordinator is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized).

The Emergency Coordinator shall locate emergency phone numbers and identify hospital routes prior to beginning work on the sites. The Emergency Coordinator shall make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator is responsible for implementing the Emergency Response Plan.

16.2.3 Site Personnel

Project site personnel are responsible for knowing the Emergency Response Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a site emergency. Project site personnel, including all subcontractors will be trained in the Emergency Response Plan.

16.3 Communications

Once an emergency situation has been stabilized, or as soon as practically, the injured Langan personnel should contact *Incident Intervention@* at 1-888-479-7787 to report their injuries. For all other communications, contact the Langan Incident Hotline at **(800) 9-LANGAN** (800-952-6426) extension 4699 as soon as possible.

16.4 Local Emergency Support Units

In order to be able to deal with any emergency that might occur during investigative activities at the site, the Emergency Notification Numbers (Table 5) will be posted and provided to all personnel conducting work within the EZ.

Figure 2 shows the hospital route map. Outside emergency number 911 and local ambulance should be relied on for response to medical emergencies and transport to emergency rooms. Always contact first responders when there are serious or life threatening emergencies on the site. Project personnel are instructed not to drive injured personnel to the Hospital. In the event of an injury, provide first aid and keep the injured party calm and protected from the elements and treat for shock when necessary.

16.5 Pre-Emergency Planning

Langan will communicate directly with administrative personnel from the emergency room at the hospital in order to determine whether the hospital has the facilities and personnel needed to treat cases of trauma resulting from any of the contaminants expected to be found on the site. Instructions for finding the hospital will be posted conspicuously in the site office and in each site vehicle.

16.6 Emergency Medical Treatment

The procedures and rules in this HASP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the HSO immediately. First-aid equipment will be available on site at the following locations:

- First Aid Kit: Contractor Vehicles
- Emergency Eye Wash: Contractor Vehicles

During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that has been set up. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, will be followed closely.

16.7 Personnel with current first aid and CPR certification will be identified.

Only in non-emergency situations may an injured person be transported to an urgent care facility. Due to hazards that may be present at the site and the conditions under which operations are conducted, it is possible that an emergency situation may develop. Emergency situations can be characterized as injury or acute chemical exposure to personnel, fire or explosion, environmental release, or hazardous weather conditions.

16.8 Emergency Site Evacuation Routes and Procedures

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs as a result of the site investigation activities, including but not limited to fire, explosion or significant release of toxic gas into the atmosphere, the Langan Project Manager will be verbally notified immediately. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at the nearest intersection to be accounted for and to receive further instructions.

In the event that an emergency situation arises, the FTL will implement an immediate evacuation of all project personnel due to immediate or impending danger. The FTL will also immediately communicate with the contractor to coordinate any needed evacuation of the property.

The FTL or Site Supervisor will give necessary instructions until the Designated Incident Commander (IC) assumes control. After the emergency has been resolved, the FTL or Site Supervisor will coordinate with the IC and indicate when staff should resume their normal duties. If dangers are present for those at the designated assembly point, another designated location of assembly will be established.

It will be the responsibility of the FTL or Site Supervisor to report a fire or emergency, assess the seriousness of the situation, and initiate emergency measures until the arrival of the local fire fighters or other first responders, should they be necessary. The FTL, working with emergency responders, may also order the closure of the Site for an indefinite period as long as it is deemed necessary.

Under no circumstances will incoming visitors be allowed to proceed to the area of concern, once an emergency evacuation has been implemented. Visitors or other persons present in the area of the emergency shall be instructed to evacuate the area. The FTL will ensure that access roads are not obstructed and will remain on-site to provide stand-by assistance upon arrival of emergency personnel.

If it is necessary to temporarily control traffic in the event of an emergency, those persons controlling traffic will wear proper reflection warning vests until the arrival of police or fire personnel.

16.8.1 Designated Assembly Locations

All personnel will evacuate the site and assemble at a designated assembly location. The assembly location will be designated by Langan personnel and discussed during each shift's pre-

job safety briefing.

16.8.2 Accounting for Personnel

All contractor and subcontractor supervisors are responsible for the accounting of all personnel assembled at the designed assembly area. The Designated Incident Commander shall be notified if personnel are not found.

16.9 Fire Prevention and Protection

In the event of a fire or explosion, procedures will include immediately evacuating the site and notification of the Langan Project Manager of the investigation activities. Portable fire extinguishers will be provided at the work zone. The extinguishers located in the various locations should also be identified prior to the start of work. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

16.9.1 Fire Prevention

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials.
- Storage of flammable liquids and gases away from oxidizers.
- Shutting off engines to refuel.
- Grounding and bonding metal containers during transfer of flammable liquids.
- Use of UL approved flammable storage cans.
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities.

The person responsible for the control of fuel source hazards and the maintenance of fire prevention and/or control equipment is the HSO.

16.10 Significant Vapor Release

Based on the proposed tasks, the potential for a significant vapor release is low. However, if a release occurs, the following steps will be taken:

- Move all personnel to an upwind location. All non-essential personnel shall evacuate.
- Upgrade to Level C Respiratory Protection.
- Downwind perimeter locations shall be monitored for volatile organics.
- If the release poses a potential threat to human health or the environment in the community, the Emergency Coordinator shall notify the Langan Project Manager.
- Local emergency response coordinators will be notified.

16.11 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet (MSDS) will be followed, when necessary.

SKIN AND EYE: Use copious amounts of soap and water from eye-wash kits and portable hand wash stations.

CONTACT: Wash/rinse affected areas thoroughly, then provide appropriate medical attention. Skin shall also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs. Affected items of clothing shall also be removed from contact with skin.

Providing wash water and soap will be the responsibility of each individual contractor or subcontractor on-site.

16.12 Decontamination during Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or omitted. The HSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on site, a plastic barrier placed between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

16.13 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work will continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.
- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds).
- Limited visibility (fog).
- Potential for electrical storms.

- Earthquakes.
- Other major incidents.

Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The HSO will determine the need to cease field operations or observe daily weather reports and evacuate, if necessary, in case of severe inclement weather conditions.

16.14 Spill Control and Response

All small spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining proper waste characterization and the best means of containment and cleanup. For small spills, sorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. All spill containment materials will be properly disposed. An exclusion zone of 50 to 100 feet around the spill area should be established depending on the size of the spill.

All contractor vehicles shall have spill kits on them with enough material to contain and absorb the worst-case spill from that vehicle. All vehicles and equipment shall be inspected prior to be admitted on site. Any vehicle or piece of equipment that develops a leak will be taken out of service and removed from the job site.

The following seven steps shall be taken by the Emergency Coordinator:

1. Determine the nature, identity and amounts of major spills.
2. Make sure all unnecessary persons are removed from the spill area.
3. Notify the HSO immediately.
4. Use proper PPE in consultation with the HSO.
5. If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosion-proof equipment to contain or clean up the spill (diesel-only vehicles, air-operated pumps, etc.)
6. If possible, try to stop the leak with appropriate material.
7. Remove all surrounding materials that can react or compound with the spill.

In addition to the spill control and response procedures described in this HASP, Langan personnel will coordinate with the designated project manager relative to spill response and control actions. Notification to the Project Manager must be immediate and, to the extent possible, include the following information:

- Time and location of the spill.
- Type and nature of the material spilled.
- Amount spilled.
- Whether the spill has affected or has a potential to affect a waterway or sewer.
- A brief description of affected areas/equipment.
- Whether the spill has been contained.
- Expected time of cleanup completion. If spill cleanup cannot be handled by Langan's on-site personnel alone, such fact must be conveyed to the Project Manager immediately.

Langan shall not make any notification of spills to outside agencies. The client will notify regulatory agencies as per their reporting procedures.

16.15 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on site:

- Industrial first aid kit.
- Fire extinguishers (one per site).

16.16 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers.
- Refilling medical supplies.
- Recharging eyewashes and/or showers.
- Replenishing spill control supplies.

16.17 Documentation

Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan Incident/Injury Hotline at 1-(800)-9-LANGAN (ext. #4699) and the client representative to report the incident or near miss. For emergencies involving personnel injury and/or exposure, the HSO and affected employee will complete and submit an Employee Exposure/Injury Incident Report (Attachment C) to the Langan Corporate Health and Safety Manager as soon as possible following the incident.

17.0 SPECIAL CONDITIONS

This guideline contains information and requirements for special conditions that may not be routinely encountered.

17.1 Scope

The guideline applies to the specific projects identified within this document. Additional provisions will be addressed in each Site-Specific HEALTH AND SAFETY PLAN (HASP), as needed.

17.2 Responsibilities

Site Personnel - All site personnel must be alert to safety hazards on work sites and take action to minimize such hazards. Personnel must utilize the buddy system, watch for inappropriate behavior, and be alert to changes in site conditions.

Health and Safety Officer (HSO) - The HSO is responsible for considering these procedures in the development of site specific HASPs. The HSO shall schedule frequent "tail gate" safety briefings to enhance safety awareness and discuss potential problems.

17.3 Procedures

The procedures outlined below shall be followed when such conditions are encountered.

17.3.1 Ladders

Langan safety procedures shall be used to ensure employee safety when using ladders in the office or work sites. All ladders shall be coated or repaired to prevent injury to the employee from punctures or lacerations and to prevent snagging or clothing. Any wood ladders used must have an opaque covering except for identification or warning labels, which may be placed on one face only of a side rail.

17.3.1.1 Ladder Use

Employees shall only use ladders for the purposes, which they were designed and shall not be used as scaffolding. Ladders will be maintained and inspected prior to use for slip hazards including oil and grease. Employees shall use ladders only on stable and level surfaces unless the ladder is secured to prevent possible displacement. Ladders should not be used on slippery surfaces unless secured or provided with slip resistant feet to prevent accidental displacement. Ladders should not be used in locations where they could be displaced by workplace activities or traffic. Ladder rungs, cleats and steps shall be parallel, level and uniformly spaced when the ladder is in the use position.

Employees should not be carrying anything including equipment that could cause injury if there was a fall while utilizing the ladder. The top and bottom of the ladder area must remain clear while in use. When ascending and descending the ladder, employees must face the ladder.

Ladders shall not be loaded beyond the maximum intended load for which they were built or the manufacturer's rated capacity.

17.3.1.2 Portable Ladders

Rungs, cleats and steps for portable ladders and fixed ladders shall be spaced not less than 10 inches apart, nor more than 14 inches apart, as measured between center lines of the rungs, cleats and steps. When used to access an upper landing surface, the ladder side rails must extend at least three feet above the upper landing surface to which the ladder is used to gain access. If this is not possible, due to the ladders length, then the top of the ladder shall be secured at its top to a rigid support.

17.3.1.3 Step Stools

Rungs, cleats and steps of step stools shall not be less than 8 inches apart, nor more than 12 inches apart, as measured between center lines of the rungs, cleats and steps.

17.3.1.4 Extension Ladders

Rungs, cleats and steps of the base section of extension trestle ladders shall be spaced not less than 8 inches apart, nor more than 18 inches apart, as measured between center lines of the rungs, cleats and steps. The rung spacing on the extension section of the extension trestle ladder shall not be less than 6 inches nor more than 12 inches, as measured between center lines of the rungs, cleats and steps. Ladders shall be used at an angle such that the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder (the distance along the ladder between the foot and the top support).

17.3.1.5 Inspection

Ladders will be inspected for visible defects periodically, prior to utilization or after any occurrence that could have negatively affected the ladder. Portable ladders with defects including broken or missing rungs, cleats, or steps, broken or split rails, corroded components or other faulty or defective components shall not be used. The ladder will be immediately marked as defective, tagged as "Do Not Use" or blocked from being used and removed from service until repaired.

17.3.2 First Aid/Cardiopulmonary Resuscitation (CPR)

Langan field and office personnel will be encouraged to be trained in First Aid and Cardiopulmonary Resuscitation (CPR). Training will be provided free of charge by Langan to all employees. Employees will receive a training certificate that will be kept on file with the Health & Safety Coordinator (HSC). Training and certification will be provided by a credited provider such

as American Red Cross or equivalent.

17.3.2.1 Emergency Procedures

Prior to work at sites the Langan employees certified in first aid and CPR will be identified in the site specific HASP. Langan will endeavor to have at least one employee at a job site trained and able to render first aid and CPR. The site specific HASP will contain first aid information on both potential chemical and physical hazards. Emergency procedures to be followed in case of injury or illnesses are provided in the HASP. The HASP will include emergency contact information including local police and fire departments, hospital emergency rooms, ambulance services, on-site medical personnel and physicians. The HASP will also include directions and contact information to the nearest emergency facility in case immediate medical attention is required. The emergency contact information will be conspicuously posted at the worksite. Employees that are injured and require immediate medical attention shall call either 911 or the local posted emergency contacts. Employees should use ambulatory services to transport injured workers to the nearest facility for emergency medical care. In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.

17.3.2.2 First Aid Supplies

First aid supplies are readily available to all Langan employees when required. First aid kits are located in each Langan office. Portable first aid kits are available for employees to use at work sites. First aid kits should consist of items needed to treat employees for potential chemical and physical injuries. At a minimum, first aid kits should contain items to allow basic first aid to be rendered. Where the eyes or body of an employee may be exposed to corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use including eye wash.

First aid kits will be weatherproof with individual sealed packages of each item. All portable first aid kits shall be inspected by Langan employees before and after use to ensure all used items are replaced. When out in the field, employees shall check first aid kits weekly to ensure used items are replaced.

17.3.3 Hydrogen Sulfide

Langan employees with the potential to be exposed to hydrogen sulfide while at work sites shall have training in hydrogen sulfide awareness. The training will include identification of areas where employees could be exposed to hydrogen sulfide, health effects, permissible exposure limits, first aid procedures and personnel protective equipment. Langan employees could be

exposed to hydrogen sulfide while at job sites including petroleum refineries, hazardous waste treatment, storage and disposal facilities, uncontrolled hazardous waste sites and remediation projects.

17.3.3.1 Characteristics

Hydrogen sulfide is a colorless gas with a strong odor of rotten eggs that is soluble in water. Hydrogen sulfide is used to test and make other chemicals. It is also found as a by-product of chemical reactions, such as in sewer treatment. It is a highly flammable gas and a dangerous fire hazard. Poisonous gases are produced in fires including sulfur oxides. Hydrogen sulfide is not listed as a carcinogen.

17.3.3.2 Health Effects

Hydrogen Sulfide can affect employees if inhaled or through contact with skin or eyes. Acute (or short term) health effects of hydrogen sulfide exposure include irritation of the nose and throat, dizziness, confusion, headache and trouble sleeping. Inhalation of hydrogen sulfide can irritate the lungs causing coughing and/or shortness of breath. Higher levels of exposure can cause build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.

Chronic (or long term) health effects of low levels of exposure to hydrogen sulfide can cause pain and redness of the eyes with blurred vision. Repeated exposure may cause bronchitis with cough, phlegm and shortness of breath.

17.3.3.3 Protective Clothing and Equipment

Respirators are required for those operations in which employees will be exposed to hydrogen sulfide above OSHA permissible exposure level. The maximum OSHA permissible exposure limit (PEL) for hydrogen sulfide is 20 parts of hydrogen sulfide vapor per million parts of air (20 ppm) for an 8-hour workday and the maximum short-term exposure limit (STEL) is 10 ppm for any 10-minute period.

Where employees are exposed to levels up to 100 parts of hydrogen sulfide vapor per million parts of air (100 ppm), the following types of respiratory protection are allowed:

- Any powered, air purifying respirator with cartridge(s);
- Any air purifying, full-facepiece respirator (gas mask) with a chin style, front- or back-mounted canister;
- Any supplied air system with escape self-contained breathing apparatus, if applicable;

- and,
- Any self-contained breathing apparatus with a full facepiece.

Respirators used by employees must have joint Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (NIOSH) seal of approval. Cartridges or canisters must be replaced before the end of their service life, or the end of the shift, whichever occurs first. Langan employees that have the potential to be exposed to hydrogen sulfide will be trained in the proper use of respirators. Respirator training is discussed under– Langan’s Respiratory Protection Program.

Employees with potential exposure to hydrogen sulfide, or when required by the client, will wear a portable hydrogen sulfide gas detector. The detector should have an audible, visual and vibrating alarm. The detector may also provide detection for carbon monoxide, sulfur dioxide and oxygen deficient atmospheres. The hydrogen sulfide monitor will, at a minimum, be calibrated to detect hydrogen sulfide at a level of 20 parts of hydrogen sulfide vapor per million parts of air (20 ppm). Many portable gas detectors will have factory defaults with a low level alarm at 10 ppm and a high level alarm at 15 ppm. Langan employees shall consult clients to determine if any site specific threshold levels exist.

If the hydrogen sulfide gas detector sounds and employees are not wearing appropriate respiratory protection, employees must immediately vacate the area and meet at the assigned emergency location. Langan employees may not re- enter the site without proper respiratory protection and approval from the client or property owner, if needed.

Employees shall wear PPE to prevent eye and skin contact with hydrogen sulfide. Employees must wear appropriate protective clothing including boots, gloves, sleeves and aprons, over any parts of their body that could be exposed to hydrogen sulfide. Non-vented, impact resistant goggles should be worn when working with or exposed to hydrogen sulfide.

17.3.3.4 Emergency and First Aid Procedures

Eye and Face Exposure

If hydrogen sulfide comes in contact with eyes, it should be washed out immediately with large amounts of water for 30 minutes, occasionally lifting the lower and upper eye lids. Seek medical attention immediately.

Skin Exposure

If hydrogen sulfide contaminates clothing or skin, remove the contaminated clothing immediately

and wash the exposed skin with large amounts of water and soap. Seek medical attention immediately. Contaminated clothing should either be disposed of or washed before wearing again.

Breathing

If a Langan employee or other personnel breathe in hydrogen sulfide, immediately get the exposed person to fresh air. If breathing has stopped, artificial respiration should be started. Call for medical assistance or a doctor as soon as possible.

Safety Precautions

Hydrogen sulfide is a highly flammable gas and a dangerous fire hazard. Containers of hydrogen sulfide may explode in a fire situation. Poisonous gases are produced during fires.

Langan employees should contact property owners and operators prior to conducting work onsite to be aware of any site specific contingency plans, identify where hydrogen sulfide is used at the facility and be informed about additional safety rules or procedures.

19.3.4 Fire Protection/Extinguishers

Langan field personnel that have been provided with portable fire extinguishers for use at worksites will be trained to familiarize employees with general principles of fire extinguisher use and hazards associated with the incipient stage of firefighting. Training will be provided prior to initial assignment for field work and annually thereafter.

Portable fire extinguishers shall be visually inspected monthly and subjected to an annual maintenance check. Langan shall retain records of the annual maintenance date.

17.3.5 Overhead lines

When field work is performed near overhead lines, the lines shall be deenergized and grounded, or other protective measures shall be provided before the work shall commence. If overhead lines are to be deenergized, arrangements shall be made with the client, property owner or organization that operates or controls the electric circuits involved to deenergize and ground them. If protective measures, such as guarding, isolating, or insulating, are provided, these precautions shall prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

When unqualified Langan personnel are working in an elevated position near overhead lines, the location shall be such that the person and the longest conductive object they may contact cannot

come closer to any unguarded, energized overhead line than the following distances:

1. For voltages to ground 50kV or below - 10 feet; and
2. For voltages to ground over 50kV - 10 feet, plus 4 inches for every 10kV over 50kV.

As previously indicated, Langan does not retain qualified employees to perform work on energized equipment.

17.3.5.1 Vehicle and Equipment Clearance

Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 feet is maintained. If the voltage of the overhead lines is higher than 50kV, the clearance shall be increased 4 inches for every 10kV over that voltage.

If any of the following discussed conditions occur, the clearance may be reduced.

- If the vehicle is in transit with its structure lowered, the clearance may be reduced to 4 ft. If the voltage is higher than 50kV, the clearance shall be increased 4 in. for every 10 kV over that voltage.
- If insulating barriers are installed to prevent contact with the lines, and if the barriers are rated for the voltage of the line being guarded and are not a part of or an attachment to the vehicle or its raised structure, the clearance may be reduced to a distance within the designed working dimensions of the insulating barrier.

Employees standing on the ground may not contact the vehicle or mechanical equipment or any of its attachments, unless the employee is using protective equipment rated for the voltage; or the equipment is located so that no uninsulated part of its structure (that portion of the structure that provides a conductive path to employees on the ground) can come closer to the overhead line than permitted.

If any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines is intentionally grounded, employees working on the ground near the point of grounding may not stand at the grounding location whenever there is a possibility of overhead line contact. Additional precautions, such as the use of barricades or insulation, shall be taken to protect employees from hazardous ground potentials, depending on earth resistivity and fault currents, which can develop within the first few feet or more outward from the grounding point.

17.3.6 Trade Secret

Langan employees could potentially be provided trade secret information by the client or property owner when site specific information is provided about highly hazardous chemicals. Trade secret means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Langan employees understand that this information should be kept confidential and if required, may enter into a confidentiality agreement with the client.

17.3.7 Bloodborne Pathogens

Langan employees that can reasonably anticipate exposure to blood or other potentially infectious material while at work sites shall have training in bloodborne pathogens. Applicable employees would include those trained in first aid and serving a designated role as an emergency medical care provider. Bloodborne pathogens are pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus and human immunodeficiency virus.

17.3.7.1 Training

Langan employees with potential occupational exposure to blood or other potentially infectious material must participate in a training program. Training must be conducted prior to initial assignment where there would be potential for exposure and annually thereafter within one year of previous training. The training program will be provided to Langan employees at no cost to them and during working hours.

Langan will ensure the training program shall consist of the following:

- An accessible copy of the regulatory text of 29 CFR 1910.1030 and an explanation of its contents;
- A general explanation of the epidemiology and symptoms of bloodborne diseases;
- An explanation of the modes of transmission of bloodborne pathogens;
- An explanation of Langan's exposure control plan and the means by which the employee can obtain a copy of the written plan;
- An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials;
- An explanation of the use and limitations of personal protective
 - equipment (PPE) to prevent and reduce exposure;
 - Information on the types, proper use, location, removal, handling and disposal of PPE;

- An explanation of the basis for selection of PPE;
- Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge;
- Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;
- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available;
- Information on the post-exposure evaluation and follow-up that the
- employer is required to provide for the employee following an exposure incident;
- An explanation of the signs and labels and/or color coding required by paragraph 29 CFR 1910.1030(g)(1); and
- An opportunity for interactive questions and answers with the person conducting the training session.

Langan will develop and implement a written Exposure Control Plan, which will be designed to eliminate or minimize employee exposure to bloodborne pathogens. The Exposure Control Plan will contain the following elements:

- An exposure determination for employees;
- The schedule and method of implementation for Methods of Compliance (29 CFR 191.1030(d)), Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up (29 CFR 1910.1030(f)), Communication of Hazards to Employees (29 CFR 1910.1030(g)) and (h) Recordkeeping (29 CFR 1910.1030(h));
- The procedure for the evaluation of circumstances surrounding exposure incidents;
- Ensure a copy of the Exposure Control Plan will be accessible to employees; and,
- The Exposure Control Plan shall be reviewed and updated at least annually.

Langan employees with occupational exposure to bloodborne pathogens include any employees trained in first aid that would be expected to provide emergency medical care. This determination is made without regards to the use of PPE, which could eliminate or minimize exposure.

Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for bloodborne pathogens. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

Work practice controls shall be used to eliminate or minimize employee exposure, if applicable. Since Langan employees will have occupational exposure only during rendering of first aid,

personnel protective equipment will be utilized to reduce or minimize exposure. PPE that could be available to Langan personnel when administering first aid includes safety glasses, gloves, and Tyvek suits or sleeves. PPE and first aid kits will be provided to employees at no cost to them.

Langan employees that render first aid in office areas will have access to hand washing facilities or restrooms. For first aid rendered at field locations, first aid kits will contain an appropriate antiseptic hand cleanser and clean cloth/paper towels or antiseptic towelettes. After using antiseptic hand cleansers or towelettes, employees shall wash their hands with soap and running water as soon as feasible.

After administering first aid, potentially infectious materials, including towels, personnel protective equipment, clothes and bandages, shall be placed in a container, which prevents leakage during collection, handling, processing, storage, transport, or shipping. All PPE will be disposed of after use. Any equipment or working surfaces which was been exposed to blood or potentially infectious materials due to an injury, will be decontaminated prior to reuse.

Langan will make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up to all employees who have had an exposure incident. These services will be available to the employee at no cost to them through a medical provider.

17.3.7.2 Recordkeeping

Langan will maintain training and medical records for each employee with occupational exposure to blood or potentially infectious materials. Medical and training records will be maintained by Langan's H&S Department.

Training records will include the following:

- Dates of the training sessions;
- Contents or a summary of the training sessions;
- Names and qualifications of persons conducting the training; and
- Names and job titles of all persons attending the training sessions.

Training records shall be maintained for 3 years from the date on which the training occurred. Medical records will be preserved and maintained for the duration of employment plus 30 years.

All records will be made available upon request to employees, the Assistant Secretary of Labor

for Occupational Safety and Health, and Director of National Institute for Occupational Safety and Health Director of OSHA for examination and copying. Medical records must have written consent from employee before releasing.

If Langan ceases to do business, all records shall be transferred to the successor employer. The successor employer shall receive and maintain these records.

If there will not be a successor, Langan will notify current employees of their rights to access records at least three months prior to the cessation of business.

18.0 RECORDKEEPING

The following is a summary of required health and safety logs, reports and recordkeeping.

18.1 Field Change Authorization Request

Any changes to the work to be performed that is not included in the HASP will require an addendum that is approved by the Langan project manager and Langan HSM to be prepared. Approved changes will be reviewed with all field personnel at a safety briefing.

18.2 Medical and Training Records

Copies or verification of training (40-hour, 8-hour, supervisor, site-specific training, documentation of three-day OJT, and respirator fit-test records) and medical clearance for site work and respirator use will be maintained in the office and available upon request. Records for all subcontractor employees must also be available upon request. All employee medical records will be maintained by the HSM.

18.3 Onsite Log

A log of personnel on site each day will be kept by the HSO or designee.

18.4 Daily Safety Meetings ("Tailgate Talks")

Completed safety briefing forms will be maintained by the HSO.

18.5 Exposure Records

All personal monitoring results, laboratory reports, calculations and air sampling data sheets are part of an employee exposure record. These records will be maintained by the HSO during site work. At the end of the project they will be maintained according to 29 CFR 1910.1020.

18.6 Hazard Communication Program/MSDS-SDS

Material safety data sheets (MSDS) or Safety Data Sheets (SDS) have been obtained for applicable substances and are included in this HASP (Attachment D). Langan's written hazard communication program, in compliance with 29 CFR 1910.1200, is maintained by the HSM.

18.7 Documentation

Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan incident/injury hotline at 1-800-952-6426, extension 4699 and the Project Manager to report the incident or near miss. The Project Manager will contact the client or client representative. A written report must be completed and submitted HSM within 24 hours of the incident. For emergencies involving personnel injury and/or exposure, employee will complete and submit the Langan incident/injury report to the Langan corporate health and safety manager as soon as possible following the incident. Accidents will be investigated in-depth to identify all causes and to recommend hazard control measures.

18.7.1 Accident and Injury Report Forms

18.7.1.1 Accident/Incident Report

All injuries, no matter how slight, shall be reported to the FTL and the PM immediately. The accident/incident report forms, attached in Attachment U and Attachment V will be filled out on all accidents by the applicable contractor supervision personnel, the FTL, or the HSO. Copies of all accident/incident reports shall be kept on-site and available for review. Project personnel will be instructed on the location of the first aid station, hospital, and doctor and ambulance service near the job. The emergency telephone numbers will be conspicuously posted in site vehicles near the work zone. First aid supplies will be centrally located and conspicuously posted between restricted and non-restricted areas to be readily accessible to all on the site.

18.7.1.2 First Aid Treatment Record

The forms in will be used for recording all non-lost time injuries treated by the project first-aid attendant, the local physician or hospital will be entered in detail on this record. "Minor" treatment of scratches, cuts, etc. will receive the same recording attention as treatment of more severe injuries.

18.7.1.3 OSHA Form 300

An OSHA Form 300 will be kept at the Langan Corporate Office in Parsippany, New Jersey. All

recordable injuries or illnesses will be recorded on this form. Subcontractor employers must also meet the requirements of maintaining an OSHA 300 form. The Incident Report form used to capture the details of work-related injuries/illnesses meets the requirements of the OSHA Form 301 (supplemental record) and must be maintained with the OSHA Form 300 for all recordable injuries or illnesses. Forms for recording OSHA work-related injuries and illnesses are included in Attachment U and Attachment V.

19.0 CONFINED SPACE ENTRY

Confined spaces are not anticipated at the Site during planned construction activities. If confined spaces are identified, the contractor must implement their own confined space program that all applicable federal, state and local regulations. Confined spaces **will not** be entered by Langan personnel.

20.0 HASP ACKNOWLEDGEMENT FORM

All Langan personnel and contractors will sign this HASP Compliance Agreement indicating that they have become familiar with this HASP and that they understand it and agree to abide by it.

TABLES