REMEDIAL ACTION WORK PLAN

for

REGO PARK CENTER III
93-30 93rd Street
Rego Park, New York
NYSDEC BCP Site No. C241259

Prepared for:

Alexander's of Rego Park III, Inc.
c/o Vornado Realty Trust
888 Seventh Avenue, 44th Floor
New York, New York 10019

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

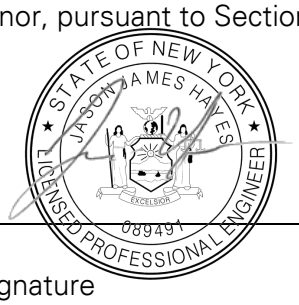
March 9, 2023
Langan Project No. 170683801

LANGAN

CERTIFICATION

I, Jason J. Hayes, certify that I am currently a New York State registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Action Work Plan (RAWP) 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).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.



089491	03/09/2023	
NYS Professional Engineer	Date	Signature

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

LIST OF ACRONYMS

Acronym	Definition
AGV	Air Guideline Value
AOC	Area of Concern
AST	Aboveground Storage Tank
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bsg	Below Sidewalk Grade
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylene
BUD	Beneficial Use Determination
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
CQAP	Construction Quality Assurance Plan
CPP	Citizen Participation Plan
CSM	Conceptual site Model
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DMM	Division of Materials Management
EC	Engineering Control
EE	Environmental Easement
el	Elevation
ELAP	Environmental Laboratory Approval Program
EPA	United States Environmental Protection Agency
ESA	Environmental site Assessment
ESI	Environmental site Investigation
FEMA	Federal Emergency Management Agency
FER	Final Engineering Report
IC	Institutional Control
ISCO	In-Situ Chemical Oxidation
µg/L	Microgram per Liter
µg/m^3	Microgram per Cubic Meter
mg/kg	Milligram per Kilogram
mg/L	Milligram per Liter
NAVD88	North American Vertical Datum of 1988
NYCRR	New York Codes, Rules and Regulations
NYCDEP	New York City Department of Environmental Protection

Acronym	Definition
NYCDOB	New York City Department of Buildings
NYCDOT	New York City Department of Transportation
NYCOER	New York City Office of Environmental Remediation
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	United States Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PGW	Protection of Groundwater
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts per Million
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RCRA	Resource Conservation and Recovery Act
RE	Remediation Engineer
REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RRUR	Restricted Use Restricted-Residential
SCG	Standards, Criteria and Guidance
SCO	Soil Cleanup Objective
SGV	Standards and Guidance Values
SFMP	Soil/Fill Management Plan
SMP	site Management Plan
SOE	Support of Excavation
SPDES	State Pollution Discharge Elimination System
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List

Acronym	Definition
TOGS	Technical and Operational Guidance Series
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This Remedial Action Work Plan (RAWP) was prepared on behalf of Alexander's of Rego Park III, Inc. (the "Participant") for Rego Park Center III ("the site") located at 93-30 93rd Street in the Rego Park neighborhood of Queens, New York. The Participant entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on December 3, 2021 and Brownfield Cleanup Program (BCP) Site No. C241259 was assigned to the site. The Participant proposes to remediate and redevelop the site for residential and commercial use.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI) completed between January 18 and February 18, 2022. This RAWP identifies and evaluates remedial action alternatives, including a Track 1 cleanup and a split Track 2/Track 4 cleanup, and their associated costs, and identifies a preferred remedy. The preferred split Track 2/Track 4 cleanup remedy described in this document is consistent with the procedures defined in Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375-3.8 and the NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for site Investigation and Remediation (DER-10) and complies with applicable federal, state, and local laws, regulations, and requirements.

Site Description/Physical Setting/Site History

The site is located at 93-30 93rd Street in the Rego Park neighborhood of Queens, New York and is currently identified as Queens Borough Tax Block 2076, Lot 50. The current tax lot was merged from the following tax lots on February 7, 2022: Block 2076, Lots 50 and 63; Block 2077, Lots 90 and 98; the demapped former 94th Place; and a demapped section of 62nd Avenue. Following the merger, the site address is now 93-30 93rd Street and no longer cross-listed as 61-10 Junction Boulevard. The site is approximately 139,558 square feet (3.20 acres) in area and is currently used as an asphalt-paved private parking lot, with the exception of the southern central portion of the site, which is used as a vehicle turning bay at the eastern terminus of 62nd Avenue. The site is bordered by the Horace Harding Expressway to the north, Junction Boulevard followed by a mixed-use residential and commercial use building to the east, 62nd Avenue and the Lost Battalion Hall Playground to the south, and 93rd Street followed by mixed-use residential and commercial buildings and parking lots to the west. A site location map and site plan are provided as Figures 1 and 2, respectively.

According to the September 16, 2016 survey prepared by Montrose Surveying Co., LLP, the ground surface elevation of the site ranges from about elevation (el) 16 to 20[1]. Sidewalk elevations adjacent to the site range from about el 16 (at the corner of Horace Harding Expressway and Junction Boulevard) to about el 19 (at the corner of 62nd Avenue and 93rd Street). According to the United States Geological Survey (USGS) Central Park Quadrangle 7.5-minute Series Topographic Map, the surrounding area slopes gradually to the east towards Meadow Lake.

Historical uses of environmental concern at the site included a gasoline filling station (circa 1950), a vehicle repair shop (circa 1995), and commercial truck repair operations (circa 1981 through early 2000s) on the north-central part of the site. The names of the operators of the former commercial facilities at the site are unknown.

Summary of the Remedial Investigation

The findings summarized below are based on data collected during previous investigations and the RI.

1. Stratigraphy: The subsurface profile generally consists of contaminated non-native fill to a depth of at least 15 feet below ground surface (bgs) and up to 27 feet bgs. The fill generally consists of fine- to medium-grained sand with gravel, silt, clay, brick, concrete, and glass fragments. A silt and organic peat layer with clay and/or fine sand was identified below the non-native fill in three borings on the western, northeastern, and eastern portions of the site. The top of the silt layer is between 17 and 19 feet bgs and extends to RI boring terminations of 20 feet bgs. Data from a 2021 geotechnical investigation indicates that in some areas non-native fill extends to 27 feet bgs and the peat layer extends from below the non-native fill to between 23 and 32 feet bgs throughout the majority of the site, with the exception of the southwestern portion.

2. Hydrogeology: Synoptic groundwater measurements collected on March 17 and 18, 2022 indicated that groundwater depths were between 9.96 feet bgs in the northeast and 11.13 feet bgs in the southeastern portion of the site and at elevations between el. 4.40 in the northeast and el.7.17 in the western portion of the site. Groundwater is estimated to flow east towards Meadow Lake, which is about one mile from the site (see Figure 6.)

3. Hazardous Lead-impacted Soil: Previous investigations identified lead at concentrations above the United States Environmental Protection Agency (USEPA) Hazardous Waste

[1] All referenced elevations are relative to the North American Vertical Datum of 1988 (NAVD88)

Limit (HWL) between 0 and 10 feet bgs at four locations on the western and southeastern portions of the site. Delineation soil sampling indicates that hazardous lead concentrations at two locations in the west and one in the southeast are limited to an area with an approximately 10-foot radius and extending to depths between 4 and 10 feet bgs. The vertical extent of hazardous lead was delineated to 7 feet bgs at another location in the southeast (RA-8); however, supplemental delineation sampling will be conducted during the remediation phase at the 0- to 4-foot depth interval to delineate the lateral extent of hazardous lead in that area (see Figures 3C and 7).

4. Petroleum-Impacted Soil: Soil recovered from the 1- to 4-foot and 2- to 4-foot depth intervals in two borings on the southeastern and central portions of the site exhibited petroleum-like odors and photoionization detector (PID) readings of 77.4 and 103.7 parts per million (ppm), respectively. Semivolatile organic compounds (SVOCs) were also detected in soil collected from the 13- to 15-foot depth interval on the northwestern portion of the site at concentrations one order of magnitude above those detected elsewhere at the site. The nuisance conditions and SVOC detections may be indicative of residual, degraded petroleum impacts (see Figures 3A and 7).

5. Non-native fill Material: Samples of non-native fill collected from up to 20 feet bgs throughout the site contained SVOCs, polychlorinated biphenyls (PCBs), pesticides, and metals above the 6 NYCRR Part 375 Unrestricted Use (UU) and/or Restricted Use Restricted-Residential (RURR) SCOs. Several SVOCs were detected at concentrations above the UU SCOs and/or RURR SCOs to depths of up to 20 feet bgs in samples collected throughout the site. Perfluorooctanesulfonic acid (PFOS) was detected in the western portion of the site to depths of up to 3 feet bgs at concentrations above the UU guidance value presented in the June 2021 NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC's Part 375 Remedial Programs. The detected concentrations are generally typical of those that characterize non-native fill in New York City. Samples collected from the eastern portion of the site generally contained higher concentrations of metals, with a sample collected from the 13- to 15-foot depth interval in the eastern portion of the site containing the maximum detected concentrations for several metals, including zinc (11,000 milligrams per kilogram [mg/kg]), silver (5.2 mg/kg), lead (10,100 mg/kg), chromium (III) (60 mg/kg), barium (1,340 mg/kg), and arsenic (39.8 mg/kg). Acetone and 2-butanone were detected at concentrations above the UU SCO in non-native fill samples collected from across the site; however, these compounds are common laboratory solvents associated with methanol preservation and may not be indicative of non-native fill (see Figures 3A and 3B).

6. Groundwater Impacts: SVOCs and dissolved barium and lead were detected at concentrations above the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGVs) for Class GA groundwater in monitoring wells throughout the site. The detections are attributable to metals and SVOC impacts within non-native fill, including entrained sediment within the groundwater samples. A single detection of chlorobenzene in a well on the central portion of the site indicates a localized occurrence from an off-site source. Perfluorooctanoic Acid (PFOA) and PFOS were detected in groundwater samples above the NYSDEC June 2021 Screening Levels for PFAS. A source of PFAS compounds was not identified (see Figures 4A, 4B and 4C).

7. Soil Vapor: One volatile organic compound (VOC), vinyl chloride, was detected at two locations on the central portion of the site above the minimum concentration for which the New York State Department of Health (NYSDOH) recommends soil vapor mitigation. Cyclohexane was also detected at one location on the central portion of the site at a concentration one to two orders of magnitude above detections in other samples. On-site sources for vinyl chloride and cyclohexane were not identified. Detections of petroleum-related VOCs were below 100 micrograms per cubic meter ($\mu g/m^3$) and generally within a common order of magnitude across the site (see Figure 5).

Qualitative Human Health Exposure Assessment

Based on the conceptual site model (CSM) and the review of environmental data, complete on-site exposure pathways appear to be present, in the absence of monitoring and mitigation or engineering controls (EC) (e.g., Construction Health and Safety Plan (CHASP) with a Community Air Monitoring Program (CAMP), capping system, etc.), during construction/remediation and future use conditions.

Complete exposure pathways have the following five elements: 1) a contaminant source; 2) a contaminant release and transport mechanism; 3) a point of exposure; 4) a route of exposure; and 5) a receptor population. A discussion of the five elements comprising a complete pathway as they pertain to the site is provided below.

Contaminant Sources

Potential sources of contamination include:

- Contaminated soil and non-native fill from unknown sources used as backfill (SVOCs, PCBs, pesticides, metals, and PFAS in soil; and SVOCs and metals in groundwater)
- Historical petroleum releases from historical filling station and vehicle repair (nuisance conditions in soil)

- Possible historical off-site uses (chlorobenzene and PFAS in groundwater, and vinyl chloride and cyclohexane in soil vapor)

Current Conditions

Contamination from on-site sources includes soil with varying concentrations of SVOCs, PCBs, pesticides, and metals and petroleum-related nuisance conditions and groundwater containing SVOCs and metals. Potential off-site contaminant sources have also impacted groundwater (chlorobenzene and PFAS) and soil vapor (vinyl chloride and cyclohexane).

On-site contaminant release and transport mechanisms include potential release and transport during penetration of the site cover for soil, groundwater, and soil vapor sampling. The potential receptors are visitors that use the parking lot and the community adjacent to the site. Under current conditions, the likelihood of exposure to humans is limited due to the following:

- The portion of the site currently accessible by visitors is covered with an asphalt-paved parking lot, which prevents direct contact with soil and groundwater.
- The unpaved portion of the site is enclosed by a secured, chain-link fence that prevents public access.
- Sampling activities and any other site cover penetration would be completed in accordance with a Health and Safety Plan (HASP) and CAMP that is designed to monitor and prevent exposure to soil, groundwater, and soil vapor contaminants.
- There are no enclosed structures at the site, thereby minimizing exposure to soil vapor.
- Groundwater at the site is not a potable water source

Construction/ Remediation Activities

During remediation and the excavation and foundation construction stage of redevelopment, points of exposure include disturbed and exposed soil during excavation, and dust and potential organic vapors generated during excavation. Groundwater is expected to be encountered within the footprint of the proposed partial cellar, based on the measured groundwater depth of 10 to 12 feet bgs. Routes of exposure include ingestion and dermal absorption of contaminated soil and groundwater, inhalation of potential organic vapors arising from contaminated soil vapor, and inhalation of dust arising from contaminated soil. The receptor population includes construction and remediation workers and the public adjacent to the site.

All five elements exist; therefore, the potential for completed exposure pathways is present. The risk can be minimized by applying appropriate health and safety measures, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, maintaining site security, and wearing the appropriate personal protective equipment (PPE). In accordance with a HASP, this RAWP, and a CAMP, measures such as conducting an air monitoring program, donning PPE, and applying vapor and dust suppression measures to prevent off-site migration of

contaminants during construction will be implemented. Such measures would minimize completion of these potential exposure pathways.

Proposed Future Conditions

For the proposed future conditions, residual contaminants may remain on-site, depending on the remedy, and would, to a lesser extent, include those listed under current conditions. If institutional controls (ICs) and/or ECs are not implemented, points of exposure include potential cracks in the foundation or lowest-level slab of the proposed development, and exposure during future soil-disturbing activities. Routes of exposure may include inhalation of vapors entering the building. The receptor population includes the building tenants, employees, visitors, and maintenance/utility workers. The possible routes of exposure can be avoided or mitigated by construction and maintenance of a site capping system (i.e., vapor barrier membrane and concrete building slab), and implementation of a Site Management Plan. To determine if any additional soil vapor mitigation measures are warranted, a soil vapor intrusion evaluation will be necessary after the remedial action.

Human Health Exposure Assessment Conclusions

1. Under current conditions, there is a marginal risk for exposure. The primary exposure pathways are dermal contact, ingestion, and inhalation of soil, soil vapor, or groundwater by site investigation workers. The exposure risks can be avoided or minimized by following the appropriate health and safety and vapor and dust suppression measures during investigation activities, and maintaining the secured fencing around the unpaved area.
2. In the absence of ECs, there is a moderate risk of exposure during the construction-phase activities. The primary exposure pathways are:
    a. Dermal contact, ingestion, and inhalation of contaminated soil, groundwater, and soil vapor by construction workers.
    b. Dermal contact, ingestion, and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site.

    These can be avoided or minimized by performing community air monitoring and by following the appropriate health and safety, vapor and dust suppression, and site security measures.
3. The existence of a complete exposure pathway for site contaminants to human receptors during proposed future conditions is unlikely. The site will be remediated and ECs and ICs will be in place to mitigate exposure risk related to residual contamination that may remain on site. Further, groundwater is not used as a potable water source in New York City.

4. It is possible that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors for current, construction-phase, and/or future conditions. Monitoring and control measures have been and will continue to be used during investigation and construction to prevent completion of this pathway. Under future conditions, the site will be remediated and ECs will be implemented as necessary to prevent completion of this pathway.

Summary of the Remedy

A remedial alternatives analysis was performed as part of the development of this RAWP and the selected remedy is a combination of a Track 2 Restricted-Residential Use cleanup in the western, central, and northeastern portions of the site, and a Track 4 cleanup with RURR SCOs in the eastern portion of the site and in areas outside of the new building footprint. The remedy consists of the following actions:

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, the community, and the environment during remediation and construction activities.
- Removal and management of the asphalt surface cover as C&D debris in accordance with Part 360 and 361 regulations by the contractor. Review and certification of C&D transport and disposal methodologies is not a requirement of the RE. The RE is responsible for documenting that C&D debris is not comingled with contaminated site soil and fill.
- Implementation of preliminary waste characterization, as required, including lateral delineation sampling of a hazardous lead hot spot on the southeastern and Track 4 portion of the site (RA-8) to facilitate off-site disposal of excavated material.
- Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
- Decommissioning of monitoring wells.
- Construction of the support of excavation (SOE) system to facilitate excavation of contaminant source material throughout the site and excavation of soil/fill that exceeds the RURR SCOs to a maximum depth of 15 feet bgs in the Track 2 remedy area and excavation of soil/fill that exceeds the RURR SCOs to a depth of 2 feet bgs in the Track 4 remedy area – No contaminant source will remain below 15 feet bgs.
- Excavation and off-site disposal of four previously delineated hotspots to remove soil exceeding the 6 NYCRR Part 371 criteria for hazardous lead, including two hotspots each in the Track 2 and Track 4 areas, and collection of confirmation endpoint samples.
- Excavation and off-site disposal of soil exhibiting petroleum nuisance conditions between 1 and 4 feet bgs in the Track 4 area, and collection of documentation endpoint samples.

- Dewatering and treatment, as necessary, to facilitate SOE installation and to accommodate the removal of contaminant source material throughout the site and soil that exceeds RURR SCOs in the Track 2 area, and discharge of dewatering fluids in accordance with a NYCDEP sewer discharge permit.
- Excavation, stockpiling, off-site transport of contaminant source material throughout the site, soil exceeding RURR SCOs to a maximum depth of 15 feet bgs in the Track 2 area, per 6 NYCRR Part 375-3.8[e][2], and soil exceeding RURR SCOs within the upper two feet to allow for construction of ECs in the Track 4 area.
- Removal, decommissioning, and off-site disposal of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Screening for indications of contamination (by visual means, odor, and monitoring with a PID) of excavated soil/fill during intrusive site work.
- Appropriate off-site disposal of non-native fill and soil from the site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
- Collection and analysis of confirmation soil samples in the Track 2 area to confirm RURR SCOs are achieved and documentation soil samples in the Track 4 area to document post-excavation conditions in relation to Track 4 SCOs; samples will be collected from the excavation base and, to the extent possible, sidewalls of the excavation in accordance with DER-10.
- Placement of a physical demarcation layer in the Track 4 area where contamination remains and not covered by impervious surfaces, consisting of orange snow fencing or equivalent material, at the excavation bottom prior to backfilling.
- Backfilling of remediated areas to development grade with documented soil meeting the lower of RURR and Protection of Groundwater (PGW) SCOs, virgin stone, or recycled concrete aggregate (RCA) from a 6 NYCRR Part 360 NYSDEC-registered facility and in compliance with Part 360.
- Capping of excavated areas with a cover system consisting of a reinforced concrete building slab in the Track 2 area and a composite cover system consisting of a reinforced concrete building slab beneath the new building, and concrete pavers and a minimum of two feet of imported clean fill in the exterior portions of the Track 4 area.
- Establishment of an NYSDEC-approved Site Management Plan (SMP) to provide for long-term management of ECs and ICs, including the performance of periodic inspections and certification that the controls are performing as they were intended.

- Recording of an Environmental Easement to memorialize the remedial action and the ECs and ICs to mandate that owners of the site continue to maintain these controls as required.

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) was prepared on behalf of Alexander's of Rego Park III, Inc. (the "Participant") for Rego Park Center III ("the site") located at 93-30 93rd Street in the Rego Park neighborhood of Queens, New York. The Participant entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on December 3, 2021 and Brownfield Cleanup Program (BCP) Site No. C241259 was assigned to the site. The Participant proposes to remediate and redevelop the site for residential and commercial use.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI) completed between January 18 and February 18, 2022. This RAWP identifies and evaluates remedial action alternatives, including a Track 1 cleanup and a split Track 2/Track 4 cleanup, and their associated costs, and identifies a preferred remedy. The preferred split Track 2/Track 4 cleanup remedy described in this document is consistent with the procedures defined in Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375-3.8 and the NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for site Investigation and Remediation (DER-10) and complies with applicable federal, state, and local laws, regulations, and requirements.

1.1 Site Location and Description

The site is located at 93-30 93rd Street in the Rego Park neighborhood of Queens, New York and is currently identified as Queens Borough Tax Block 2076, Lot 50. The current tax lot was merged from the following tax lots on February 7, 2022: Block 2076, Lots 50 and 63; Block 2077, Lots 90 and 98; the demapped former 94th Place; and a demapped section of 62nd Avenue. The site is approximately 139,558 square feet (3.20 acres) in area and is currently used as an asphalt-paved private parking lot, with the exception of the southern central portion of the site, which is used as a vehicle turning bay at the eastern terminus of 62nd Avenue. The site is bordered by the Horace Harding Expressway to the north, Junction Boulevard followed by a mixed-use residential and commercial use building to the east, 62nd Avenue and the Lost Battalion Hall Playground to the south, and 93rd Street followed by mixed-use residential and commercial buildings and parking lots to the west. A site location map and site plan are provided as Figures 1 and 2, respectively.

According to the September 16, 2016 Survey prepared by Montrose Surveying Co., LLP, the ground surface elevation of the site ranges from about elevation (el) 16 to 20, relative to the North American Vertical Datum of 1988 (NAVD88). Sidewalk elevations adjacent to the site range from about el 16 (at the corner of Horace Harding Expressway and Junction Boulevard) to about el 19 (at the corner of 62nd Avenue and 93rd Street). According to the United States Geological Survey

(USGS) Central Park Quadrangle 7.5-minute Series Topographic Map, the surrounding area slopes gradually to the southeast towards Meadow Lake. The survey is included as Appendix A.

1.2 Redevelopment Plan

The proposed development project will include demolition of the existing asphalt parking lot, excavation and off-site disposal of contaminated soil simultaneously with development, and implementation of other remedial elements, if required. The proposed redevelopment includes construction of an approximately 89,000-square-foot, 32-story mixed-use residential and commercial building on the eastern part of the site and an approximately 51,000-square-foot low-rise retail building on the western part of the site. The retail building will include a full cellar, and the mixed-use building will include a partial, approximately 30,000-square-foot cellar level. The portion of the site containing cellars (i.e., the full retail building and the northern portion of the mixed-use building) will be remediated under a Track 2 cleanup, and the southern, slab-on-grade portion of the mixed-use building and exterior portions of the site will be remediated under a Track 4 cleanup, as described in Section 3.3.

The mixed-use building will contain parking and storage in the cellar; retail, parking, and community space on the ground floor; parking and retail space on the second and third floors; and residential units on the upper floors. At least 30% of the residential apartments will be designated as affordable housing, pursuant to the 421-a Affordable Housing NY Program. The proposed development plans are included as Appendix B.

1.3 Description of Surrounding Property

The site is located in a mixed-use area with residential, commercial, industrial, institutional, and parking uses nearby. The following is a summary of adjoining and surrounding property usage:

<table>
<tr><th>Direction</th><th colspan="3">Adjoining and Adjacent Properties</th><th>Surrounding Properties</th></tr>
<tr><th></th><th>Block No.</th><th>Lot No.</th><th>Description</th><th></th></tr>
<tr><td rowspan="4">North</td><td colspan="3">Horace Harding Expressway</td><td rowspan="5">Multi-story mixed-use, residential, commercial, and institutional buildings, and open space and outdoor recreation areas</td></tr>
<tr><td>1913</td><td>1</td><td>Six-story residential building
(94-30 Horace Harding Expressway)</td></tr>
<tr><td>1913</td><td>7501</td><td>Six-story mixed-use building
(94-30 60th Avenue)</td></tr>
<tr><td>East</td><td colspan="3">Junction Boulevard</td></tr>
</table>

Direction	Adjoining and Adjacent Properties			Surrounding Properties
	Block No.	Lot No.	Description	
	2080	7501	21-story Rego Center Shopping Mall and residential building (61-01 Junction Boulevard)	
South	2077	50	Lost Battalion Hall Playground and Recreation Center (93-29 Queens Boulevard)	Multi-story mixed-use, residential, and commercial buildings
	2078	16	Two-story AT&T utility building (94-05 Queens Boulevard)	
	62nd Avenue, 62nd Drive and Queens Boulevard			
West	93rd Street			Multi-story mixed-use, residential, commercial, and institutional buildings, and 1- and 2-family residential buildings
	2075	7501	16-story mixed-use building (92-29 Queens Boulevard)	
		36	2-story commercial building (92-63 Queens Boulevard)	
		39	4-story mixed-use building (92-73 Queens Boulevard)	
		44	Parking lot and Burger King restaurant (92-15 62nd Avenue)	

Land use within a half-mile radius is urban and includes residential, commercial, institutional, and public parks. The nearest ecological receptor is Meadow Lake within Flushing Meadows Corona Park, which is located about one mile east of the site. Sensitive receptors, as defined in DER 10, located within a half mile of the site include those listed below:

Number	Name (approximate distance from site)	Address
1	Lost Battalion Hall Playground and Recreation Center (southern adjoining)	93-29 Queens Boulevard, Rego Park, NY 11374
2	PS206 The Horace Harding School (about 850 feet east of the site)	61-65 Wetherole St, Rego Park, NY 11374
3	Nelia's Day Care (about 1,000 feet east of the site)	97-07 63rd Road Rego Park, NY 11374
4	P721Q John F Kennedy Jr. School (about 1,100 feet southwest of the site)	54-12 94th St, Elmhurst, NY 11373

Number	Name (approximate distance from site)	Address
5	MetroKids Preschool (about 1,300 feet southwest of the site)	63-47 Booth St Rego Park, NY 11374
6	P.S. 139 Rego Park (about 1,500 feet south of the site)	93-06 63rd Drive Rego Park, NY 11374
7	Sholom Daycare (about 1,600 feet southwest of the site)	6344 Wetherole Street Rego Park, NY 11374
8	All My Children Daycare & Nursery School (about 1,850 feet southeast of the site)	97-30 Queens Blvd Rego Park, NY 11374
9	Independent Kidz Daycare Inc (about 2,150 feet southwest of the site)	63-49 Alderton St Rego Park, NY 11374
10	IQ Panda Child Day Care (about 2,300 feet southwest of the site)	63-77 Alderton St Rego Park, NY 11374
11	Magic Years Daycare (about 2,400 feet northwest of the site)	90-20 55 Ave. Elmhurst, NY 11373

1.4 Site History

1.4.1 Historical Site Use

Historical Sanborn Fire Insurance Maps indicate that the site was vacant until at least 1931 with a creek (Horse Creek) transecting the central eastern portion of the site (former Lot 98) from west to east. Former 94th Place and 62nd Avenue were also shown as mapped by 1931. From 1950 onward, the site was occupied by various commercial facilities on the northern portion of the site, including a gasoline filling station (1950) (northwestern corner of former Lot 98), and a commercial trucking and private parking lot (1981 to present) and a vehicle repair shop (1995) (northeastern corner of former Lot 50). Evidence of commercial truck repair operations was documented near the former vehicle repair shop in 2003. A geophysical survey in 2004 identified potential underground storage tanks (USTs) associated with the former vehicle repair shop

1.4.2 Previous Environmental Reports

Previous environmental reports were reviewed and summarized below and are included in Appendix C.

- *Evaluation of Existing Parking Lot Fill, prepared by Langan Engineering and Environmental Services, P.C. (Langan), dated September 1994*
- *Phase I Environmental site Assessment (ESA), prepared by AKRF, Inc. (AKRF), dated April 30, 2003*

- *Phase II ESA, prepared by Roux Associates, Inc. (Roux), dated March 5, 2004*
- *Supplemental Phase II ESA, prepared by Roux, dated March 6, 2012*
- *Supplemental Subsurface Investigation (SSI) Technical Memorandum, Rego Center III, Rego Park, Queens, New York, prepared by Langan, dated October 19, 2021*

Evaluation of Existing Parking Lot Fill, dated September 1994

Langan completed an evaluation of subsurface conditions at the site as part of a larger investigation that included the property located to the southeast (Block 2084, Lot 101), which is currently occupied by the Rego Center Shopping Mall. Five of the 71 soil borings advanced during the investigation were located on former Block 2076, Lot 50 and former Block 2077, Lot 98. Total petroleum hydrocarbons (TPH) were identified in soil samples throughout the site at concentrations above 1,000 parts per million (ppm). Lead analyzed via Toxicity Characteristic Leaching Procedure (TCLP) was identified on the southeast part of the site (former Lot 98) at a concentration of 9.4 milligrams per liter (mg/L), which exceeds the United States Environmental Protection Agency Hazardous Waste Limit (USEPA HWL) of 5.0 mg/L.

Phase I ESA, dated April 30, 2003

AKRF prepared a Phase I ESA in April 2003 in accordance with ASTM E1527-00 for former Block 2076, Lot 50 and former Block 2077, Lot 98. At the time of the Phase I ESA, the site was an asphalt-paved parking lot. The following Recognized Environmental Conditions (RECs) were identified:

- Documented evidence of TPH and TCLP lead contamination, as identified in the above-referenced 1994 Evaluation of Existing Parking Lot Fill.
- Operation of a vehicle maintenance garage in a one-story building in the northeast part of former Lot 50.
- Historical operation of a gasoline filling station (1950) and a vehicle repair facility (1995) on the northern portion of the site.
- Historical off-site operation of a sewer disposal plant (1914 to 1950) and removal of a leaking UST on the southern adjoining property.

The Phase I ESA also documented active commercial trucking storage and maintenance operations on the central and northeastern portions of the site. The one-story former vehicle maintenance garage was vacant at the time of the site reconnaissance.

Phase II ESA, dated March 5, 2004

Roux completed a Phase II ESA in March 2004 to investigate RECs identified in the April 2003 Phase I ESA. The Phase II investigation included a geophysical survey, collection of soil samples from eight soil borings, and collection of groundwater samples from five monitoring wells. Field observations and laboratory analytical results are summarized below:

Geophysical Survey: Two anomalies indicative of USTs were identified about 40 feet east of the former vehicle repair facility on the northern portion of the site.

Soil: Lead was detected above Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Restricted Use Restricted-Residential (RURR) Soil Cleanup Objectives (SCOs) in two soil samples collected from the eastern portion of the site. TCLP lead exceeding the USEPA HWL was identified at one location in the southeast portion of the site (17.4 mg/L). Volatile organic compounds (VOCs) were not detected above the RURR SCOs.

Groundwater: Lead was detected in two unfiltered groundwater samples at concentrations above the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGVs) for Class GA groundwater.

Supplemental Phase II ESA, dated March 6, 2012

Roux completed a Supplemental Phase II ESA to investigate RECs identified in the April 2003 Phase I ESA and to further investigate findings from the March 2004 Phase II ESA. The investigation included a test pit excavation and collection of soil samples from eight soil borings. Field observations and laboratory analytical results are summarized below:

Site Geology and Hydrogeology: Soil borings were characterized by non-native fill consisting of fine to coarse sand and gravel with silt, brick, glass and wood fragments. Fill was identified at the terminal depth of the borings, which extended to about 15 feet below ground surface (bgs). Groundwater was identified between 11 and 15 feet bgs and was inferred to flow towards the southeast.

Field Observations: Organic vapors of up to 406 parts per million (ppm) and a "chemically treated wood odor" were observed in soil between about 10 and 15 feet bgs in a boring advanced on the southeastern portion of the site. Organic vapors of up to 15.6 and 45.2 ppm were also observed in soil between 9 and 14 feet bgs and between 1 and 12 feet bgs, respectively, in two separate borings on the western portion of the site. A test pit was excavated to expose the suspected USTs identified in the 2004 Phase II ESA; however, the excavation was abandoned at about 1 foot bgs due to water infiltration. Odors, organic vapor concentrations of up to 6.5 ppm,

and vehicle parts, oil filters, and other debris associated with historical vehicle repair were observed in the excavation.

Soil: Soil samples were analyzed for VOCs, semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides and TCLP metals. Four metals, including barium, lead, copper and mercury, exceeded the RURR SCOs in five locations throughout the site. TCLP lead was identified at two locations in the southwestern and northwestern portions of the site at concentrations of 29 mg/L and 32.7 mg/L, respectively, which exceed the USEPA HWL. Two pesticides, including 4'4'-DDD and 4'4'-DDE, exceeded the RURR SCOs in soil samples between 1 and 3 feet bgs in the eastern portion of the site.

Supplemental Subsurface Investigation Technical Memorandum, dated October 19, 2021

Langan performed a Supplemental Subsurface Investigation (SSI) to obtain current data and supplement previous documentation of subsurface contamination at the site. The SSI included a geophysical survey, advancement of 17 soil borings, and collection of 9 soil samples from 5 soil borings. The SSI confirmed Langan's prior assessment of site conditions and identified additional site contamination, including lead, copper, and several SVOCs at concentrations above the RURR SCOs.

Geophysical Survey: In addition to subsurface utilities, which were identified throughout the site, an approximately 8-foot by 15-foot geophysical anomaly resembling a potential UST was identified in the northern part of the site. Also, an anomaly indicative of a fuel fill port was identified in the northern sidewalk and connected to a buried pipe that extended about 50 feet southward onto the site before terminating about 30 feet east of the apparent UST.

Field Observations: Non-native fill was observed beneath the 3- to 4-inch-thick asphalt surface cover extending to depths between about 2 and 12 feet bgs. The fill primarily consists of fine- to medium-grained sand with varying amounts of slag, metal, wood, clay, silt, gravel, concrete, brick, and coal. Native soil was observed at depths between 4 and 8 feet bgs in 8 of the 17 borings and consists of fine- to medium-grained sand with varying amounts of gravel, clay and silt. Based on observations from a subsequent Remedial Investigation (RI) and from a 2021 geotechnical investigation conducted by Langan, the soil previously interpreted to be native is more likely non-native fill containing a lesser proportion of anthropogenic material. The apparent groundwater depth observed in the borings was between about 11 and 12 feet bgs. Soil recovered from nine borings exhibited indications of petroleum impacts, based on staining, odors, and/or photoionization detector (PID) readings above background. PID readings were between 0 and 50.6 ppm.

Soil: Samples were analyzed for VOCs, SVOCs, and metals under New York State Analytical Services Protocol (ASP) Category B. In addition, quality control/quality assurance (QA/QC)

samples, including a duplicate, field blank and trip blanks were collected and analyzed. VOCs were not detected at concentrations above the RURR SCOs. SVOCs were detected at concentrations above the RURR SCOs in two samples collected from 10 to 12 feet bgs and 0 to 2 feet bgs on the northwestern and southeastern portions of the site, respectively. Metals, including copper and lead, were detected at concentrations above the RURR SCOs in two samples collected from a boring on the southeastern portion of the site from 0 to 2 feet bgs and 6 to 8 feet bgs.

1.5 Significant Threat

NYSDEC has determined that the site does not pose a significant threat to human health and the environment.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The RI was completed between January 18 and February 18, 2022 in accordance with the NYSDEC-approved Remedial Investigation Work Plan (RIWP), dated December 3, 2021, 6 NYCRR Part 375-1, 3.8, and 6.8, NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for Site Investigation and Remediation (DER-10), and the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006, with updates. The objectives of the RI were to (1) supplement the existing environmental data to determine, to the extent possible, the nature and extent of contamination in soil, groundwater, and soil vapor at the site, and (2) investigate Areas of Concern (AOC).

2.1 Field Investigation

The RI consisted of the following:

- Advancement of 28 soil borings and collection of 59 grab soil samples (including QA/QC samples) for analysis for Part 375/Target Compound List (TCL) VOCs, SVOCs, pesticides, and PCBs, and Part 375/Target Analyte List (TAL) metals
- Advancement of 17 lead delineation soil borings at four locations and collection of 46 grab soil samples (including QA/QC samples) for analysis of total and TCLP lead
- Installation of 16 permanent groundwater monitoring wells and collection of one groundwater sample from each well, in addition to QA/QC samples, for analysis for Part 375/TCL VOCs, SVOCs, pesticides, and PCBs, and Part 375/TAL metals
- Surveying and synoptic gauging of all groundwater monitoring wells to evaluate groundwater elevation and flow direction
- Installation of 13 temporary soil vapor points, and collection of 13 soil vapor samples and one ambient air sample

2.1.1 Summary of Remedial Investigation Findings

The findings are based on data collected during previous investigations and this RI. Soil, groundwater, and soil vapor analytical results are shown on Figures 3A through 3C, Figures 4A through 4C, and Figure 5. The findings summarized herein are based on qualitative data (field observations and instrumental readings) and laboratory analytical soil, groundwater, and soil vapor sample results. The findings are as follows:

1. Stratigraphy: Based on observations during the RI and previous investigations, the subsurface profile generally consists of contaminated non-native fill to a depth of at least 15 feet bgs and up to 27 feet bgs. The fill generally consists of fine- to medium-grained sand with gravel, silt, clay, brick, concrete, and glass fragments. A silt and organic peat

layer with clay and/or fine sand was identified below the non-native fill in three borings on the western, northeastern, and eastern portions of the site. The top of the silt layer is between 17 and 19 feet bgs and extends to the boring terminations of 20 feet bgs. Data from a 2021 geotechnical investigation indicates that in some areas non-native fill extends to 27 feet bgs and the peat layer extends from below the non-native fill to between 23 and 32 feet bgs throughout the majority of the site, with the exception of the southwestern portion.

2. Hydrogeology: Synoptic groundwater measurements collected on March 17 and 18, 2022 indicated that groundwater depths were between 9.96 feet bgs in the northeast and 11.13 feet bgs in the southeastern portion of the site and at elevations between el. 4.40 in the northeast and el.7.17 in the western portion of the site. Groundwater is estimated to flow east towards Meadow Lake, which is about one mile from the site.

3. Hazardous Lead-impacted Soil: Previous investigations identified lead at concentrations above the USEPA HWL between 0 and 10 feet bgs at four locations on the western and southeastern portions of the site. Delineation soil sampling indicates that hazardous lead concentrations at two locations in the west and one in the southeast are limited to an area with an approximately 10-foot radius and extending to depths between 4 and 10 feet bgs. The vertical extent of hazardous lead has been delineated to 7 feet bgs at another location in the east (RA-8); however, supplemental delineation sampling will be conducted during the remediation phase at the 0- to 4-foot depth interval to delineate the lateral extent of hazardous lead in that area.

4. Petroleum-Impacted Soil: Soil recovered from the 1- to 4-foot and 2- to 4-foot depth intervals in two borings on the southeastern and central portions of the site exhibited petroleum-like odors and PID readings of 77.4 and 103.7 ppm, respectively. SVOCs were also detected in soil collected from the 13- to 15-foot depth interval on the northwestern portion of the site at concentrations one order of magnitude above those detected elsewhere at the site. The nuisance conditions and SVOC detections may be indicative of residual, degraded petroleum impacts.

5. Non-native fill Material: Samples of non-native fill collected from up to 20 feet bgs throughout the site contained SVOCs, PCBs, pesticides, and metals above the Part 375 Unrestricted Use (UU) and/or RURR SCOs. Several SVOCs were detected at concentrations above the UU SCOs and/or RURR SCOs to depths of up to 20 feet bgs in samples collected throughout the site. Perfluorooctanesulfonic acid (PFOS) was detected in the western portion of the site to depths of up to 3 feet bgs at concentrations above the UU guidance value presented in the June 2021 NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC's Part 375

Remedial Programs. The detected concentrations are generally typical of those that characterize non-native fill in New York City. Samples collected from the eastern portion of the site generally contained higher concentrations of metals, with a sample collected from the 13- to 15-foot depth interval in the eastern portion of the site containing the maximum detected concentrations for several metals, including zinc (11,000 mg/kg), silver (5.2 mg/kg), lead (10,100 mg/kg), chromium (III) (60 mg/kg), barium (1,340 mg/kg), and arsenic (39.8 mg/kg). Acetone and 2-butanone were detected at concentrations above the UU SCO in non-native fill samples collected from across the site; however, these compounds are common laboratory solvents associated with methanol preservation and may not be indicative of non-native fill.

6. Groundwater Impacts: SVOCs and dissolved barium and lead were detected at concentrations above the SGVs in monitoring wells throughout the site. The detections are attributable to metals and SVOC impacts within non-native fill, including entrained sediment within the groundwater samples. A single detection of chlorobenzene in a well on the central portion of the site indicates a localized occurrence from an off-site source. Perfluorooctanoic Acid (PFOA) and PFOS were detected in groundwater samples above the NYSDEC June 2021 Screening Levels for PFAS. A source of PFAS compounds was not identified.

7. Soil Vapor: One VOC, vinyl chloride, was detected at two locations on the central portion of the site above the minimum concentration for which NYSDOH recommends soil vapor mitigation. Cyclohexane was also detected at one location on the central portion of the site at a concentration one to two orders of magnitude above detections in other samples. On site-sources for vinyl chloride and cyclohexane were not identified. Detections of petroleum-related VOCs (i.e., benzene, toluene, ethylbenzene and total xylenes [BTEX]) were below 100 µg/m^3 and generally within a common order of magnitude across the site.

2.2 Geological Conditions

Geological and hydrogeological observations are described below. Soil boring logs, a groundwater contour map, and groundwater monitoring well construction logs are appended to the RIR.

2.2.1 Non-Native Fill

Non-native fill material was encountered beneath the surface cover and predominantly consists of dark brown to gray, fine- to coarse-grained sand and gravel with silt, brick, glass, concrete, and wood fragments. Fill was observed from surface grade to boring termination depths, which varied between 15 and 20 feet bgs.

2.2.2 Native Soil

Native soil encountered below non-native fill predominantly consists of fine- to medium-grained sand with varying amounts of fine gravel, peat, and silt. A silt layer with peat and/or fine sand was identified below the non-native fill in three borings on the western, northeastern, and eastern portions of the site. The top of the silt layer was between 17 and 19 feet bgs and extended to the termination depth of 20 feet bgs.

2.2.3 Bedrock

Bedrock was not encountered during the remedial investigation.

2.2.4 Hydrogeology

Synoptic groundwater-level measurements were collected on March 17 and 18, 2022, and the top of casing of each groundwater monitoring well was surveyed by Langan on April 4, 2022. Groundwater was observed at depths between 9.96 feet bgs and 11.13 feet bgs on the northeastern and southeastern portions of the site, respectively, and at elevations between el.4.40 and el. 7.17 on the northeastern and western portions of the site, respectively. Based on the data, the inferred direction of groundwater flow is to the east. The inferred direction of regional groundwater flow is east towards Meadow Lake, which is about 1.15 miles from the site.

2.2.5 Conceptual Site Model

A conceptual site model (CSM) has been developed based on the findings of the RI and previous investigations. The purpose of the CSM is to develop a simplified framework for understanding the distribution of impacted materials, potential migration pathways, and potentially complete exposure pathways.

Potential Sources of Contamination

Potential sources of contamination include:

- Contaminated soil and non-native fill material from unknown sources used as backfill (SVOCs, PCBs, pesticides, and metals in soil; and SVOCs and metals in groundwater)
- Historical petroleum releases from a historical filling station and vehicle repair (nuisance conditions in soil)
- Possible historical off-site uses (chlorobenzene and PFAS in groundwater, and vinyl chloride and cyclohexane in soil vapor)

Exposure Media

The impacted media include soil, groundwater, and soil vapor.

Several SVOCs and metals, total PCBs, and pesticides (4-4'-DDD, 4-4' DDE, and 4-4' DDT) were detected at concentrations above the UU and/or RURR SCOs, and PFOS was detected above the UU guidance value, in soil throughout the site. The impacts generally coincide with non-native fill, which extends to a depth of at least 15 feet bgs and up to 27 feet bgs. Hazardous lead-impacted soil also occurs between 0 and up to 10 feet bgs at four locations throughout the site.

SVOCs, metals, and PFAS were also detected in groundwater throughout the site, and the VOC chlorobenzene was detected in one groundwater sample. Vinyl chloride and cyclohexane were detected in soil vapor on the central portion of the site.

Receptor Populations

The site is currently operated as a parking lot. Current receptor populations are limited to visitors that use the parking lot, workers conducting subsurface investigation, and the community adjacent to the site. During site development, human receptors will be limited to construction and remediation workers, authorized guests visiting the site, and the public adjacent to the site. Under future conditions, receptors will include the new building tenants, workers, and visitors to the property, including children. The RI data indicate that the site is not a source of off-site contaminant migration.

2.2.6 Description of Areas of Concern

Based on the history of the site, the findings of previous environmental investigations, and the RI, the following AOCs were identified and are described below and shown on Figure 7.

AOC 1: Historical Vehicle Repair, Filling Station, and Potential USTs

AOC 1 Findings Summary

Investigation of AOC 1 included collection of soil and groundwater samples from six borings/monitoring wells on the northern portion of the site, and the collection of three soil vapor samples.

Petroleum-like odors and PID readings up to 103.7 ppm were identified in soil collected from the 2- to 4-foot depth interval in a boring on the central portion of the site and south of the former repair facility. The corresponding soil and groundwater analytical results from the boring did not indicate evidence of petroleum impacts. Petroleum-related compounds also were not detected at concentrations above the UU or RURR SCOs or SGVs in soil and groundwater samples collected from other target borings and monitoring wells within AOC 1. Dissolved-phase barium was detected in groundwater samples collected from two wells near the western boundary of the former repair facility at concentrations above the SGV. However, barium was not detected in the corresponding soil samples at concentrations above the UU or RURR SCOs and was also

detected at a similar order of magnitude in groundwater elsewhere on the site, including in wells on the northwestern and southeastern portions of the site.

Petroleum-related VOCs detected in the three soil vapor samples were generally of a similar order of magnitude to those detected elsewhere on site. A soil vapor sample located southeast of the former repair facility contained the chlorinated VOC vinyl chloride at a concentration above the minimum threshold for which soil vapor mitigation is recommended and contained cyclohexane at a concentration up to two orders of magnitude above detections elsewhere at the site. Soil and groundwater data do not indicate an on-site source for vinyl chloride or cyclohexane.

AOC 1 Conclusions

Although petroleum nuisance conditions, including organic vapors and petroleum-like odors, were identified in one soil sample within AOC 1, the observation does not correlate with analytical indications of petroleum or other impacts in soil, groundwater, or soil vapor. Vinyl chloride and cyclohexane detected in one soil vapor sample do not appear to originate from an on-site source. USTs and corresponding localized petroleum impacts associated with historical site use, including nuisance conditions, may still be encountered during future remedial excavation.

AOC 2: Petroleum Nuisance Conditions

AOC 2 Findings Summary

Investigation of AOC 2 included collection of soil samples from 28 soil borings, collection of groundwater samples from 16 monitoring wells, and collection of soil vapor samples from 13 sampling points.

The findings from samples within the footprint of the historical filling station and repair facilities are discussed above under AOC 1. Soil recovered from the 1- to 4-foot depth interval in a boring on the southeastern portion of the site exhibited petroleum-like odors and PID readings up to 77.4 ppm. The corresponding soil and groundwater analytical results from the boring did not indicate evidence of petroleum impacts.

Petroleum-related compounds also were not detected at concentrations above the UU or RURR SCOs or SGVs in soil and groundwater samples collected from other borings and monitoring wells within AOC 2. SVOCs were detected in soil collected from the 13- to 15-foot depth interval in a boring on the northwestern portion of the site at concentrations one order of magnitude above those detected elsewhere, with a maximum detection of 17 mg/kg for benzo(b)fluoranthene. The SVOCs may either reflect a degraded petroleum source or non-native fill conditions.

Petroleum-related VOCs detected in the soil vapor samples were generally of a similar order of magnitude to those detected elsewhere on site.

AOC 2 Conclusions

Although petroleum nuisance conditions, including organic vapors and petroleum-like odors, were identified in one soil sample within AOC 2, the observation does not correlate with analytical indications of petroleum or other impacts in soil, groundwater, or soil vapor. Localized petroleum impacts associated with historical site use, including nuisance conditions such as those encountered during the 1994, 2012, and 2021 investigations, may still be encountered during future remedial excavation.

AOC 3: Hazardous Lead-Impacted Soil

AOC 3 Findings Summary

Investigation of AOC 3 included collection of soil samples from one target boring at each of the four locations with historically documented hazardous concentrations of lead, three five-foot offset borings around each target location, and one 10-foot step out location for a total of 17 borings. Two soil samples were collected from each boring from depths ranging between 4 and 13 feet bgs, based on the depth at which hazardous lead was initial documented. TCLP lead was not detected at a concentration above the 5 mg/L USEPA HWL in any of the target location or offset borings. Total lead concentrations varied between 2.88 and 1,240 mg/kg, which exceeds the RURR SCO of 400 mg/kg. Total lead concentrations in other borings throughout the site were within a similar range as those observed in the delineation borings, with the exception of a lead detection of 10,100 mg/kg at the 12- to 15-foot depth interval in a boring on the eastern portion of the site.

AOC 3 Conclusions

Based on the absence of hazardous lead concentrations in the target and offset borings, the extent of lead exceeding the USEPA HWL at three boring locations has been delineated. The vertical extent of hazardous lead has been delineated to 7 feet bgs at the former location of boring RA-8 on the southeastern portion of the site; supplemental delineation sampling will be conducted during the remediation phase near the 0- to 4-foot depth interval to delineate the lateral extent of hazardous lead in that area. Groundwater data indicate that the hazardous lead impacts are not a source of contamination.

AOC 4: Fill of Unknown Origin

AOC 4 Findings Summary

Investigation of AOC 4 included all borings and monitoring wells, due to the prevalence of non-native fill throughout the site.

Soil Samples

Field screening and analytical results from non-native fill samples are summarized as follows:

- Non-native fill material was observed below impervious surface cover to the maximum boring depth of 20 feet bgs across the site; however, non-native fill extends to at least 27 feet bgs in some portions of the site, based on a 2021 geotechnical investigation.
- Seven SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene) were detected at concentrations above the UU and/or RURR SCOs in samples of fill material collected from 16 of the 28 soil borings. The SVOC concentrations exceeded the UU and/or RURR SCOs at depths ranging between 0 and 15 feet bgs.
- One or more of the following metals were detected at concentrations above the UU and/or RURR SCOs in non-native fill samples collected from all soil borings at depths ranging between 0 and 20 feet bgs: arsenic, barium, cadmium, chromium (III), copper, lead, mercury, nickel, selenium, silver, and zinc.
- Total PCBs were detected above the UU SCO in two borings on the southeastern portion of the site at depths between 1 and 3 feet bgs and two borings in the central portion of the site at depths between 0 and 3 feet bgs and between 13 and 15 feet bgs.
- Three pesticides, 4-4' DDE, 4-4' DDD, and 4-4' DDT, were detected above the UU SCOs in samples variously collected between 0 and 15 feet bgs in borings throughout the site.

Groundwater Samples

Groundwater is between about 10 and 11.5 feet bgs and therefore within the non-native fill stratum. One VOC, chlorobenzene, exceeded the SGV in one well on the south-central portion of the site, and at least one and up to seven of the SVOCs benzo[a]anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded the SGVS in 11 of the 16 monitoring wells. At least one and up to six of the dissolved metals barium, iron, lead, magnesium, manganese, and sodium exceeded the SGVs in each of the monitoring wells. PCBs and pesticides were not detected in any of the groundwater samples.

AOC 4 Conclusions

Non-native fill material throughout the site contains SVOCs, metals, PCBs, and pesticides at concentrations above the UU SCO and RURR SCOs. The exceedances extend to a depth of at least 15 feet bgs with maximum SVOCs and metals concentrations detected between 13 and 15 feet bgs on the northwestern and eastern portions of the site, respectively. The concentrations are generally typical of those observed in fill material; however, the SVOCs detected on the northwestern portion of the site in one boring may be indicative of degraded petroleum, as discussed for AOC 3. Metals concentrations, especially those for lead and barium, are generally higher in samples collected on the eastern portion of the site. Based on the location of these detections relative to the historical vehicle repair facility on the northern portion of the site, the concentrations are likely attributable to background conditions in non-native fill material.

The detection of SVOCs and some dissolved metals, including lead and barium, in groundwater correlates with detections of these analytes in corresponding samples of non-native fill. The SVOC detections are likely attributable to entrained sediment within the samples. Dissolved barium in particular was detected in several wells throughout the site at concentrations above the SGVs. Other metals detected in groundwater reflect a regional groundwater condition (i.e., iron, magnesium, manganese, and sodium). Similarly, the detection of the VOC chlorobenzene in one well above the SGVs appears to be a localized occurrence unrelated to an on-site source. Vinyl chloride detected in a soil vapor sample above the minimum threshold for which soil vapor mitigation is recommended could be potentially attributed to conditions in non-native fill; however, it is more likely related to an off-site source, based on its absence in soil and groundwater.

2.2.7 Nature and Extent of Contamination

Soil Contamination

Non-native fill material containing SVOCs, PCBs, pesticides, and metals at concentrations above the Part 375 UU SCOs and/or RURR SCOs was observed throughout the site. PFOS was also detected in four shallow samples between 0 and 3 feet bgs on the western portion of the site.

Contaminated non-native fill consisting predominantly of fine- to coarse-grained sand and gravel with silt, brick, glass, concrete, and wood fragments was observed across the site beneath the existing surface cover from surface grade to boring termination depths, which varied between 15 and 20 feet bgs. Based on data from a geotechnical investigation, non-native fill extends up to 27 feet bgs in some portions of the site. SVOCs, PCBs, pesticides, metals, and PFOS detected at concentrations above the Part 375 UU and RURR SCOs and UU guidance values for PFOS are likely related to the quality of non-native fill. Four areas contain lead at concentrations above the USEPA HWL, and petroleum nuisance conditions were observed in borings throughout the site.

The source of the lead impacts and nuisance conditions is either background conditions in non-native fill or undocumented localized releases associated with a historical filling station and vehicle repair facilities.

Groundwater Contamination

Groundwater contaminants included one VOC, several SVOCs and dissolved metals, and PFOA and PFOS. One VOC, chlorobenzene, was detected at a concentration above the SGV in one well near the southern boundary of the site. The detection appears to be unrelated to an on-site source.

At least one and up to seven SVOCs were detected in 11 of the 16 wells at concentrations above the SGVs, and at least one and up to six of the dissolved metals exceeded the SGVs in each of the monitoring wells. SVOC and some dissolved metal detections, including barium and lead, correlate with detections of these analytes in corresponding samples of non-native fill from the same locations. Other metals detected in groundwater reflect a regional groundwater condition (i.e., iron, magnesium, manganese, and sodium).

PFOA and PFOS were detected in 14 groundwater samples above the NYSDEC June 2021 Screening Levels. An on-site source of PFAS compounds was not identified.

Soil Vapor Contamination

Of the eight VOCs addressed in the NYSDOH decision matrices, vinyl chloride was detected in two soil vapor samples on the central portion of the site at concentrations above the NYSDOH minimum mitigation threshold criterion. One VOC, cyclohexane, was also detected in a soil vapor sample on the central portion of the site at a concentration up to two orders of magnitude higher than detections in other samples. An on-site source for vinyl chloride and cyclohexane in soil vapor was not identified.

Petroleum-related VOCs (i.e., BTEX) were detected in all soil vapor samples. Total BTEX concentrations were between 6.97 µg/m^3 in the north-central part of the site and 105.1 µg/m^3, in the eastern part of the site. Detections of individual petroleum-related VOCs were below 100 µg/m^3 and generally within a common order of magnitude across the site; potential soil vapor hot spots were not identified.

2.3 Qualitative Human Exposure Assessment

Based on the CSM and the review of environmental data, complete on-site exposure pathways appear to be present, in the absence of monitoring and mitigation or engineering controls (EC) (e.g., Construction Health and Safety Plan (CHASP) with a Community Air Monitoring Program (CAMP), capping system, etc.), during construction/remediation and future use conditions.

Complete exposure pathways have the following five elements: 1) a contaminant source; 2) a contaminant release and transport mechanism; 3) a point of exposure; 4) a route of exposure; and 5) a receptor population. A discussion of the five elements comprising a complete pathway as they pertain to the site is provided below.

2.3.1 Contaminant Sources

Potential sources of contamination include:

- Contaminated soil and non-native fill from unknown sources used as backfill (SVOCs, PCBs, pesticides, metals, and PFAS in soil; and SVOCs and metals in groundwater)
- Historical petroleum releases from historical filling station and vehicle repair (nuisance conditions in soil)
- Possible historical off-site uses (chlorobenzene and PFAS in groundwater, and vinyl chloride and cyclohexane in soil vapor)

2.3.2 Current Conditions

Contamination from on-site sources includes soil with varying concentrations of SVOCs, PCBs, pesticides, and metals and petroleum-related nuisance conditions and groundwater containing SVOCs and metals. Potential off-site contaminant sources have also impacted groundwater (chlorobenzene and PFAS) and soil vapor (vinyl chloride and cyclohexane).

On-site contaminant release and transport mechanisms include potential release and transport during penetration of the site cover for soil, groundwater, and soil vapor sampling. The potential receptors are visitors that use the parking lot and the community adjacent to the site. Under current conditions, the likelihood of exposure to humans is limited due to the following:

- The portion of the site currently accessible by visitors is covered with an asphalt-paved parking lot, which prevents direct contact with soil and groundwater.
- The unpaved portion of the site is enclosed by a secured, chain-link fence that prevents public access
- Sampling activities and any other site cover penetration would be completed in accordance with a HASP and CAMP that is designed to monitor and prevent exposure to soil, groundwater, and soil vapor contaminants.
- There are no enclosed structures at the site, thereby minimizing exposure to soil vapor.
- Groundwater at the site is not a potable water source

2.3.3 Construction/Remediation Activities

During remediation and the excavation and foundation construction stage of redevelopment, points of exposure include disturbed and exposed soil during excavation, and dust and potential organic vapors generated during excavation. Groundwater is expected to be encountered within the footprint of the proposed partial cellar, based on the measured groundwater depth of 10 to 12 feet bgs. Routes of exposure include ingestion and dermal absorption of contaminated soil and groundwater, inhalation of potential organic vapors arising from contaminated soil vapor, and inhalation of dust arising from contaminated soil. The receptor population includes construction and remediation workers and the public adjacent to the site.

All five elements exist; therefore, the potential for completed exposure pathways is present. The risk can be minimized by applying appropriate health and safety measures, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, maintaining site security, and wearing the appropriate personal protective equipment (PPE). In accordance with a HASP, this RAWP, and a CAMP, measures such as conducting an air monitoring program, donning PPE, and applying vapor and dust suppression measures to prevent off-site migration of contaminants during construction will be implemented. Such measures would minimize completion of these potential exposure pathways.

2.3.4 Proposed Future Conditions

For the proposed future conditions, residual contaminants may remain on-site, depending on the remedy, and would, to a lesser extent, include those listed under current conditions. If institutional controls (ICs) and/or ECs are not implemented, points of exposure include potential cracks in the foundation or lowest-level slab of the proposed development, and exposure during future soil-disturbing activities. Routes of exposure may include inhalation of vapors entering the building. The receptor population includes the building tenants, employees, visitors, and maintenance/utility workers. The possible routes of exposure can be avoided or mitigated by construction and maintenance of a site capping system (i.e., vapor barrier membrane and concrete building slab), and implementation of a Site Management Plan. To determine if any additional soil vapor mitigation measures are warranted, a soil vapor intrusion evaluation will be necessary after the remedial action.

2.3.5 Human Health Exposure Assessment Conclusions

1. Under current conditions, there is a marginal risk for exposure. The primary exposure pathways are dermal contact, ingestion, and inhalation of soil, soil vapor, or groundwater by site investigation workers. The exposure risks can be avoided or minimized by following the appropriate health and safety and vapor and dust suppression measures during investigation activities and maintaining the secured fencing around the unpaved area.

2. In the absence of ECs, there is a moderate risk of exposure during the construction-phase activities. The primary exposure pathways are:

    a. Dermal contact, ingestion, and inhalation of contaminated soil, groundwater, and soil vapor by construction workers.

    b. Dermal contact, ingestion, and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site.

    These can be avoided or minimized by performing community air monitoring and by following the appropriate health and safety, vapor and dust suppression, and site security measures.

3. The existence of a complete exposure pathway for site contaminants to human receptors during proposed future conditions is unlikely. The site will be remediated and ICs and ECs will be in place to mitigate exposure risk related to residual contamination that may remain on site. Further, groundwater is not used as a potable water source in New York City.

4. It is possible that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors for current, construction-phase, and/or future conditions. Monitoring and control measures have been and will continue to be used during investigation and construction to prevent completion of this pathway. Under future conditions, the site will be remediated and ECs will be implemented as necessary to prevent completion of this pathway.

2.4 Remedial Action Objectives

Based on the results of the RI, the following Remedial Action Objectives (RAO) have been identified:

2.4.1 Groundwater

RAOs for Public Health Protection:

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater

RAOs for Environmental Protection

- Remove the source of groundwater contamination if the site is determined to be the source of groundwater impacts

2.4.2 Soil

RAOs for Public Health Protection:

- Prevent ingestion/direct contact with contaminated soil
- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater contamination

2.4.3 Soil Vapor

RAOs for Public Health Protection:

- Mitigate the risk of impacts to public health resulting from existing, or the potential for, soil vapor intrusion into building(s) at the site based on the RI data.

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

This section presents an analysis of the proposed remedial alternatives that can potentially be achieved under the BCP. The SCOs for Alternative I would be the Part 375 UU SCOs under a Track 1 cleanup. The proposed SCOs for Alternative II are RURR SCOs under a combined Track 2 and Track 4 cleanup. Both alternatives are expected to achieve the established RAOs.

3.1 Identification of Standards, Criteria and Guidance

In accordance with New York Environmental Conservation Law (ECL) §27-1415 and DER-10, the objectives of the remedial action are to: (1) reduce the concentrations of contaminants of concern at the site to meet those levels that will protect public health and the environment, and (2) isolate the site from migration of contaminated groundwater and soil vapor from potential off-site sources. In accordance with DER-10, remedial alternatives will be developed that eliminate or mitigate on-site environmental impacts or human exposures, to the extent practical, resulting from off-site contamination. Where identifiable on-site sources of contamination are found, the sources will be removed or treated to the extent practical.

Also in accordance with DER-10, the RAOs for this site are defined as medium-specific objectives for the protection of public health and the environment and are developed based on contaminant-specific standards, criteria, and guidance (SCG).
The SCGs for the site include:

- NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (issued May 3, 2010, latest update April 9, 2019)
- NYSDEC DER-23 Citizen Participation Handbook for Remedial Programs (March 2010)
- NYSDEC DER-32 Brownfield Cleanup Program Applications and Agreements (June 2017)
- NYSDEC TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (1998)
- NYSDEC TOGS 5.1.8 – New York State Stormwater Management Design Manual (2008)
- NYSDEC TOGS 5.1.10 – New York Standards and Specifications for Erosion and Sediment Controls (2005)
- NYSDEC CP-51 - Soil Cleanup Guidance (2010)
- NYSDEC CP-43 Groundwater Monitoring Well Decommissioning Policy (2009)

- NYSDOH – Guidance for Evaluating Soil Vapor Intrusions in the State of New York (2006) and subsequent updates
- Title 10 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Chapter 1, Part 5-1 – Drinking Water Supplies, Public Water Systems
- 6 NYCRR Part 360 – General Provisions
- 6 NYCRR Part 364 – Waste Transporter Permits
- 6 NYCRR Part 370 – Hazardous Waste Management System
- 6 NYCRR Part 375 – Environmental Remediation Programs
- 6 NYCRR Part 376 – Land Disposal Restrictions
- 6 NYCRR Part 700-706 – Surface Water and Groundwater Classification Standards
- 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Regulations
- Code of Federal Regulations (CFR) Title 29 Part 1910.120 – Hazardous Waste Operations and Emergency Response Standard
- CFR Title 29 Part 1926 – Safety and Health Regulations for Construction
- NYSDEC Spill Response Guidance Manual
- NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances Under NYSDEC's Part 375 Remedial Programs (June 2021)

3.2 Technical Description of Alternative I – Track 1

Alternative I, a Track 1 remedy, would include implementation of the following remedial elements.

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, community/residents, and the environment during remediation and construction activities.
- Removal and management of the asphalt surface cover as C&D debris by the contractor in accordance with Part 360 and 361 regulations. Review and certification of C&D transport and disposal methodologies is not a requirement of the RE. The RE is responsible for documenting that C&D debris is not comingled with contaminated site soil and fill.

- Implementation of preliminary waste characterization, as required, including lateral delineation sampling of a hazardous lead hot spot on the southeastern portion of the site (RA-8), to facilitate off-site disposal of excavated material.
- Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
- Decommissioning of monitoring wells.
- Construction of the support of excavation (SOE) system to facilitate excavation of soil/fill that exceeds the UU SCOs.
- Excavation and off-site disposal of four previously delineated hazardous lead hotspots, and collection of confirmation endpoint samples.
- Dewatering and treatment, as necessary, to facilitate SOE installation and to accommodate the removal of soil that exceeds UU SCOs, and discharge of dewatering fluids in accordance with a New York City Department of Environmental Protection (NYCDEP) sewer discharge permit.
- Excavation, stockpiling, and off-site transport of soil exceeding UU SCOs as defined by 6 NYCRR Part 375-6.8.
- Removal, decommissioning, and off-site disposal of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Screening for indications of contamination (by visual means, odor, and monitoring with a PID) of excavated soil/fill during intrusive site work.
- Appropriate off-site disposal of non-native fill and soil from the site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
- Collection and analysis of confirmation soil samples to confirm UU SCOs are achieved.
- Backfilling of remediated areas to development grade with documented soil meeting UU SCOs, virgin stone, or recycled concrete aggregate (RCA) from a 6 NYCRR Part 360 NYSDEC-registered facility and in compliance with Part 360.

The Alternative I remediation extent is shown on Figure 8 and is based on data presented in the RIR. UU SCOs are provided in Table 1. The requirements for each of the Alternative I tasks are described below.

3.2.1 On-Site Worker, Public Health, and Environmental Protection

A site-specific CHASP would be enforced during excavation to protect on-site workers from accidents and acute and chronic exposures to the identified contaminated media. Public health would be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP would include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Field personnel would monitor site perimeters for visible dust and odors. The environment would be protected by implementing and enforcing the appropriate soil erosion prevention measures.

3.2.2 Documentation of Soil/C&D Material Separation during Surface Cover Removal

The asphalt surface cover would be removed by the contractor and managed as C&D debris in accordance with Part 360 and 361 to allow for SOE installation and remedial excavation. Review and certification of C&D transport and disposal methodologies is not a requirement of the RE. The RE is responsible for documenting that C&D debris is not comingled with contaminated site soil and fill.

3.2.3 Preliminary Waste Characterization Sampling

A waste characterization study would be performed, as warranted, for soil intended for off-site disposal in a manner acceptable to the receiving facility and in conformance with applicable permits. As part of the waste characterization, soil samples would be collected near the former RA-8 soil boring on the southeastern part of the site to delineate the lateral extent of hazardous lead between 0 and 4 feet bgs; the vertical extent of hazardous lead has been delineated in that area. The lateral and vertical extent of hazardous lead has been delineated in other areas where hazardous lead was identified during the RI. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results would be reported in the Final Engineering Report (FER). Data available for excavated soil/fill to be disposed of at a given facility would be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

3.2.4 Soil Erosion, Pollution, and Sediment Control Measures

A Stormwater Pollution Prevention Plan (SWPPP) would be prepared during the project design process and provided to NYSDEC when completed. Erosion and sediment controls for the site would be designed in conformance with requirements presented in the New York State Standards and Specifications for Erosion and Sediment Control. Best Management Practices (BMP) would be employed to mitigate erosion and prevent the migration of sediment off site throughout construction.

3.2.5 Monitoring Well Decommissioning

The existing groundwater monitoring wells would be decommissioned in accordance with NYSDEC CP-43 Groundwater Monitoring Well Decommissioning Policy. The only exception to this is if the full length of the well is to be excavated during remediation and development. In that case, all well materials would be removed in conjunction with excavation. Well decommissioning would be performed by an experienced driller and logged by the driller and field personnel supervised by the RE. Decommissioning documentation would be provided in the FER.

3.2.6 Support of Excavation

An SOE system would be constructed to accommodate removal of soil that exceeds UU SCOs. Remedial excavation along the site perimeter would extend below the water table in some areas to a depth of 25 feet bgs, or greater, if end-point sampling indicated exceedance of UU SCOs. Excavation would extend below the water table across the western, central, and northeastern portions of the site.

3.2.7 Removal of Hazardous Lead-Impacted Soil

Lead concentrations exceeded the USEPA HWRLs at four former boring locations at depths of 6 to 8 feet bgs (RA-16) and 8 to 10 feet bgs (RA-9) in the western portion of the site and 0 to 4 feet bgs (RA-8 and P-67) in the southeastern portion of the site. The lateral and vertical extent of each area, with the exception of RA-8, were delineated during the RI. The lateral extent of hazardous lead impacts around RA-8 would be delineated during waste characterization sampling, as described above. Based on the extents identified during delineation sampling, the hazardous lead-impacted soil in the western and southeastern portions of the site would be excavated and disposed of at a facility permitted to accept hazardous waste. The Participant would obtain a USEPA Resource Conservation and Recovery Act (RCRA) hazardous waste generator identification number prior to excavating and disposing of the soil. Following excavation of the hazardous lead-impacted hot spots, one confirmation endpoint sample would be collected from the base and one endpoint sample would be collected from each of the four sidewalls of each excavation for total and TCLP lead analysis, per the frequencies described in DER-10, Section 5.4(b)5, to confirm that surrounding soil does not exceed the USEPA HWRL.

3.2.8 Excavation Dewatering

Dewatering would be required to achieve a Track 1 UU SCO cleanup. The contractor would either dispose of the accumulated water at an off-site disposal facility permitted to accept the waste or follow the Rules of the City of New York (RCNY), Title 15, Chapter 19, Use of the Public Sewers and the NYCDEP "Procedure for Obtaining Letter of Approval for Groundwater Discharge to Sanitary or Combined Sewer" and would use the approval to obtain a Temporary Discharge of

Groundwater into the City Sewer System Permit. Dewatering would need, at a minimum, a settling tank prior to discharge to the sewer. Additional pretreatment (e.g., bag filters, oil-water separators, carbon filtration, etc.) may be required prior to discharge to the New York City sewer system. If daily discharge exceeds 10,000 gallons, the contractor would also have to obtain approval from NYCDEP's Bureau of Water and Sewer Operations, Chief of Permitting and Compliance. Dewatering would also require receipt of an NYSDEC Long Island Well Permit.

3.2.9 Soil/Fill Removal

SVOCs, metals, PCBs, and pesticides were detected in non-native fill at concentrations that exceed the UU SCOs. To achieve a Track 1 cleanup, soil/fill removal and disposal would extend from surface grade to depths ranging from 14 to 25 feet bgs. Excavation for foundation construction would extend to about 15 feet bgs in the western, central, and northeastern portions of the site and to about 2 feet bgs in the eastern portion of the site and in areas outside of the building footprint. The estimated volume of soil and non-native fill requiring removal and off-site disposal for a Track 1 cleanup is approximately 116,423 cubic yards, with the final volume depending on the exact depth of additional/fill that exceeds UU SCOs based on waste characterization and confirmation sampling.

3.2.10 UST System Removal

Any USTs encountered during remedial excavation would be decommissioned in accordance with applicable NYSDEC tank closure requirements, including DER-10 Section 5.5, 6 NYCRR Part 613.9, and NYSDEC CP-51. USTs and/or associated appurtenances would be registered and administratively closed with the NYSDEC PBS unit. Petroleum-impacted soil/fill, if encountered, would be excavated, stockpiled separately, characterized, and removed for off-site disposal at a permitted disposal facility in accordance with applicable regulations. If the area-wide remedial excavation does not extend beyond the bottom of the encountered tank, additional confirmation soil samples under the tank excavation would be collected, per DER-10.

3.2.11 Confirmation Soil Sampling

Per NYSDEC DER-10, confirmation soil samples would be collected from the excavation base at a frequency of one per 900 square feet. Sidewall samples would not be collected from the site perimeter because SOE measures (e.g., sheeting and secant pile wall) would preclude access to soil along excavation sidewalls. An estimated 155 confirmation soil samples, plus QA/QC samples, would be collected and analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals including hexavalent and trivalent chromium, PFAS, and 1,4-dioxane. A reduced-frequency confirmation sampling plan could be proposed, with supporting rationale, in accordance with DER-10 Section 1.6.

3.2.12 Excavation Backfill

Areas of the site requiring over-excavation to achieve a Track 1 cleanup would be backfilled to development grade (i.e., the grade required to complete construction of the foundation components). Excavation backfill would comply with 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e)10, and Appendix 5.

Imported material would consist of fill that meets UU SCOs or other acceptable fill such as virgin stone from a quarry or RCA. If RCA is imported to the site, it would come from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of RCA acquisition. RCA imported from compliant facilities would not require chemical testing, unless required by NYSDEC under its terms for operation of the facility. Imported RCA must be derived from recognizable and uncontaminated concrete (less than 10% by weight passing through a No. 80 sieve). RCA is not acceptable for, and would not be used as, site cover or drainage material. An estimated 69,830 cubic yards of backfill would be required to raise the site to development grade upon completion of the Track 1 remedial excavation.

3.3 Technical Description of Alternative II – Combined Track 2 and 4

Alternative II consists of a combined Track 2 and Track 4 remedy. The western, central, and northeastern portions of the site would be remediated to a Track 2 Restricted-Residential Use cleanup, during which contaminant source material would be removed and fill/soil exceeding the RURR SCOs would be removed to a depth of 15 feet bgs (6 NYCRR Part 375-3.8[e][2]); soil/fill determined to be a contaminant source would be removed, if present, below 15 feet. The eastern portion of the site and areas outside of the building footprint would be remediated to a Track 4 cleanup with RURR SCOs, during which the top two feet of fill/soil exceeding the RURR SCOs and underlying contaminant source material would be removed; residual contamination would remain in place and would be maintained with ECs and ICs (6 NYCRR Part 375-3.8[e][4]). The Track 2 portion of the site would be developed with a cellar and cover about 96,200 square feet. The Track 4 portion would be developed with a slab-on-grade building and exterior areas covered with paving or landscaping and would cover about 43,200 square feet. The extents of the proposed Track 2 and Track 4 areas are shown in Figure 9.

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, the community, and the environment during remediation and construction activities.
- Removal and management of the asphalt surface cover as C&D debris in accordance with Part 360 and 361 regulations by the contractor. Review and certification of C&D transport and disposal methodologies is not a requirement of the RE. The RE is responsible for documenting that C&D debris is not comingled with contaminated site soil and fill.

- Implementation of preliminary waste characterization, as required, including lateral delineation sampling of a hazardous lead hot spot on the southeastern and Track 4 portion of the site (RA-8), to facilitate off-site disposal of excavated material.
- Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
- Decommissioning of monitoring wells.
- Construction of the SOE system to facilitate excavation of contaminant source material throughout the site and excavation of soil/fill that exceeds the RURR SCOs to a maximum depth of 15 feet bgs in the Track 2 remedy area and excavation of soil/fill exceeding the RURR SCOs to a depth of 2 feet bgs in the Track 4 remedy area. No contaminant source will remain below 15 feet bgs.
- Excavation and off-site disposal of four previously delineated hazardous lead hotspots, including two hotspots each in the Track 2 and Track 4 areas, and collection of confirmation endpoint samples.
- Excavation and off-site disposal of soil exhibiting petroleum nuisance conditions between 1 and 4 feet bgs in the Track 4 area, and collection of documentation endpoint samples.
- Dewatering and treatment, as necessary, to facilitate SOE installation and to accommodate the removal of contaminant source material throughout the site and soil that exceeds RURR SCOs in the Track 2 area, and discharge of dewatering fluids in accordance with a NYCDEP sewer discharge permit.
- Excavation, stockpiling, off-site transport of contaminant source material throughout the site, soil exceeding RURR SCOs to a maximum depth of 15 feet bgs in the Track 2 area, per 6 NYCRR Part 375-3.8[e][2], and soil exceeding RURR SCOs within the upper two feet to allow for construction of ECs in the Track 4 area.
- Removal, decommissioning, and off-site disposal of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Screening for indications of contamination (by visual means, odor, and monitoring with a PID) of excavated soil/fill during intrusive site work.
- Appropriate off-site disposal of non-native fill and soil from the site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
- Collection and analysis of confirmation soil samples in the Track 2 area to confirm RURR SCOs are achieved and documentation soil samples in the Track 4 area to document post-excavation conditions in relation to Track 4 SCOs; samples would be collected from the

excavation base and, to the extent possible, sidewalls of the excavation in accordance with DER-10.

- Placement of a physical demarcation layer in the Track 4 area where contamination remains and not covered by impervious surfaces, consisting of orange snow fencing or equivalent material, at the excavation bottom prior to backfilling.
- Backfilling of remediated areas to development grade with documented soil meeting the lower of RURR and Protection of Groundwater (PGW) SCOs, virgin stone, or RCA from a 6 NYCRR Part 360 NYSDEC-registered facility and in compliance with Part 360.
- Capping of Track 4 excavated areas with a cover system consisting of a reinforced concrete building slab in the Track 2 area and a composite cover system consisting of a reinforced concrete building slab beneath the new building, and concrete pavers and a minimum of two feet of imported clean fill in the exterior portions of the Track 4 area.
- Establishment of a NYSDEC-approved Site Management Plan (SMP) to provide for long-term management of ECs and ICs, including the performance of periodic inspections and certification that the controls are performing as they were intended.
- Recording of an Environmental Easement to memorialize the remedial action and the ECs and ICs to mandate that owners of the site continue to maintain these controls as required.

The Alternative II remediation extents are shown on Figure 9 and are based on data presented in the RIR and the proposed development plans. Track 2 and Track 4 SCOs are provided in Tables 2 and 3, respectively. The requirements for each of the Alternative II tasks are described below.

3.3.1 On-Site Worker, Public Health, and Environmental Protection

A site-specific CHASP would be enforced during excavation to protect on-site workers from accidents and acute and chronic exposures to the identified contaminated media. Public health would be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP would include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Field personnel would monitor site perimeters for visible dust and odors. The environment would be protected by implementing and enforcing the appropriate soil erosion prevention measures.

3.3.2 Documentation of Soil/C&D Material Separation during Surface Cover Removal

The asphalt surface cover would be removed by the contractor and managed as C&D debris in accordance with Part 360 and 361 to allow for SOE installation and remedial excavation. Review

and certification of C&D transport and disposal methodologies is not a requirement of the RE. The RE is responsible for documenting that C&D debris is not comingled with contaminated site soil and fill.

3.3.3 Preliminary Waste Characterization Sampling

A waste characterization study would be performed, as warranted, for soil intended for off-site disposal in a manner acceptable to the receiving facility and in conformance with applicable permits. As part of the waste characterization, soil samples would be collected near the former RA-8 soil boring on the southeastern part of the site in the Track 4 cleanup area to delineate the lateral extent of hazardous lead between 0 and 4 feet bgs; the vertical extent of hazardous lead has been delineated in that area. The lateral and vertical extent of hazardous lead has been delineated in other areas where hazardous lead was identified during the RI. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results would be reported in the FER. Data available for excavated soil/fill to be disposed of at a given facility would be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

3.3.4 Soil Erosion, Pollution, and Sediment Control Measures

A SWPPP would be prepared during the project design process and provided to NYSDEC when completed. Erosion and sediment controls for the site would be designed in conformance with requirements presented in the New York State Standards and Specifications for Erosion and Sediment Control. BMPs would be employed to mitigate erosion and prevent the migration of sediment off site throughout construction.

3.3.5 Monitoring Well Decommissioning

The existing groundwater monitoring wells would be decommissioned in accordance with NYSDEC CP-43 Groundwater Monitoring Well Decommissioning Policy. The only exception to this is if the full length of the well is to be excavated during remediation and development. In that case, all well materials would be removed in conjunction with excavation. Well decommissioning would be performed by an experienced driller and logged by the driller and field personnel supervised by the RE. Decommissioning documentation would be provided in the FER.

3.3.6 Support of Excavation

An SOE system would be constructed to accommodate removal of contaminant source material, including hazardous lead-impacted soil, and soil that exceeds RURR SCOs to a maximum depth of 15 feet bgs in the Track 2 cleanup area and soil that exceeds the RURR SCOs to 2 feet bgs in the Track 4 cleanup area. Remedial excavation along the site perimeter would extend below the

water table in some areas to a maximum depth of 15 feet bgs in the Track 2 area. General excavation would extend below the water table to about 15 feet bgs throughout the Track 2 area.

3.3.7 Removal of Hazardous Lead-Impacted Soil

Lead concentrations exceeded the USEPA HWRLs at four former boring locations at depths of 6 to 8 feet bgs (RA-16) and 8 to 10 feet bgs (RA-9) in the Track 2 portion of the site and 0 to 4 feet bgs (RA-8 and P-67) in the Track 4 portion of the site. The lateral and vertical extent of each area, with the exception of RA-8, were delineated during the RI. The lateral extent of hazardous lead impacts around RA-8 would be delineated during waste characterization sampling, as described above. Based on the extents identified during delineation sampling, the hazardous lead-impacted soil would be excavated and disposed of at a facility permitted to accept hazardous waste. The Participant would obtain a USEPA RCRA hazardous waste generator identification number prior to excavating and disposing of the soil. Following excavation of the hazardous lead-impacted hot spots, one confirmation endpoint sample would be collected from the base and one endpoint sample would be collected from each of the four sidewalls of each excavation for total and TCLP lead analysis, per the frequencies described in DER-10, Section 5.4(b)5, to confirm that surrounding soil does not exceed the USEPA HWRL.

3.3.8 Removal of Soil Exhibiting Nuisance Conditions

Soil at the 1- to 4-foot depth interval in former boring SB-21 on the southeastern portion of the site (Track 4 area) exhibited petroleum-like odors and PID readings up to 77.4 ppm. Soil exhibiting nuisance conditions at that location would be excavated and disposed of at an appropriate facility. Following excavation, documentation endpoint samples would be collected from the base at a frequency of 1 per 900 square feet and endpoint samples would be collected from each of the four sidewalls at a frequency of 1 per 30 linear feet to document final conditions in the former hot spot area. The endpoint samples would be analyzed for CP-51 list VOCs and SVOCs.

3.3.9 Excavation Dewatering

Dewatering would be required to achieve a Track 2 RURR SCO cleanup in the western, central, and northeastern portions of the site. The contractor would either dispose of the accumulated water at an off-site disposal facility permitted to accept the waste or follow the RCNY, Title 15, Chapter 19, Use of the Public Sewers and the NYCDEP "Procedure for Obtaining Letter of Approval for Groundwater Discharge to Sanitary or Combined Sewer" and would use the approval to obtain a Temporary Discharge of Groundwater into the City Sewer System Permit. Dewatering would need, at a minimum, a settling tank prior to discharge to the sewer. Additional pretreatment (e.g., bag filters, oil-water separators, carbon filtration, etc.) may be required prior to discharge to the New York City sewer system. If daily discharge exceeds 10,000 gallons, the contractor would also have to obtain approval from NYCDEP's Bureau of Water and Sewer

Operations, Chief of Permitting and Compliance. Dewatering would also require receipt of an NYSDEC Long Island Well Permit.

3.3.10 Soil/Fill Removal

SVOCs, metals, PCBs, and pesticides were detected in non-native fill at concentrations that exceed the RURR SCOs. To achieve a Track 2/Track 4 cleanup, soil/fill removal and disposal would extend from surface grade to depths ranging from 2 to 15 feet bgs in the Track 2 area and from 2 to 9 feet bgs in the Track 4 area. Excavation for foundation construction would extend to about 15 feet bgs in the Track 2 area and to about 2 feet bgs in the Track 4 area. The estimated volume of soil and non-native fill requiring removal and off-site disposal for a combined Track 2/Track 4 cleanup is approximately 51,091 cubic yards, with the final volume depending on the exact depth of additional/fill that contains contaminant source material and exceeds RURR SCOs in the Track 2 portion of the site, based on waste characterization and confirmation sampling.

3.3.11 UST System Removal

Any USTs encountered during remedial excavation would be decommissioned in accordance with applicable NYSDEC tank closure requirements, including DER-10 Section 5.5, 6 NYCRR Part 613.9, and NYSDEC CP-51. USTs and/or associated appurtenances would be registered and administratively closed with the NYSDEC PBS unit. Petroleum-impacted soil/fill, if encountered, would be excavated, stockpiled separately, characterized, and removed for off-site disposal at a permitted disposal facility in accordance with applicable regulations. If the area-wide remedial excavation does not extend beyond the bottom of the encountered tank, additional confirmation soil samples under the tank excavation would be collected, per DER-10.

3.3.12 Confirmation and Documentation Soil Sampling

Per DER-10, post-excavation confirmation samples would be collected from the Track 2 area to confirm that all soil exceeding the RURR SCOs has been removed to a depth of 15 feet bgs, and documentation samples would be collected from the Track 4 area to document the soil levels achieved by the remedy and inform the SMP. Track 4 area remaining soil that may exceed the SCOs would be controlled with ICs and ECs. Sidewall samples would be collected from the vertical midpoint of any excavation sidewall that is not obstructed by SOE. Considering the expansive size of the site, confirmation and documentation soil samples would be collected from the excavation base at a reduced sampling frequency of one sample per 2,000 square feet of excavation base, and one sample per 50 linear feet of sidewall. If contaminant source areas are encountered during the remedial excavation (e.g., petroleum-impacted soil), confirmation/documentation samples would be collected at a frequency of one sample per 900 square feet of excavation base, and one sample per 30 linear feet of sidewall in those areas.

An estimated 51 base confirmation and 19 documentation soil samples (plus QA/QC samples) would be collected. No sidewall documentation samples are expected, because sidewall samples would not be collected in areas where the SOE obstructs access to sidewall soil, sidewall soil is off-site. Should the contractor slope down to contaminant source removal areas, if identified, at a slope greater than 1:1, then vertical sidewall samples would be collected. Collection of the sidewall samples would be determined in the field, communicated to NYSDEC via daily field reports, and would follow the above sampling frequency.

Confirmation and documentation samples would be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, cyanide, metals (including hexavalent and trivalent chromium), 1,4-dioxane, and PFAS compounds

3.3.13 Excavation Backfill

Areas of the site requiring over-excavation to achieve a Track 2/Track 4 cleanup would be backfilled to development grade (i.e., the grade required to complete construction of the foundation components and exterior cover system). Excavation backfill would comply with 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e)10, and Appendix 5.

Imported material would consist of fill that meets the lesser of the RURR and the PGW SCOs or other acceptable fill such as virgin stone from a quarry or RCA. If RCA is imported to the site, it would be delivered from an NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of RCA acquisition. RCA imported from compliant facilities would not require chemical testing, unless required by NYSDEC under its terms for operation of the facility. Imported RCA must be derived from recognizable and uncontaminated concrete (less than 10% by weight passing through a No. 80 sieve). RCA is not acceptable for, and would not be used as, site cover or drainage material. An estimated 58 cubic yards of backfill would be required to raise the site to development grade upon completion of the hazardous lead- impacted soil removal and removal of the nuisance condition in the Track 4 and southeastern portion of the site. Where portions of the Track 4 area are not covered by impervious surfaces, a physical demarcation barrier consisting of snow fencing would be placed at the excavation bottom prior to backfilling.

3.3.14 Composite Cover System

A composite site cover system consisting of a reinforced concrete foundation slab would be constructed within the footprint of the new building on the Track 2 and Track 4 portions of the site. The site cover system would serve as an engineering control for the protection of human health on the Track 4 portion of the site by preventing contact with residual site soil and groundwater. Additionally, to incorporate green remediation principles and techniques to the extent feasible in the development at this site, the building will include as an element of

construction a minimum 20-mil vapor barrier/waterproofing membrane on the foundation, which may improve energy efficiency.

3.3.15 Site Management Plan and Environmental Easement

An environmental easement (EE) would be recorded that references ICs and ECs that are part of the selected remedy, which would be binding upon all subsequent owners and occupants of the property. The ICs would perform the following:

- Restrict site use to restricted-residential, commercial, and industrial uses, although land use is subject to local zoning laws
- Restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDEC or NYSDOH
- Require implementation of an NYSDEC-approved SMP
- Require the completion and submission to the NYSDEC of a periodic certification of ICs and ECs in accordance with Part 375
- Include notice of use restrictions of the site soil

The ICs required in the EE include the requirements for the operation, maintenance, and monitoring of the ECs, which consists of the composite cover system described in this alternative and any additional ECs established through the SMP under future site development.

The SMP would identify all use restrictions, ECs, and long-term monitoring and maintenance requirements. The SMP provides a plan that, if followed, would ensure the ICs and/or ECs remain in place and are effective. The SMP would include, but may not be limited to:

- An Excavation Work Plan, which details the provisions for management of future excavations in areas of remaining contamination
- Descriptions of the EE provisions, including any land use, and/or groundwater use restrictions
- Provisions for evaluation of the potential for soil vapor intrusion for any buildings developed on the site
- Provisions for the management and inspection of the identified ECs
- Descriptions for maintaining site access controls and NYSDEC notification
- Steps necessary for the periodic reviews and certification of the ICs and/or ECs

- A Monitoring Plan to assess the performance and effectiveness of the remedy, which includes, but may not be limited to:
    - Evaluation for vapor intrusion for any future buildings developed on the site, beyond the currently envisioned development, as may be required by the IC and EC Plan discussed above
    - A schedule of monitoring and frequency of submittals to NYSDEC

3.4 Evaluation of Remedial Alternatives

The following is an evaluation of the proposed remedial alternatives based on the NYSDEC BCP remedy evaluation criteria listed below. The first two criteria are considered "threshold criteria" and the remaining criteria are "balancing criteria". A remedial alternative must meet the threshold criteria in order to be considered and evaluated further under the balancing criteria.

- Protection of human health and the environment
- Compliance with standards, criteria, and guidance (SCG)
- Short-term effectiveness and impacts
- Long-term effectiveness and impacts
- Reduction of toxicity, mobility, or volume of contaminated material
- Implementability
- Cost effectiveness
- Community acceptance
- Land use

3.4.1 Protection of Public Health and the Environment

Alternative I – The remedy would eliminate pathways of exposure from on-site contaminated media. Remediating the site to Track 1 standards would result in the removal of 116,423 cubic yards of soil with contaminant concentrations above UU SCOs. The RAOs for public health and environmental protection would be met through the removal of contaminated soil, which would eliminate any possibility for ingestion and inhalation of or dermal contact with contaminated soil particles. Since no ICs and ECs would be required for this remedy to maintain the site in the future, this remedy is the most protective of human health and the environment.

Alternative II – The remedy would mitigate pathways of exposure from on-site contaminated media. A Track 2/Track 4 cleanup would result in the removal and off-site disposal of on-site soil to the proposed remedial excavation depth between about 2 feet and 15 feet bgs in the Track 2

area and between about 2 feet and 9 feet bgs in the Track 4 area. Development-related excavation would extend to a minimum depth of about 15 feet bgs in the Track 2 area and about 2 feet bgs in the Track 4 area. Excavation beyond the proposed remediation depths would be performed to remove potential petroleum-impacted soil or soil indicative of a potential contaminant source or exhibiting nuisance conditions, if observed. Residual contaminants may remain in some areas, provided they are not a source of contamination. The RAOs for public health and environmental protection would be met through the combination of contaminant removal, ECs (including site capping in the Track 4 area), and ICs (including an EE and SMP). In addition, groundwater in Queens is not used as a source of drinking water.

3.4.2 Compliance with Standards, Criteria, and Guidance

Both remedial alternatives comply with applicable SCGs listed in Section 3.1 by removing on-site sources of contamination to achieve the RAOs. During implementation of either remedy, protection of public health and the environment would be maintained by enforcing site-specific CHASP and CAMP. Occupational Safety and Health Administration (OSHA) requirements for on-site construction safety would be followed by any site contractors performing work under Alternative I or II.

3.4.3 Short-Term Effectiveness and Impacts

Alternative I - The most significant short-term adverse impacts and risks to the community are potential complications and risk involved with constructing SOE, bulk soil excavation, and import of backfill. Potential impositions on roadway and pedestrian traffic associated with construction would result from the remedial excavation to achieve a Track 1 cleanup and subsequent import of backfill to bring the site up to construction sub-grade. Increased truck traffic and construction-related noise levels would result from hauling soil that exceeds UU SCOs to achieve Track 1 standards, relative to Alternative II.

Off-site transport of the excavated soil and fill would require about 4,657 25-cubic-yard-capacity truck trips, and backfilling of the site to achieve construction sub-grade would require about 2,793 25-cubic-yard capacity truck trips. Implementing Alternative I would require approximately 10 months of effort (assuming normal work hours). Truck traffic would be routed on the most direct course using major thoroughfares where possible and flaggers would be used to protect pedestrians at site entrances and exits. Waiting times associated with analysis of confirmation sampling and resampling may delay construction, leaving soil exposed for a longer time resulting in a potential increase in dust, odors, and/or organic vapor from the excavation and construction-related noise. The effects of these potential adverse impacts to the community, workers and the environment would be minimized by implementing appropriate control plans (including the CHASP, CAMP, and dust, odor and vapor control measures).

Alternative II - Alternative II would result in similar short-term adverse impacts and risks to the community, but for a shorter duration than Alternative I. The excavated soil and fill would require approximately 2,044 25-cubic-yard capacity truck trips (approximately 56% fewer truck trips than Alternative I), and would require substantially less import of soil or stone to backfill the hazardous lead hot spot excavation areas. Implementing the Alternative II concept would require approximately 6 months of effort (assuming normal work hours). The shorter implementation period means fewer potential impacts to the community, such as a shorter period of truck traffic and less potential for exposure to contaminated media.

Under both remedial alternatives, dust would be controlled by the on-site application of water spray as needed. ECs, such as slowing the pace of work, applying foam and/or dust suppressant, and/or covering portions of the excavation would be used to suppress odors and/or dust when required. Work would be modified or stopped according to the action levels defined in the CAMP. There would be fewer short-term impacts for Alternative II than Alternative I.

3.4.4 Long-Term Effectiveness and Impacts

Alternative I – A Track 1 remedy would remove all contaminated media exceeding UU SCOs from the site. Because an Environmental Easement and SMP are not required as part of the Track 1 remedy, Article 141 of the New York City Department of Health (NYCDOH) code would be relied upon to prevent ingestion of groundwater, which prohibits potable use of groundwater without prior approval. Future site use would be unrestricted, as removal of contaminants across the site would be complete and permanent, thereby eliminating environmental risks and satisfying the objectives of this criterion.

Alternative II – Contaminants in soil would remain at concentrations above UU SCOs; however, all contaminant source material would be removed and potential exposure to remaining contaminated soil would be prevented by the cover system. In addition, groundwater is not a source of potable water in New York City. Long-term effectiveness and impacts of this alternative would be achieved through the implementation of the SMP and through enforcement of the EE.

3.4.5 Reduction of Toxicity, Mobility, and Volume

Alternative I – The Track I remedy would permanently and significantly reduce the toxicity, mobility, and volume of contamination through excavation and removal of all on-site soil and non-native fill exceeding the UU SCOs. Therefore, Alternative I provides the greatest reduction of the toxicity, mobility, and volume of contaminated material.

Alternative II – The Track 2/Track 4 remedy would significantly reduce the toxicity, mobility, and volume of contaminated material by removing hazardous lead-impacted soil and any identified

contaminant source material throughout the site, contaminated soil exceeding RURR SCOs to depths of up to 15 feet bgs in the Track 2 area, and soil exceeding RURR SCOs to 2 feet bgs in the Track 4 area. Soil exceeding RURR SCOs would remain below the remediation depth and would be managed using ECs and ICs according to an SMP. Contaminated groundwater may remain beneath the site, subject to management by ECs and ICs. Documented groundwater exceedances of the SGVs are attributable to regional background and off-site conditions; therefore, mitigation of off-site groundwater migration will not be warranted.

3.4.6 Implementability

Alternative I – Implementing a Track 1 remedy would be technically challenging because of dewatering, underpinning, and SOE requirements associated with protection of the neighboring buildings and streets, and it would be necessary to extend SOE below the depth required for construction. This remedy would consist primarily of excavation with standard bucket excavators, dewatering and treatment of groundwater, and import of soil for backfill to construction sub-grade. The availability of local contractors, personnel, and equipment suitable for working in a structurally challenging environment is high due to the frequency of this type of work in the region. The area surrounding the site currently experiences heavy traffic due to the mall located across the street from the site. The Alternative I remedial activities would increase the amount of traffic in the area significantly more than the Alternative II remedial activities. Also, a longer timeframe and additional costs associated with the excavation of additional soil, SOE installation, and import of backfill would be necessary.

Alternative II – The technical feasibility of implementing the Alternative II remedy is greater than that of Alternative I, as the extent of the SOE system, excavation, and backfilling is reduced. This alternative would consist of excavation with standard bucket excavators and cover system. The availability of local contractors, personnel, and equipment suitable to working in a structurally challenging environment is high due to the frequency of this type of remediation in the region.

3.4.7 Cost Effectiveness

Alternative I – Based on the assumptions detailed for Alternative I, the estimated remediation cost of a Track 1 Cleanup is about $20.1 million. Because the site would be remediated to UU SCOs, there are no long-term operation, maintenance, or monitoring costs associated with the proposed remedy. This alternative is the most costly because of additional time and costs associated with handling and disposal of fill and soil above UU SCOs, SOE, import of backfill, and dewatering. Table 3 details the individual cost components used to arrive at this cost estimate.

Alternative II – Based on the assumptions detailed for Alternative II, the estimated engineering and contractor remediation cost of a Track 2/Track 4 Cleanup is about $10.4 million. This alternative is about 49% less expensive than a Track 1 remedy because the costs for handling

and disposal of soil, constructing SOE, dewatering, and import of backfill would be significantly less. Alternative II is the most cost-effective alternative. Table 4 details the individual cost components used to arrive at this cost estimate.

3.4.8 Community Acceptance

Both remedial alternatives are expected to be acceptable to the community, because the potential exposure pathways to on-site contamination would be eliminated or significantly reduced upon completion of the remedial actions. The Track 1 remedy would be less acceptable to the community, however, due to the increased truck traffic associated with complete removal of soils above UU SCOs and requisite backfilling to development grade. The selected remedy will be subject to a 45-day public comment period in accordance with the Citizen Participation Plan (CPP), included as Appendix D. Any substantive public comments received would be addressed before the remedy is approved.

3.4.9 Land Use

The current, intended, and reasonably anticipated future land use of the site and its surroundings are compatible with both remedial alternatives. The proposed development would include a mixed-use commercial and residential space, which is expected to cover the entire site footprint. The future proposed development is a commercial office building. Review of previous environmental and public documents led to the following conclusions:

1. The current and proposed use of the site and its surroundings would be compatible with the selected remedy.
2. The proposed site use conforms to applicable zoning laws and maps.
3. The proposed site use conforms to historical and/or recent development patterns in the area.
4. The site does not fall within the boundaries of an existing Brownfield Opportunity Area (BOA).
5. The site is located in an urban setting that is characterized by residential, commercial, and mixed-use developments. There are no areas zoned for agricultural use in the proximity of the site.
6. There are no federal or state land designations.
7. The population growth patterns and projections support the proposed land use.
8. The site is accessible to existing infrastructure.
9. The site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites.

10. The nearest ecological receptor is Meadow Lake within Flushing Meadows Corona Park, which is located about one mile east of the site.
11. Municipal water supply wells are not present in this area of New York City; therefore, groundwater from the site would not affect municipal water supply wells or recharge areas.
12. According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map (Panel No. 3604970226F), the site is located in an area of 0.2% annual chance flood (Zone X).
13. The site geology is described in Section 2.2.
14. There are no known ICs currently in effect at the site.

3.5 Selection of Preferred Remedy

Both alternatives would be protective of human health and the environment and would meet the remedy selection criteria. Alternative II would achieve all of the remedial action goals established for the project and would impact the community less in the short-term. Alternative II would reduce contaminant mobility, toxicity and volume to a lesser extent than Alternative I. Alternative I would be more effective in the long-term, because it would achieve unrestricted land use that would be free of long-term site management, ECs, ICs, an EE, and associated future costs that would be required under Alternative II; however, the technical feasibility and additional costs associated with constructing the SOE, dewatering, and importing backfill are greater than those associated with Alternative II. Both Alternatives are considered acceptable to the community and are consistent with land use requirements, though Alternative II is considered more acceptable due to the lesser short term impacts to the community during site remediation.

Alternative I is feasible; however, it brings the increased risk of compromising adjacent structures, increased truck traffic and greater greenhouse gas emissions, and is not cost-effective. Alternative II is feasible, carries reduced risk compared to Alternative I, and is similarly protective of human health and the environment, as ICs and ECs would be managed pursuant to an SMP and EE.

Alternative II is the selected remedy. Figure 9 depicts the Alternative II cleanup plan.

3.5.1 Zoning

According to the New York City Planning Commission Zoning Map 14a, the site is located within a mixed-used residential and commercial district (R8/C2-2); however, the site is subject to a reverter provision contained in a 1986 restrictive declaration, whereby it is subject to the regulations applicable in an R7-1/C2-2 district. R7-1 districts are medium-density apartment house districts. The height factor regulations for R7-1 districts encourage lower apartment

buildings on smaller zoning lots and on larger lots, taller buildings with less lot coverage. With regard to the commercial overlay, C2-2 districts are "commercial overlays mapped within residence districts. Mapped along streets that serve local retail needs, they are found extensively throughout the city's lower- and medium-density areas and occasionally in higher-density districts". Zoning is consistent with the proposed mixed-use development. The surrounding area is used for industrial, commercial and residential purposes.

3.5.2 Surrounding Property Uses

The current, intended, and reasonably anticipated future land use of the site and its surroundings are compatible with the selected remedy.

3.5.3 Citizen Participation

The CPP is discussed in Section 4.1.9.

3.5.4 Environmental Justice Concerns

According to the New York State Data Clearinghouse, the site is located in a potential environmental justice area.

3.5.5 Land Use Designations

There are no federal or state land use designations.

3.5.6 Population Growth Patterns

The population growth patterns and projections support the proposed land use.

3.5.7 Accessibility to Existing Infrastructure

Currently, there are no buildings located on the site property. Upon completion of the proposed development, water and sewer service will be provided by NYC water and sewer utilities, and electric and natural gas services will be supplied by Consolidated Edison. The property is near New York City subway and bus routes.

3.5.8 Proximity to Cultural Resources

According to the New York State Historic Preservation Office, New York City Landmark's Preservation Commission map, there are no City Landmark listed sites located within ½-mile of the site. According to the National Park Service Database of listed properties on the National Register map, no properties in the National Register (NR) of Historic Places are located within approximately ½-mile of the site. The proposed remedy is therefore not anticipated to adversely impact these cultural resources.

The site is not located in close proximity to important federal, state, or local natural resources, including waterways, wildlife refuges, wetlands, and critical habitats of endangered or threatened species. The nearest ecological receptor is the Meadow Lake, which is located about one mile east of the site.

3.5.9 Off-Site Groundwater Impacts

Municipal water supply wells are not present in this area of New York City; therefore, groundwater from the site cannot affect municipal water supply wells or recharge areas.

3.5.10 Geography and Geology of the site

The site geology is described in Section 2.2 of this report.

3.5.11 Current Institutional Controls

There are no ICs assigned to the site.

3.6 Summary of Selected Remedial Actions

Alternative II, a combination of a Track 2 Restricted-Residential Use cleanup and a Track 4 cleanup with RURR SCOs, will include implementation of the following remedial elements.

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, the community, and the environment during remediation and construction activities.
- Removal and management of the asphalt surface cover as C&D debris in accordance with Part 360 and 361 regulations by the contractor. Review and certification of C&D transport and disposal methodologies is not a requirement of the RE. The RE is responsible for documenting that C&D debris is not comingled with contaminated site soil and fill.
- Implementation of preliminary waste characterization, as required, including lateral delineation sampling of a hazardous lead hot spot on the southeastern and Track 4 portion of the site (RA-8), to facilitate off-site disposal of excavated material.
- Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
- Decommissioning of monitoring wells.
- Construction of the SOE system to facilitate excavation of contaminant source material throughout the site and excavation of soil/fill that exceeds the RURR SCOs to a depth of 15 feet bgs in the Track 2 remedy area and excavation of soil/fill that exceeds the RURR SCOs to a depth of 2 feet bgs in the Track 4 remedy area. No contaminant source will remain below 15 feet bgs.

- Excavation and off-site disposal of four previously delineated hotspots to remove soil exceeding the 6 NYCRR Part 371 criteria for hazardous lead, including two hotspots each in the Track 2 and Track 4 areas, and collection of confirmation endpoint samples.
- Excavation and off-site disposal of soil exhibiting petroleum nuisance conditions between 1 and 4 feet bgs in the Track 4 area, and collection of documentation endpoint samples.
- Dewatering and treatment, as necessary, to facilitate SOE installation and to accommodate the removal of contaminant source material throughout the site and soil that exceeds RURR SCOs in the Track 2 area, and discharge of dewatering fluids in accordance with a NYCDEP sewer discharge permit.
- Excavation, stockpiling, off-site transport of contaminant source material throughout the site, soil exceeding RURR SCOs to a maximum depth of 15 feet bgs in the Track 2 area, per 6 NYCRR Part 375-3.8[e][2], and soil exceeding RURR SCOs within the upper two feet to allow for construction of ECs in the Track 4 area.
- Removal, decommissioning, and off-site disposal of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Screening for indications of contamination (by visual means, odor, and monitoring with a PID) of excavated soil/fill during intrusive site work.
- Appropriate off-site disposal of non-native fill and soil from the site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
- Collection and analysis of confirmation soil samples in the Track 2 area to confirm RURR SCOs are achieved and documentation soil samples in the Track 4 area to document post-excavation conditions in relation to Track 4 SCOs; samples will be collected from the excavation base and, to the extent possible, sidewalls of the excavation in accordance with DER-10.
- Placement of a physical demarcation layer in the Track 4 area where contamination remains and not covered by impervious surfaces, consisting of orange snow fencing or equivalent material, at the excavation bottom prior to backfilling.
- Backfilling of remediated areas to development grade with documented soil meeting the lower of RURR and Protection of Groundwater (PGW) SCOs, virgin stone, or RCA from a 6 NYCRR Part 360 NYSDEC-registered facility and in compliance with Part 360.
- Capping of Track 4 excavated areas with a cover system consisting of a reinforced concrete building slab in the Track 2 area and a composite cover system consisting of a reinforced concrete building slab beneath the new building, and concrete pavers and a minimum of two feet of imported clean fill in the exterior portions of the Track 4 area.

- Establishment of an NYSDEC-approved Site Management Plan (SMP) to provide for long-term management of ECs and ICs, including the performance of periodic inspections and certification that the controls are performing as they were intended.
- Recording of an Environmental Easement to memorialize the remedial action and the ECs and ICs to mandate that future owners of the site continue to maintain these controls as required.

Remedial activities will be performed in accordance with this RAWP, and the Department-issued Decision Document. Deviations from the RAWP and/or Decision Document will be promptly reported to the NYSDEC for approval and fully explained in the FER.

4.0 REMEDIAL ACTION PROGRAM

4.1 Governing Documents

The primary documents governing the remedial action are summarized in this section.

4.1.1 Standards, Criteria, and Guidance

The following standards, criteria, and guidance are typically applicable to Remedial Action projects in New York State, and will be consulted and adhered to as applicable:

- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 373-4 – Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators
- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 – Standards for Universal Waste
- 6 NYCRR Part 375 – Environmental Remediation Programs
- 6 NYCRR Part 376 – Land Disposal Restrictions
- 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Permits
- 12 NYCRR Part 56 – Industrial Code Rule 56 (Asbestos)
- CP-43 – Commissioner Policy on Groundwater Monitoring Well Decommissioning (December 2009)
- CP-51 – Soil Cleanup Guidance (2010)
- DER-10 – Technical Guidance for site Investigation and Remediation (May 3, 2010)
- DER-23 – Citizen Participation Handbook for Remedial Programs (March, 2010)
- NYSDEC – Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC Part 375 Remedial Programs (June 2021)
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 with revisions)

- TOGS 1.1.1 – Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- USEPA OSWER Directive 9200.4-17 – Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank sites (December 1997)
- Screening and Assessment of Contaminated Sediment (Division of Fish, Wildlife and Marine Resources, June 2014)

4.1.2 Site Specific Construction Health & Safety Plan

The RE prepared a site-specific CHASP (Appendix E). The CHASP addresses site-specific contaminants and applies only to remedial and construction-related work on-site. Contractors operating on the site are required to adhere to their own plans that, at a minimum, meet the requirements of the CHASP. Remedial work performed under this plan will be in compliance with governmental requirements, including site and worker safety requirements mandated by OSHA. The CHASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and PPE requirements during implementation of the remedy. 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:

- Organization and identification of key personnel
- Training requirements
- Medical surveillance requirements
- List of site hazards
- Excavation safety
- Drill rig safety
- Work zone descriptions and monitoring procedures
- Personal safety equipment and PPE requirements
- Decontamination requirements
- Standard operating procedures
- Protective measure plan
- CAMP
- Safety Data Sheets (SDS)

The Participant and the contractors preparing the remedial documents submitted to the State and those performing the construction work are responsible for the preparation of an appropriate CHASP and for the appropriate performance of work according to that plan and applicable laws.

The CHASP and requirements defined in this RAWP pertain to all remedial and invasive work performed at the site until the issuance of a Certificate of Completion. The Langan Site Safety Coordinator will be William Bohrer. If required for site workers, confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses. Langan personnel will not enter confined spaces.

4.1.3 Quality Assurance Project Plan

The RE prepared a Quality Assurance Project Plan (QAPP) that describes the quality control components to guide the proposed remedy in accomplishing the remedial goals, remedial action objectives, and the remediation in accordance with the design specifications. The QAPP is provided as Appendix F and includes:

- Responsibilities of key personnel and their organizations for the proposed remedy
- Qualifications of the quality assurance officer
- Sampling requirements including methodologies, quantity, volume, locations, frequency, acceptance and rejection criteria
- Description of the reporting requirements for quality assurance activities, including weekly quality assurance review reports, periodic quality assurance and quality control audits, and other report and data submissions

4.1.4 Construction Quality Assurance Plan

The RE prepared this Construction Quality Assurance Plan (CQAP) that describes the quality control components that will guide the proposed remedy in accomplishing the remedial goals and RAOs, and the remediation in accordance with the design specifications. Because the remedy is being accomplished concurrent with building construction, the contractor and construction manager will have the primary responsibility to provide construction quality. A list of engineering personnel involved in implementation of the CQAP and procedures that will be carried out by the remedial engineering team are identified below. Project personnel resumes are provided in Appendix G.

The following project personnel are anticipated to implement the RAWP.

Remediation Engineer (RE):	Jason Hayes, P.E.
Project Manager:	Stuart Knoop, P.G.
Langan Health & Safety Officer:	Tony Moffa, ASP, CHMM, COSS
Langan Site Safety Coordinator:	William Bohrer, P.G.
Qualified Environmental Professional (QEP):	Michael Burke, P.G., CHMM
Field Team Leader:	Joshua Golding, P.E.
Quality Assurance Officer:	Gerald Nicholls, P.E.

The QEP or RE will directly supervise Langan field representatives that will be on-site during the remedial action to monitor particulates and organic vapor in accordance with the CAMP. Daily reports will be submitted to the NYSDEC and NYSDOH and will include reporting of any CAMP results that exceed the specified action levels.

The QEP or RE will directly supervise Langan field representatives who will meet with the Construction Superintendent on a daily basis to discuss the plans for that day and schedule upcoming activities. The field representative will document remedial activities in the daily report. This document will be forwarded to the Field Team Leader on a daily basis and to the Project Manager and the RE on a weekly basis.

The QEP or RE will directly supervise Langan field representatives who will screen the excavation with a PID during intrusive activities. PID readings will be noted in the record. PID readings that exceed action levels will be reported to the NYSDEC and NYSDOH in the daily reports. The field representative will collect the post-excavation documentation samples in accordance with this RAWP.

A photo log will be kept to document construction activities by still photos. The photo log may also be used to record activities recorded in the daily report.

The project field book will be used to document sample collection and how it corresponds to the RAWP. Observations, field and/or laboratory tests will be recorded in the project field book or on separate logs. Recorded field observations may take the form of notes, charts, sketches, or photographs.

The Field Team Leader will maintain the current field book and original field paperwork during the performance of work. The Project Manager will maintain the field paperwork after completion and will maintain all submittal document files.

4.1.5 Soil/Fill Management Plan

The RE will prepare a Soil/Fill Management Plan (SFMP) that includes detailed plans for managing soil/fill that are disturbed at the site, including excavation, handling, storage, transport and disposal. It also includes controls that will be applied to these efforts to mitigate nuisances (e.g., dust and odor) in compliance with applicable federal, state and local laws and regulations. The SFMP is further described in Section 5.4.

4.1.6 Stormwater Pollution Prevention Plan

Because this project involves soil disturbance of more than 20,000 square feet, a Stormwater Pollution Prevention Plan (SWPPP) will be required, under New York City regulations. A SWPPP will be prepared during the project design process, and provided to NYSDEC when completed. Erosion and sediment controls for the site will be designed in conformance with requirements presented in the New York State Standards and Specifications for Erosion and Sediment Control. Best Management Practices (BMPs) will be employed to mitigate erosion and prevent the migration of sediment off site throughout construction.

The contractor will either dispose of accumulated water generated during dewatering at an off-site disposal facility permitted to accept the waste or follow the Rules of the City of New York (RCNY), Title 15, Chapter 19, Use of the Public Sewers and the NYCDEP "Procedure for Obtaining Letter of Approval for Groundwater Discharge to Sanitary or Combined Sewer" and will use the approval to obtain a Temporary Discharge of Groundwater into the City Sewer System Permit. Dewatering will need, at a minimum, a settling tank prior to discharge to the sewer. Additional pretreatment (e.g., bag filters, carbon filtration, etc.) may be required prior to discharge to the New York City sewer system. If daily discharge exceeds 10,000 gallons, the contractor will also have to obtain approval from NYCDEP's Bureau of Water and Sewer Operations, Chief of Permitting and Compliance. Collected groundwater or rainwater will be discharged, as defined by the NYCDEP permit, into the New York City sewer system, via an entry point acceptable to the NYCDEP. The dewatering and treatment system will be designed by the contractor's New York State-licensed Professional Engineer. The contractor will also obtain an NYSDEC Long Island Well Permit prior to dewatering. Copies of the dewatering design plan, the Long Island Well Permit, and the NYCDEP permit, if warranted, will be provided to NYSDEC.

4.1.7 Community Air Monitoring Program

Community air monitoring will be conducted in accordance with the CAMP discussed in the CHASP and in accordance with the NYSDOH Generic CAMP included as Appendix 1A in DER-10.

4.1.8 Contractor's Site Operations Plan

The RE will review plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and confirm that the plans and submittals are in compliance with this RAWP. The RE is responsible for documenting that contractor and subcontractor submittals for this remedial project are in compliance with this RAWP. Remedial documents will be submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.9 Citizen Participation Plan

Fact Sheets describing the remedial action proposed in the RAWP will be distributed through DEC Delivers, the NYSDEC's email listserv service. Additional Fact Sheets will be distributed to announce 1) the completion of the Remedial Action with a summary of the FER and 2) the issuance of the Certificate of Completion for the site.

No changes will be made to the approved Fact Sheets authorized for release by the NYSDEC without written consent of the NYSDEC. Other information, such as brochures and flyers, will not be included with the Fact Sheet mailing. The CPP for this project is included in Appendix D.

Document repositories have been established at the following locations and contain all applicable project documents:

Queens Community Board 6
Attn: Heather Beers-Dimitriadis, Chair
104-01 Metropolitan Avenue
Forest Hills, New York 11375
Phone: (718) 263-9250
Email: qn06@cb.nyc.gov

Queens Public Library at Rego Park
91-41 63rd Drive
Rego Park, NY 11374
Phone: (718) 459-5140
Hours (call to verify):

Monday, Wednesday, and Friday	10:00 a.m. to 6:00 p.m.
Tuesday	1:00 p.m. to 6:00 p.m.
Thursday	12:00 p.m. to 8:00 p.m.
Saturday	10:00 a.m. to 5:00 p.m.
Sunday	Closed

4.1.10 Green Remediation Principles

Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Installing a minimum 20-mil vapor barrier/waterproofing membrane on the foundation of any future development at this site, to the extent feasible, which may improve energy efficiency
- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term
- Reducing direct and indirect greenhouse gases and other emissions
- Increasing energy efficiency and minimizing use of non-renewable energy
- Conserving and efficiently managing resources and materials
- Reducing waste, increasing recycling and increasing reuse of materials that would otherwise be considered a waste
- Maximizing habitat value and creating habitat when possible
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development

4.2 General Remedial Construction Information

4.2.1 Project Organization

Section 4.1.4 presents the anticipated project organization and associated roles, including key personnel, descriptions of duties, and lines of authority in the management of the RAWP. Information regarding the organization/personnel and their associated responsibilities is provided below. Resumes of key personnel involved in the Remedial Action are included in Appendix G.

4.2.2 Remediation Engineer

The RE for this project will be Jason Hayes, P.E. The RE is a registered professional engineer licensed by New York State. The RE will have primary direct responsibility for implementation of the remedial program for the site. The RE will certify in the Final Engineering Report (FER) that the remedial activities were observed by qualified environmental personnel under his supervision and that the remediation requirements set forth in the RAWP and any other relevant provisions

of ECL 27-1419 have been achieved in full conformance with the RAWP. Other RE certification requirements are listed later in this RAWP.

The RE will document and advise on the work of other contractors and subcontractors involved in aspects of remedial construction, including groundwater treatment, soil excavation, stockpiling, characterization, removal and disposal, air monitoring, dewatering treatment system installation and implementation, construction of ECs, emergency spill response services, import of backfill, and management of waste transport and disposal. The RE will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The RE will review pre-remedial plans submitted by contractors for compliance with this RAWP and will certify compliance in the FER. The RE will provide the certifications listed in Section 10.1.

4.2.3 Remedial Action Construction Schedule

The remedial action construction schedule is discussed in Section 11 and is provided in Appendix H. The NYSDEC will be promptly notified of proposed changes, delays and/or deviations to the schedule.

4.2.4 Work Hours

The hours for operation of remedial construction will conform to the NYCDOB construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Participant of any variances issued by the NYCDOB. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

The site perimeter will be secured with gated, signed, plywood fencing with points of entry and exit in accordance with NYCDOB and New York City Department of Transportation (NYCDOT) permits and requirements. The purpose of the fencing is to limit site access to authorized personnel, protect pedestrians from site activities, and maintain site security.

4.2.6 Traffic Control

Site traffic will be controlled through designated points of access and will be continuously monitored and if necessary, a flagging system will be used to protect workers, pedestrians and authorized guests. Traffic will also adhere to applicable local, state, and federal laws. A truck route map is included as Figure 11.

4.2.7 Contingency Plan

Contingency plans, as described below, have been developed to effectively address unexpected discoveries of additional USTs or contaminated media.

Discovery of USTs

As a contingency, if a UST is discovered via exploratory test pit or excavation, it will be decommissioned in accordance with 6 NYCRR Part 612.2 and 613.9, and DER-10 section 5.5. Once the tank and its contents are removed, post-excavation soil samples will be collected per the NYSDEC DER-10 requirements, if deemed necessary by the NYSDEC and the RE. Post-excavation soil sampling is not expected where the remedial excavation will extend below the UST. If encountered, petroleum-contaminated soils will be removed. UST closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, will be provided as appendices in the FER. The NYSDEC PBS registration will be updated as necessary, depending on the type, number, and capacity of discovered tanks.

Discovery of Additional Contaminated Soil

During remediation and construction activities, the soil will be continuously monitored by the RE's field representatives using a PID, and visual and olfactory field screening techniques to identify additional contamination source material and soil that may not be suitable for disposal at the RE-approved disposal facilities. If discovered, such soil and non-native fill will be segregated and sampled in accordance with disposal facility requirements. If the facility is not permitted to receive the suspect soil or non-native fill, the soil or non-native fill will be disposed of off-site at a permitted facility able to receive the material based on the characterization data.

Identification of unknown or unexpected contaminated media by screening during ground-intrusive site work will be promptly communicated by phone and email to the NYSDEC Project Manager. These findings will be detailed in the daily reports and the subsequent monthly BCP progress report.

4.2.8 Worker Training and Monitoring

Worker training and monitoring will be conducted in accordance with the site-specific CHASP, included as Appendix E.

4.2.9 Agency Approvals

The planned end use for the site conforms to current zoning for the property as determined by New York City Department of Planning. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

4.2.10 NYSDEC BCP Signage

Signs are optional for BCP sites and should be discussed with the NYSDEC Project Manager. If a sign is to be displayed, it must follow NYSDEC specifications for design and content. The NYSDEC Project Manager can provide details on signage protocol.

4.2.11 Pre-Construction Meeting with NYSDEC

Prior to the onset of construction, a meeting will be held between the NYSDEC, RE, Participant, Construction Manager, and Contractor to discuss project roles, responsibilities, and expectations associated with the NYSDEC-approved RAWP.

4.2.12 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.13 Remedial Action Costs

The estimated engineering and contractor cost of the preferred remedy (Alternative II) is $10.1 million. An itemized and detailed summary of estimated costs for the preferred remedy is included as Table 4. This will be revised based on actual costs and submitted as an Appendix to the FER.

4.3 Site Preparation

4.3.1 Mobilization

Prior to commencing the remedial excavation, the Remediation Contractor will mobilize to the site and prepare for remedial activities. Descriptions of mobilization and site preparation activities may include the following:

- Identifying the location of all aboveground and underground utilities (e.g., power, gas, water, sewer, communications), equipment, and structures (as necessary to implement the remediation)
- Mobilizing necessary remediation personnel, equipment, and materials to the site
- Constructing one or more stabilized construction entrances consisting of nonhazardous material capped with a gravel roadway at or near the site exit, which takes into consideration the site setting and site perimeter
- Constructing an equipment decontamination pad for trucks, equipment, and personnel that come into contact with impacted materials during remedial activities
- Installing erosion and sedimentation control measures, as necessary
- Installing temporary fencing or other temporary barriers to limit unauthorized access to areas where remediation activities will be conducted

4.3.2 Erosion and Sedimentation Controls

Based on the size of the site and the planned excavation, select common erosion and sedimentation control practices (i.e., perimeter silt fencing, inlet protection, stabilized construction entrances, dust control via water sprinkling, etc.) will be necessary and will be performed in accordance with the project-specific SWPPP, which will be provided to NYSDEC prior to the start of RAWP implementation. Best management practices for soil erosion will be selected to minimize erosion and sedimentation off site from the start of the remediation to the completion of development.

4.3.3 Monitoring Well Decommissioning

Existing groundwater monitoring wells will be properly decommissioned, in accordance with NYSDEC CP-43. The only exception to this is if the full length of the well is to be excavated during remediation and development. If required, well decommissioning will be performed by an experienced driller and logged by the driller and a Langan field engineer, scientist, or geologist. Decommissioning documentation will be provided in the FER.

4.3.4 Temporary Stabilized Construction Entrance(s)

Temporary stabilized entrances will be constructed with gravel or RCA and graded so that runoff water will be directed to the site. Vehicles exiting construction areas will be cleaned using clean water or dry brushing, as needed, to remove site soil from the tires and undercarriages. The Contractor will protect and maintain the existing sidewalks and roadways at both site access points.

4.3.5 Utility Marker and Easements Layout

The Participant and its contractors are responsible for identifying utilities and easements that might be affected by the remedial work and implementation of all required, appropriate, or necessary health and safety measures under this RAWP. The Participant and its contractors are responsible for safe execution of all invasive and other work performed under this RAWP. The Participant and its contractors must obtain any local, state, or federal permits or approvals pertinent to such work that may be required to implement this RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

4.3.6 Sheeting and Shoring

Appropriate management of structural stability for on-site or off-site structures during remedial activities, including excavation, is the responsibility of the Participant and its contractors. The Participant and its contractors are responsible for safe execution of all invasive and other work performed under this RAWP. The Participant and its contractors must obtain any local, state, or federal permits or approvals that may be required to perform work under this RAWP. Further,

the Participant and its contractors are responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved RAWP.

4.3.7 Equipment and Material Staging

The Contractor will notify the RE and the Participant, in writing with receipt confirmed, at least 30 calendar days in advance of pending site mobilization. During mobilization, construction equipment will be delivered to the site, temporary facilities constructed, and temporary utilities installed. The Contractor will place and maintain temporary toilet facilities within the work areas for use by all site personnel.

4.3.8 Truck Inspection Station

An outbound-truck inspection station will be set up at or near the site exit. Before exiting the site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. If observed, soil and debris will be removed. Brooms, shovels and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary. The Contractor is responsible for collecting soil that is tracked immediately off site and returning the soil to the site.

4.3.9 Site Fencing

The site perimeter will be secured with gated, signed, plywood fencing maintained by the contractor. The purpose of the fencing is to limit site access to authorized personnel, protect pedestrians from site activities, and maintain site security.

4.3.10 Demobilization

After remediation and construction is completed, the Contractor will be responsible for demobilizing labor, equipment, and materials not designated for off-site disposal. The RE will document that the Contractor performs follow-up coordination and maintenance for the following activities:

- Removal of sediment and erosion control measures and disposal of materials in accordance with applicable rules and regulations
- Removal of remaining contaminated material or waste
- Equipment decontamination
- General refuse disposal

4.4 Reporting

Periodic reports and an FER will be submitted to the NYSDEC as required to document the remedial action. The Project RE responsible for certifying all reports will be an individual licensed to practice engineering in New York State. Jason Hayes, P.E. of Langan, will have this responsibility. Should Mr. Hayes become unable to fulfill this responsibility, another suitably qualified Professional Engineer will take his place. In addition to the periodic reports and the FER, copies of all relevant contractor documents will be submitted to the NYSDEC.

4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers during on-site remedial construction activities by the end of each day following the reporting period and will include:

- An update of progress made during the reporting day
- Locations of work and quantities of soil and fill imported to and exported from the site
- References to an alpha-numeric map for site activities
- A summary of complaints with relevant details (names, phone numbers)
- A summary of CAMP findings, including trigger action levels, and
- 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 or spill), requests for changes to the RAWP or other sensitive or time critical information; however, such conditions must also be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to NYSDEC Project Manager via personal communication.

4.4.2 Monthly Reports

Monthly reports will continue to be submitted to NYSDEC and NYSDOH Project Managers by the 10th day of the month following the reporting period and will include the following information, as well as the information required in the BCA:

- Activities relative to the site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., tons of soil and fill exported and imported, etc.)
- Description of approved activity modifications, including changes of work scope and/or schedule
- Sampling results received following internal data review and validation, as applicable

- An update of the remedial schedule, including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays

4.4.3 Other Reporting

Photographs of remedial activities will be taken and submitted to the NYSDEC in digital (JPEG) format. Photographs will illustrate the remedial program elements and will be of acceptable quality. Representative photographs of the site will be provided. Field photographs will be included in daily reports, as necessary, and a comprehensive photograph log will be included in the FER. Upon request, photographs will be submitted to the NYSDEC and NYSDOH Project Managers on CD or other acceptable electronic media. CDs will have a label and a general file inventory structure that separates photographs into directories and sub-directories according to logical Remedial Action components. A photograph log keyed to photo file ID numbers will be prepared to provide explanation for all representative photographs.

Site record keeping for all remedial work will be appropriately documented. These records will be maintained on-site at all times during the project and will be available for inspection by NYSDEC and NYSDOH staff.

4.4.4 Complaint Management Plan

The management plan for documenting complaints is detailed below.

Item	Description
Approach	Complaints regarding remediation or construction activities/operations to be minimized and mitigation measures implemented to reduce the incidence of complaints.
Objective	To manage environmental complaints from the community regarding construction or remediation.
Implementation Strategy/Mitigation Measures	All complaints will be documented on a complaint register. The register will be maintained as an ongoing record. The entry will include following information: • Time, date and nature of complaint; • Type of communication (telephone, letter, personal, etc.); • Name, contact address and contact number; • Response and investigation undertaken as a result of the complaint; and action taken and signature of responsible person. Each complaint will be investigated as soon as practical in relation to requirements.
Monitoring	A representative of the Participant or the RE will follow up on the complaint within two weeks of receipt to ensure it is resolved.
Reporting	Upon receipt and following the complaint investigation and resolution, the NYSDEC will be notified. Complaint resolutions will be documented in daily reports.
Corrective Action	Should an incident or failure to comply occur in relation to the management of environmental complaints, one or more of the following corrective actions will be undertaken as appropriate: • Conduct additional training of staff to handle environmental complaints • Investigate why the environmental complaint was not addressed within the specified time frame • Investigate complaint and action follow-up to results of investigation

4.4.5 Deviations from the RAWP

Necessary deviations from the RAWP will be coordinated with the NYSDEC in advance. Notification will be provided to the NYSDEC by telephone/email for conditions requiring immediate action (e.g., conditions judged to be a danger to the surrounding community). Based on the significance of the deviation, an addendum to this RAWP may be necessary and will include:

- Reasons for deviating from the approved RAWP

- Approval process to be followed for changes/editions to the RAWP
- Effect of the deviations on the overall remedy

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

Remediation will include excavation of (1) four hazardous lead-impacted hot spots in the Track 2 and Track 4 portions of the site; (2) a hot spot exhibiting petroleum nuisance conditions in the Track 4 portion of the site; (3) soil and non-native fill to depths required to meet RURR SCOs, up to 15 feet bgs, in the Track 2 portion of the site (i.e., about 2 to 15 feet bgs); and (4) soil and non-native fill to accommodate construction of a composite site cover in the Track 4 portion of the site (i.e., about 2 feet bgs). Any soil exceeding the RURR SCOs and remaining below the remedial excavation in the Track 4 area will be managed with ECs and ICs under an SMP.

5.1 Soil Cleanup Objectives

The SCOs for the site will be the RURR SCOs listed in Table 2. In the Track 4 area, residual site soil will be capped with a site cover system that includes a concrete foundation slab within the building footprint and concrete pavement and/or a minimum of two feet of imported fill material meeting capping material requirements in the exterior portions of the site. Residual soil remaining below the remedial excavation depth in the Track 4 area that exceeds the RURR SCOs and is not a contaminant source will be managed with ECs and ICs under an SMP.

Soil and fill management on-site will be conducted in accordance with the SFMP as described below.

5.2 Confirmation and Documentation Sampling

5.2.1 Soil Sampling Frequency

The proposed remedy will achieve a Track 2 cleanup in the western, central and northeastern portions of the site and a Track 4 cleanup in the eastern portion of the site and areas outside of the building footprint. Per DER-10, post-excavation confirmation samples will be collected from the Track 2 area to confirm that all soil exceeding the RURR SCOs has been removed to a maximum depth of 15 feet bgs, and documentation samples will be collected from the Track 4 area to document the soil levels achieved by the remedy and inform the SMP. Considering the large size of the site, documentation soil samples will be collected at a reduced sampling frequency of one sample per 2,000 square feet of excavation base. If contaminant source areas are encountered during the remedial excavation (e.g., petroleum-impacted soil), confirmation/documentation samples will be collected at a frequency of one sample per 900 square feet of excavation base in those areas.

An estimated 70 base documentation soil samples (plus QA/QC samples) will be collected, including 51 base confirmation samples from the Track 2 area and 19 base documentation soil samples from the Track 4 area to document remedial performance. Collection of sidewall

documentation samples will likely be precluded by the presence of SOE (e.g., pile lagging) around the site perimeter. In areas of over-excavation for remediation below the general excavation depths of 15 feet bgs in the Track 2 area and 2 feet bgs in the Track 4 area, sidewall samples will be collected at a frequency of 1 per 30 linear feet when the sidewall slope is greater than 1:1. The proposed sample locations are shown on Figure 10.

5.2.2 Methodology

Confirmation and documentation soil samples will be collected in accordance with NYSDEC DER-10 to document remedial performance and will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), PFAS, and 1,4-dioxane. Confirmation or documentation samples associated with any identified petroleum remediation areas will be analyzed for CP-51 listed VOCs and SVOCs.

5.2.3 QA/QC

Quality control procedures for documentation soil sampling are included in the QAPP (refer to Appendix F). Documentation sample analytical results will be provided in the NYSDEC's electronic data deliverable (EDD) format for EQuIS™. Guidance on the sampling frequency is presented in NYSDEC DER-10 Section 5.4.

The QA/QC procedures required by the NYSDEC Analytical Services Protocol (ASP) and SW-846 methods will be followed. This will include instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of quality control samples. The laboratory will provide sample bottles, which will be pre-cleaned and preserved. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP will take precedence.

5.2.4 DUSR

ASP Category B deliverables will be prepared for all remedial performance samples collected during implementation of this RAWP. Data Usability Summary Reports (DUSR) will be prepared by a qualified data validator and the findings will be reported in the FER.

5.2.5 Reporting

Analytical laboratories that analyze documentation soil samples, prepare results, and perform contingency sampling will be NYSDOH ELAP-certified laboratories.

5.3 Estimated Material Removal and Backfill Quantities

As a pre-requisite to commencement of site remediation, the contractor will remove asphalt and concrete surface cover and manage it as C&D debris in accordance with Part 360 and 361 regulations. Review and certification of C&D transport and disposal methodologies is not a

requirement of RE. The RE is responsible for documenting that C&D debris is not comingled with contaminated site soil and fill. The estimated volume of soil and fill requiring removal and off-site disposal for the combined Track 2 and Track 4 remedy is about 51,091 cubic yards, including 47,841 cubic yards in the Track 2 area and 3,250 cubic yards in the Track 4 area. With the exception of excavation for the hazardous lead hot spots in the Track 4 area, over-excavation is not expected. Virgin stone, RCA originating from a Part 360 registered facility and in compliance with Part 360, or soil that meets PGW and/or RURR SCOs will be imported to the site as backfill, where required. The estimated volume of material required is 58 cubic yards.

5.4 Soil/Fill Management Plan

This section presents the approach to management and disposal of soil and non-native fill excavated from the site. This plan is based on the current knowledge of site conditions and will be augmented, as necessary, using additional data collected during remediation. As a pre-requisite to commencement of site remediation, the contractor will remove asphalt and concrete surface cover and manage it as C&D debris in accordance with Part 360 and 361 regulations.

A Langan field representative under the direction of the RE will monitor and document the handling and transport of contaminated soil and non-native fill removed from the site for disposal as a regulated solid waste. A Langan field representative, under the direction of the RE, will assist the remediation contractor in identifying impacted soil and non-native fill during remediation, determining soil and non-native fill suitable for direct load out versus temporary on-site stockpiling, selection of samples for waste characterization, if necessary, and determining the proper off-site disposal facility. Separate stockpile areas will be constructed as needed for the various soil and non-native fill to be excavated or generated, with the intent to most efficiently manage and characterize the materials and to avoid comingling impacted soil and non-native fill with non-impacted soil. The following types of sol and non-native fill are reasonably anticipated to be encountered during remediation:

- Nonhazardous Fill/Soil – This category refers to non-native fill and soil that contains contaminants above the Track 2 and Track 4 RURR SCOs, and will not be reused on-site. It will be excavated across the site footprint and transported off-site for disposal at a facility permitted to accept the fill. Non-hazardous fill material will be excavated to a depth of about 15 feet bgs for remediation and construction of the proposed cellar in the Track 2 area and to a depth of about 2 feet bgs for remediation and construction of the proposed ground floor slab and exterior area cover system in the Track 4 area. Characterization sampling will be completed in conformance with the requirements of the disposal facility.
- Soil Exhibiting Petroleum Nuisance Conditions – This category refers to fill material and native soil that exhibit staining, petroleum-like odors, and/or PID readings above background concentrations. The RI identified soil exhibiting petroleum nuisance

conditions in the upper 4 feet of borings on the central and southeastern portions of the site. This material will be excavated from localized excavation areas and stockpiled separately from excavated non-hazardous fill material and native soil, as required by the selected permitted disposal facility. Characterization sampling will be completed to conform to the requirements of the selected disposal facility and to determine whether excavated material will be treated as hazardous or non-hazardous waste.

- Hazardous Lead-Impacted Soil – This category refers to fill material and native soil that contain lead above the Part 371 criteria for hazardous lead. This material will not be reused on-site. Hazardous lead-impacted soil has been identified at two locations within the upper 8 to 10 feet in the Track 2 area and at two locations within the upper 4 to 8 feet in the Track 4 area.

5.4.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a Langan field representative under the direct supervision of the RE during all remedial and development excavations into known or potentially contaminated soil and non-native fill. Soil screening is performed regardless of when the invasive work is done and includes all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the Certificate of Completion.

Resumes are provided herein for personnel responsible for field screening the excavation (i.e., those representing the RE) and other ground-intrusive work performed during remediation and development.

5.4.2 Stockpile Methods

Stockpiles will be constructed as necessary to separate and stage excavated soil and non-native fill pending loading or characterization sampling. Separate stockpile areas will be constructed to avoid comingling soil and non-native fill of differing waste types. Stockpile areas will meet the following minimum requirements:

- Excavated soil will be placed onto a 6-mil minimum thickness low-permeability liner of sufficient strength to prevent puncture during use; separate stockpiles will be created where soil and non-native fill types are different (e.g., petroleum-impacted material stockpiled in a contaminated soil area). The use of multiple layers of thinner liners is permissible.
- 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 at the designated times (see below) with minimum 6-mil plastic sheeting or tarps that will be securely anchored to the ground. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced.
- Stockpiles will be covered upon reaching their capacity (i.e., about 1,000 cubic yards) until ready for loading. Stockpiles that have not reached their capacity, whether active or inactive, will be covered at the end of each workday.
- Each stockpile will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from rainwater that has drained off the soils and to mitigate the potential for surface water run-off.
- Stockpiles will be inspected at a minimum of once daily and after every storm event. Results of inspections will be recorded in a logbook, maintained at the site, and made available for inspection by the NYSDEC.

5.4.3 Soil Excavation and Load Out

A Langan field representative under the supervision of the RE will monitor ground-intrusive work and the excavation and load-out of excavated soil and non-native fill.

The Participant and its contractors are solely responsible for safe execution of ground-intrusive and other remedial work performed under this RAWP. The Participant and its contractors are solely responsible for the identification of utilities and/or easements that might be affected by the work conducted under this RAWP.

Loaded vehicles leaving the site will be appropriately lined, securely covered, manifested, and placarded in accordance with the appropriate federal, state, and local requirements, including applicable transportation requirements (i.e., New York State Department of Transportation [NYSDOT] and NYCDOT requirements). Trucks hauling non-native fill will not be lined unless free liquids are present or the material is grossly impacted.

A truck wash/cleaning area will be operated on-site (see Section 4.3.8). The RE will be responsible for documenting that outbound trucks will be washed/cleaned at the truck wash area, as necessary, before leaving the site until the remedial construction is complete. Locations where vehicles enter or exit the site will be inspected daily for evidence of off-site sediment tracking.

The RE will be responsible for documenting that egress points for truck and equipment transport from the site will be clean of dirt and other materials derived from the site during remediation and development. The remediation contractor will clean adjacent streets as necessary to maintain a clean condition with respect to site-derived materials.

The Participant and associated parties preparing the remedial documents submitted to New York State, and the parties performing this work, are responsible for the safe performance of ground-intrusive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations).

The Participant and associated parties will arrange for site development activities to not interfere with, or otherwise impair or compromise, remedial activities proposed in this RAWP.

Development-related grading cuts and fills will not be performed without NYSDEC approval and will not interfere with, or otherwise impair or compromise, the performance of remediation required by this RAWP.

Mechanical processing of non-native fill and contaminated soil on-site is prohibited unless otherwise approved by NYSDEC. Mechanical screening, if proposed, must meet the following conditions:

- Screening equipment can be a source of dust; dedicated dust suppression methods will be in place (i.e., spraying water) during mechanical screening
- Screening equipment will be centrally located and no closer than 50 feet from the site boundary
- Field personnel will consider and document the materials that are separated such as the screen overs (the material larger than the screen openings) and unders (the material smaller than the screen openings; the fines)
- If fill is screened, screening must consider the fill constituents established during the RI. The unders generated from screened fill are not soil but rather finer-grained fill that might resemble soil. Screened fill unders must be managed as a regulated solid waste unless specifically determined otherwise to be beneficially used (i.e., beneficial use determination [BUD] or request to import request).
- If the overs contain material other than recognizable, uncontaminated concrete, asphalt, rock, or brick, these materials (e.g., ash, coal, slag, or similar) would need to be defined prior to off-site disposal. Recognizable, uncontaminated concrete, asphalt, rock, or brick must be separated from the fine material and then sorted/segregated to comply with the acceptable criteria at the receiving registered or permitted Part 360 facility.

Primary contaminant sources (including, but not limited to, tanks and hotspots) identified during site characterization, the RI, and implementation of the remedy will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be included with the FER. If the primary contaminant sources are removed under the Track 2/Track 4 cleanup, the final excavation subgrade will be surveyed.

5.4.4 Soil Transport Off-site

Transport of soil and non-native fill will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Trucks loaded with soil and non-native fill will exit the vicinity of the site using approved truck routes (Figure 11). These routes are the most appropriate routes to and from the site and take into account:

- Limiting transport through residential areas and past sensitive sites
- Use of city mapped truck routes
- Limiting off-site queuing of trucks entering the facility
- Limiting total distance to major highways
- Promoting safety in access to highways
- Overall safety in transport
- Community input (where necessary)

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

Egress points for truck and equipment transport from the site will be kept clean of soil and non-native fill during remediation and development.

To the extent possible, queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be minimized.

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

5.4.5 Soil and Non-native fill Off-Site Disposal

Disposal facilities will be determined at a later date and will be reported to the NYSDEC Project Manager prior to off-site transport and disposal of excavated soil and non-native fill. Soil and non-native fill excavated and removed from the site will be handled, transported and disposed of in accordance with local, state (including 6 NYCRR Part 360) and federal regulations. If disposal of soil/fill from this site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's

Project Manager. Unregulated off-site management of soil and non-native fill from this site is prohibited without formal NYSDEC approval.

The following documentation will be obtained and reported by the RE for each disposal location used in this project to fully demonstrate and document that the disposal of soil and non-native fill derived from the site conforms to applicable laws:

(1) A letter from the RE or BCP Participant to the receiving facility describing the soil and non-native fill to be disposed of and requesting formal written acceptance of the soil and non-native fill. This letter will state that soil and non-native fill to be disposed of is contaminated soil and non-native fill generated at an environmental remediation site in New York State. The letter will provide the project identity and the name and phone number of the RE. The letter will include as an attachment a summary of all chemical data for the material being transported (including waste characterization data).

(2) A letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material.

These documents will be included in the FER.

Non-hazardous non-native fill and contaminated soil transported off-site will be handled, at a minimum, as a solid waste per 6 NYCRR Part 360. Non-native fill and contaminated soil excavated from the site are prohibited from being disposed of at Part 360 Registration Facilities (also known as Soil Recycling Facilities). Hazardous waste is prohibited from being sent to a construction and demolition debris handling and recovery facility (6 NYCRR Part 361-5). Hazardous wastes derived from the site will be managed, transported and disposed of in full compliance with applicable local, state and federal regulations.

Soil that is contaminated but non-hazardous and is removed from the site is considered by the NYSDEC Division of Materials Management (DMM) to be C&D debris with contamination not typical of virgin soils. Soil and non-native fill will be considered a regulated solid waste unless a beneficial use determination (BUD) is approved stating otherwise. This soil may be sent to a permitted Part 360 landfill in New York or other appropriate out-of-state disposal facility permitted to accept contaminated soil from a brownfield site. This soil may be sent to a permitted C&D processing facility without permit modifications only upon prior notification and approval from NYSDEC. This soil and non-native fill is prohibited from being sent or redirected to a New York Part 361.5 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C&D facility that provides a detailed explanation that the soil and non-native fill is derived from an NYSDEC DER remediation site, that the soil and non-native fill is contaminated, and that the soil and non-native fill must not be redirected to on-site or off-site Soil Recycling Facilities. The letter will provide the project identity and the name and phone

number of the RE. The letter will include as an attachment a summary of chemical data for the soil and non-native fill being transported.

The FER will include an accounting of the destination of soil and non-native fill removed from the site during implementation of the remedy, including excavated soil, contaminated soil, non-native fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of each material type must also include records and approvals for receipt of the material. This information will also be presented in a table to be included in the FER.

A "Bill of Lading" system or equivalent will be used for off-site movement of non-hazardous wastes and contaminated soils. This information will be reported in the FER. Hazardous wastes derived from the site will be stored, transported, and disposed of in compliance with applicable local, state, and federal regulations.

Appropriately licensed haulers, in compliance with applicable local, state, and federal regulations, will be used to transport the material removed from this site.

A preliminary waste characterization study has been performed for soil intended for off-site disposal in a manner typically suitable to receiving facilities that receive waste from NYC construction sites. Additional sampling will be performed, as necessary, consistent with contractor-selected receiving facility permits. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results will be reported in the FER. Data available for excavated soil and non-native fill to be disposed of at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

5.4.6 Soil and Non-native fill Reuse On-site

Soil excavated during the remedy may be reused on-site below the site cap if the requirements in this section are met. Non-hazardous non-native fill or native soil that is not grossly impacted and meets the Track 2/Track 4 RURR SCOs may be reused at the discretion of the RE and upon approval of NYSDEC. Fill will be used as backfill for the excavation from which the fill was taken without additional analytical testing, assuming no grossly-impacted soil/fill is observed. Reused soil must be non-hazardous in accordance with the predetermined beneficial use listed in 6 NYCRR 360.13. Reuse of soil will be coordinated in advance with the NYSDEC project manager. Soil/fill intended for reuse on-site will be stockpiled separately from soil/fill designated for off-site disposal.

Acceptable demolition material proposed for reuse on-site, if any, will be sampled for asbestos. Concrete crushing or processing on-site is prohibited, unless NYSDEC specifically approves on-site processing and reuse of acceptable demolition material. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing is prohibited for reuse on-

site. Contaminated on-site non-native fill and contaminated soil, removed for grading or other purposes, will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

5.4.7 Fluids Management

Liquids to be removed from the site, including dewatering fluids, will be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations. The Contractor will either dispose of the accumulated water at an off-site disposal facility permitted to accept the waste or discharge to the New York City sewer system, following treatment and permitting.

5.4.8 Demarcation

After completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soils. A physical demarcation layer, consisting of orange snow fencing or equivalent material, will be placed on this surface to provide a visual reference in areas not otherwise covered by an impervious surface (e.g., concrete foundation slab). This demarcation layer will constitute the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the SMP. The survey will measure the top of the Residuals Management Zone before the placement of cover soils, pavement, structures, or other materials. This survey will constitute the physical and written record of the upper surface of the Residuals Management Zone in the SMP. A map showing the survey results will be included in the FER and the SMP.

5.4.9 Backfill from Off-Site Sources

Materials proposed for import onto the site will be approved by the RE and will be in compliance with the provisions in this RAWP prior to receipt at the site. Imported soil for backfill must meet the lower of the PGW and RURR SCOs; other acceptable fill for backfill includes virgin, native stone from a quarry or RCA that is provided by an NYSDEC Part 360-registered facility and complies with Part 360. Material from industrial sites, spill sites, other environmental remediation sites, or other potentially contaminated sites will not be imported to the site. Solid waste will not be imported onto the site.

Backfill will consist of clean fill (as described in the following paragraph) or other acceptable fill such as virgin stone from a quarry or RCA. Imported RCA will be from facilities permitted or registered by the NYSDEC. The import facilities will be identified in the FER. A PE/QEP will certify that the facilities have 6 NYCRR Part 360 registration and permitting for the period of acquisition of RCA. RCA imported from compliant facilities and virgin gravel, rock or stone from mines, quarries or facilities permitted or registered by the NYSDEC or the applicable state of origin and have no more than 10% by weight passing through a No. 80 sieve will not require

additional testing unless required by NYSDEC under its terms for operation of the facility. Addition exemptions from testing requirements may be approved by NYSDEC Project Manager based on their review of requests by the PE/QEP. RCA imported to the site must be derived from recognizable and uncontaminated concrete. RCA is not acceptable for, and will not be used as, a site cover.

Imported soil (i.e., clean fill) will meet the lower of PGW or RURR SCOs. Non-compliant soils will not be imported to the site. Clean fill will be segregated at a source/facility that is free of environmental contaminants. Qualified environmental personnel will collect representative samples at a frequency consistent with NYSDEC CP-51 Soil Cleanup Guidance Table 4, or at a lesser frequency negotiated with the NYSDEC Project Manager, depending on the proposed backfill source. The samples will be analyzed for Part 375 VOCs, SVOCs, pesticides/herbicides, PCBs, cyanide, and metals including trivalent and hexavalent chromium, PFAS, and 1,4-dioxane (8270 SIM) by a NYSDOH ELAP-certified laboratory. Upon meeting these criteria, the certified-clean fill will be transported to the site and segregated from impacted material, as necessary, on plastic sheeting until it is used as backfill.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by the NYSDEC. The contents of this RAWP and NYSDEC approval of this RAWP should not be construed as an approval for this purpose.

Trucks entering the site with imported soils will be secured with tight fitting covers.

5.4.10 Stormwater Pollution Prevention

The RE will provide documentation that the remediation contractor performs stormwater pollution prevention measures in accordance with the project-specific SWPPP, which will be provided prior to the start of RAWP implementation.

5.4.11 Contingency Plan

If USTs or other previously unidentified contaminant sources are found during on-site remedial excavation, sampling will be performed on product, if encountered, and surrounding subsurface soil/fill, if impacted or below the remedial excavation depth. Chemical analyses will be for full scan parameters (TCL VOCs and SVOCs, TAL metals, PCBs, and pesticides). Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during ground-intrusive work will be promptly communicated by phone to the NYSDEC Project Manager. These findings will also be detailed in the daily reports and the subsequent monthly BCP progress report.

5.4.12 Community Air Monitoring Plan

Community air monitoring will be conducted in compliance with the NYSDOH Generic CAMP outlined below.

The CAMP will include real-time monitoring for VOCs and particulates at the downwind perimeter of each designated work area when ground-intrusive work is in progress. Continuous monitoring will be required for all ground-intrusive work. Ground-intrusive work includes, but is not limited to, soil/fill excavation and handling and utility trenching. Periodic monitoring for VOCs may be required during non-intrusive work such as the collection of soil samples. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location and taking a reading prior to leaving a sample location.

CAMP monitoring of total VOC levels will be conducted using PIDs, and monitoring for particulates will be conducted using particulate sensors equipped with filters that can detect airborne particulates less than 10 microns in diameter (PM10). Monitoring for particulates and odors will be conducted during ground-intrusive work by a Langan field representative under the supervision of the RE. The work zone is defined as the general area in which machinery is operating in support of remediation. A portable PID will be used to monitor the work zone and for periodic monitoring of total VOC levels during work such as soil sampling. The site perimeter will be visually monitored for fugitive dust emissions.

The following actions will be taken based on total VOC measurements:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the work zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work will resume provided that the total VOC 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, work will be shut down.

The following actions will be taken based on PM10 measurements and visual dust observations:

- If the downwind PM10 level is 100 µg/m³ 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 µg/m³ 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 µg/m³ 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 µg/m³ of the upwind level and in preventing visible dust migration.

Sustained concentrations of VOCs or PM10 will be reported to the NYSDEC and NYSDOH Project Managers and included in the daily report. In addition, a map showing the location of the downwind and upwind CAMP stations will be included in the daily report.

5.4.13 Odor, Dust and Nuisance Control Plan

Dust, odor, and nuisance control will be accomplished by the remediation contractor as described in this section. The FER will include the following certification by the RE: "I certify that ground-intrusive work during remediation and development-related construction was conducted in accordance with dust and odor suppression methodology defined in the RAWP."

Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used as needed will include application of foam suppressants or tarps over the odor or VOC source areas, if encountered. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of site perimeter odor monitoring, including advising the Participant and contractor of conditions warranting the halt of work, will be the responsibility of the RE, who is responsible for certifying the FER. Application of odor controls is the responsibility of the Remedial Contractor.

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

Dust Control Plan

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

- Dust suppression will be achieved through the use of a dedicated water distribution system or on-site water truck for road wetting. Where required, the truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles
- Gravel will be used on roadways to provide a clean and dust-free road surface
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling

Other Nuisances

A plan for rodent control will be developed and used by the remediation contractor during site preparation (including clearing and grubbing) and during remedial work.

A plan for noise control will be developed and used by the remediation contractor during site preparation and remedial work and will conform, at a minimum, to the NYCDEP noise control standards.

6.0 CONTAMINATION TO REMAIN ON-SITE

Because residual contaminated soil will exist beneath the site after the remedy is complete, ECs and ICs are required to protect human health and the environment. These ECs and ICs are described hereafter. Long-term management of EC/ICs and of residual contamination will be executed under a site-specific SMP that will be developed and included in the FER.

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the site) will have one primary EC system: a composite cover system in the Track 4 area, which consists of a concrete foundation slab and concrete pavement and/or a minimum of two feet of imported cover material meeting the criteria established in this RAWP.

The FER will report residual contamination in tabular and map form. This will include presentation of contaminant concentrations that exceed Track 1, 2 and 4 SCOs.

7.0 ENGINEERING CONTROLS

7.1 Cover System

Exposure to residual contaminated soils in the Track 4 area will be prevented by an engineered composite cover system. This cover system will be comprised of a reinforced concrete building slab that covers the entire slab-on-grade portion of the building, and concrete paving and/or a minimum of two feet of imported soil or virgin stone meeting the criteria established in Section 5.4.9 of this RAWP. Additionally, to incorporate green remediation principles and techniques to the extent feasible in the development at this site, the building will include as an element of construction a minimum 20-mil vapor barrier/waterproofing membrane on the foundation, which may improve energy efficiency. Proposed development plans are provided in Appendix B.

The cover system will be a permanent EC. It will be inspected and its performance certified at specified intervals as required by the SMP. The SMP (to be included in the FER) will outline maintenance requirements and the procedures to be followed in the event that the composite cover system is disturbed after the remedial action is complete. A site survey will be conducted to document the location of residual contamination.

A map showing the aerial distribution of the cover system is included in Figure 12.

8.0 CRITERIA FOR COMPLETION OF REMEDIATION/TERMINATION OF ENGINEERING CONTROL SYSTEMS

The below sections describe the criteria for completion of remediation and termination of remedial systems.

8.1 Cover System

The Track 4 area composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

9.0 INSTITUTIONAL CONTROLS

Two elements have been designed to support continual and proper management of residual contamination in perpetuity: an EE and an SMP. These elements are described in this section.

A site-specific EE will be recorded with Queens Office of the City Register to provide an enforceable means for the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It will require that the grantor of the EE and the grantor's successors and assigns adhere to all ECs and ICs placed on this site by this NYSDEC-approved remedy. ICs provide restrictions for on-site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The will SMP describe appropriate methods and procedures for compliance with all ECs and ICs that are required by the EE. Once the SMP has been approved by the NYSDEC, compliance with the SMP will be required by the grantor of the EE and grantor's successors and assigns.

9.1 Environmental Easement

An EE, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination above UU SCOs is left on-site after the Remedial Action is complete. If the site will have residual contamination after completion of all Remedial Actions, then an EE is required. As part of this remedy, an EE approved by NYSDEC will be filed and recorded with the Queens Office of the City Register. The EE will be submitted as part of the FER.

The EE renders the site a Controlled Property. The EE must be recorded with the Queens Office of the City Register before the Certificate of Completion can be issued by NYSDEC. A series of ICs is required under this remedy to implement, maintain and monitor these EC systems, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil, and restricting the use of the site to restricted-residential and commercial uses only. These ICs are requirements or restrictions placed on the site that are listed in, and required by, the EE. ICs can generally be subdivided between controls that support ECs, and those that place general restrictions for on-site usage or other requirements. ICs in both of these groups are closely integrated with the SMP, which provides all of the methods and procedures to be followed to comply with this remedy.

Under the combined Track 2 and Track 4 scenario, the ECs will be in the form of a long-term cover system (concrete building foundation and/or a minimum of two feet of NYSDEC-approved imported backfill). The ICs that support the ECs are:

- Compliance with the EE by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required.

- All ECs must be operated and maintained as specified in the SMP.
- All ECs on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP.
- Environmental or public health monitoring must be performed as defined in the SMP.
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP.
- ECs may not be discontinued without an amendment or extinguishment of the EE. The EE may be extinguished only by release by the Commissioner of NYSDEC, or the Commissioner's designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

Adherence to these ICs for the site is mandated by the EE and will be implemented under the SMP (discussed in the next section).

The Controlled Property (site) will also have a series of ICs in the form of site restrictions and requirements. The site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming in residual site soil on the Controlled Property are prohibited.
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose as approved by NYSDOH and NYSDEC.
- All future activities on the Controlled Property that will disturb residual contaminated material, if present, are prohibited unless they are conducted in accordance with the soil management provisions in the SMP.
- The Controlled Property may be used for restricted-residential, commercial, and industrial use only (as allowed by zoning), provided the long-term ECs and ICs included in the SMP are employed.
- The Controlled Property may not be used for a higher level of use, such as unrestricted or residential (single family) use without an amendment or extinguishment of this EE.
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the

continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This statement must be certified by an expert that the NYSDEC finds acceptable.

9.2 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of Completion for the remedial action. The SMP is submitted as part of the FER but will be written in a manner that allows its use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the EE and the SMP are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes: (1) development, implementation, and management of all ECs and ICs; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of site information to NYSDEC; and (5) defining criteria for termination of treatment system operation, if applicable.

To address these needs, this SMP will include four plans: (1) an Engineering and Institutional Control Plan for implementation and management of IC/ECs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management, reporting, and IC/EC certification will be scheduled on a certification period basis. The certification period will be annual, unless otherwise approved by NYSDEC. The SMP will be based on a calendar year and will be due for submission to NYSDEC by three months following the end of the reporting period.

No exclusions for handling of remaining contaminated soil will be provided in the SMP. All handling of remaining contaminated material will be subject to provisions contained in the SMP.

10.0 FINAL ENGINEERING REPORT

An FER will be submitted to NYSDEC following implementation of the remedy defined in this RAWP. The FER will be prepared in conformance with NYSDEC DER-10 and will include the following:

- Documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan
- A comprehensive account of the locations and characteristics of material removed from the site including the surveyed map(s) of each source, as necessary
- As-built drawings for constructed elements, certifications, manifests, and bills of lading
- A description of the changes to the remedy from the elements provided in the RAWP and associated design documents, if any
- A tabular summary of performance evaluation sampling results and material characterization results and other sampling and chemical analysis performed as part of the remedy
- Written and photographic documentation of remedial work performed under this remedy
- An itemized tabular description of actual costs incurred during implementation of the remedy
- A summary of remaining contamination that exceeds the Track 2 and Track 4 SCOs – A table and a map that shows remaining contamination in excess of the SCOs will also be included
- An accounting of the destination of material removed from the site, including excavated contaminated soil, historical fill, solid waste, hazardous waste, non-regulated material, and fluids – Documentation associated with disposal of material must also include records and approvals for receipt of the material
- An accounting of the origin and chemical quality of material imported onto the site

Before approval of an FER and issuance of a Certificate of Completion, all project reports must be submitted in digital form on electronic media (PDF).

10.1 Certifications

The following certification will appear in front of the FER Executive Summary. The certification will be signed by the RE, Jason J. Hayes, who is a NYS-licensed Professional Engineer. The certification will be appropriately signed and stamped. The certification will include the following statements:

I _____certify that I am currently a NYS registered professional engineer, I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Work Plan (or Remedial Design or Plans and Specifications) was implemented and that all construction activities were completed in substantial conformance with the DER-approved Remedial Work Plan (or Remedial Design or Plans and Specifications).

The data submitted to DER demonstrates that the remediation requirements set forth in the Remedial Work Plan (or Remedial Design or Plans and Specifications) and all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established in the work plan (or Remedial Design or Plans and Specifications).

All use restrictions, institutional controls, engineering controls and/or any operation and maintenance requirements applicable to the site are contained in an environmental easement created and recorded pursuant to ECL 71-3605 and that any affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

An SMP has been submitted for the continual and proper operation, maintenance and monitoring of any engineering controls employed at the site including the proper maintenance of any remaining monitoring wells, and that such plan has been approved by DER.

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

11.0 SCHEDULE

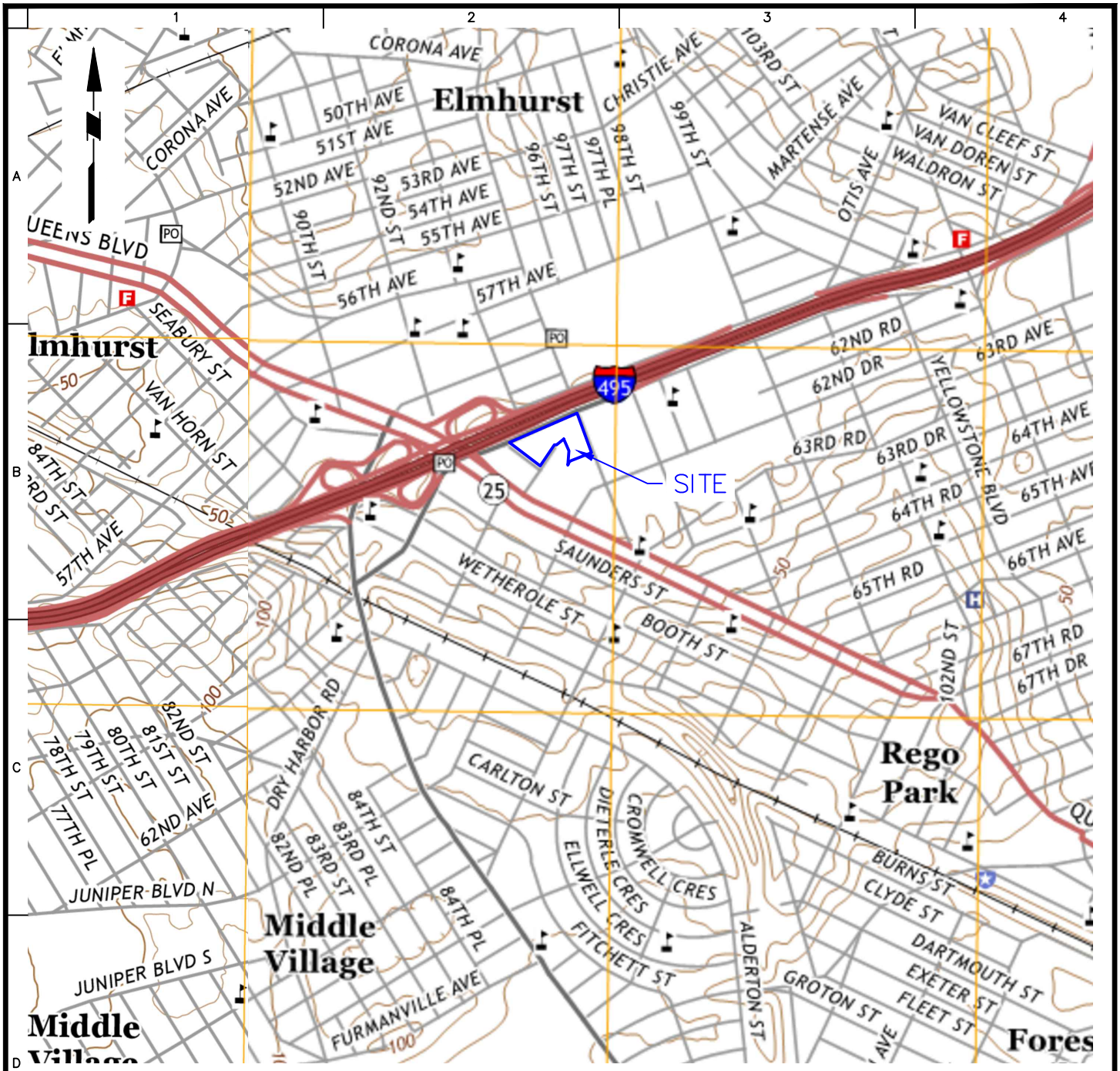
Remedial earthwork activities are anticipated to take about 6 months. Within 90 days of completion of all remedial activities at the site, an FER will be submitted to NYSDEC as detailed in Section 10.0. The project is anticipated to start in May 2023. A Gantt chart showing a detailed project schedule is included in Appendix H.

12.0 REFERENCES

1. Evaluation of Existing Parking Lot Fill dated June 9, 1994, prepared by Langan
2. Phase I Environmental Site Assessment, AKRF Project Number 10329, Rego Park, Queens, New York, dated April 30, 2003, prepared by AKRF Inc.
3. Phase II Environmental site Assessment, dated March 5, 2004, prepared by Roux Associates, Inc.
4. Supplemental Phase II Environmental Site Assessment, dated March 6, 2012, prepared by Roux Associates, Inc.
5. Remedial Investigation Work Plan, Rego Park Center III, 61-10 Junction Boulevard and 93-30 93rd Street, Rego Park, New York, dated December 3, 2021, prepared by Langan
6. Geotechnical Engineering Study for Rego Center III, Queens, New York, dated September 29, 2022, prepared by Langan
7. Supplemental Subsurface Investigation Technical Memorandum, Rego Center III, Rego Park, Queens, New York, dated October 19, 2021, prepared by Langan
8. New York State Department of Health, Final Guidance for the Evaluation of Soil Vapor Intrusion in the State of New York, dated October 2006.
9. New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER), Draft Brownfield Cleanup Program Guide, dated May 2004.
10. NYSDEC, DER, Technical and Administrative Guidance Memorandum No. 4031 Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Waste sites, dated October 27, 1989.
11. NYSDEC, Draft DER-10 Technical Guidance for site Investigation and Remediation, dated May 3, 2010; effective June 18, 2010.
12. NYSDEC, Part 375 of Title 6 of the New York Compilation of Codes, Rules, and Regulations, Effective December 14, 2006.
13. New York State Division of Water Technical and Operational Guidance Series (TOGS) (1.1.1) dated June 1998.
14. New York State Division of Water Technical and Operational Guidance Series (TOGS) 5.1.8 New York State Stormwater Management Design Manual, dated June 2008.
15. United States Environmental Protection Agency, Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, "EPA/540/S-95/504, April 1996.

16. NYSDEC, Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC's Part 375 Remedial Programs, June 2021.

FIGURES



LEGEND:

APPROXIMATE SITE BOUNDARY

NOTES:

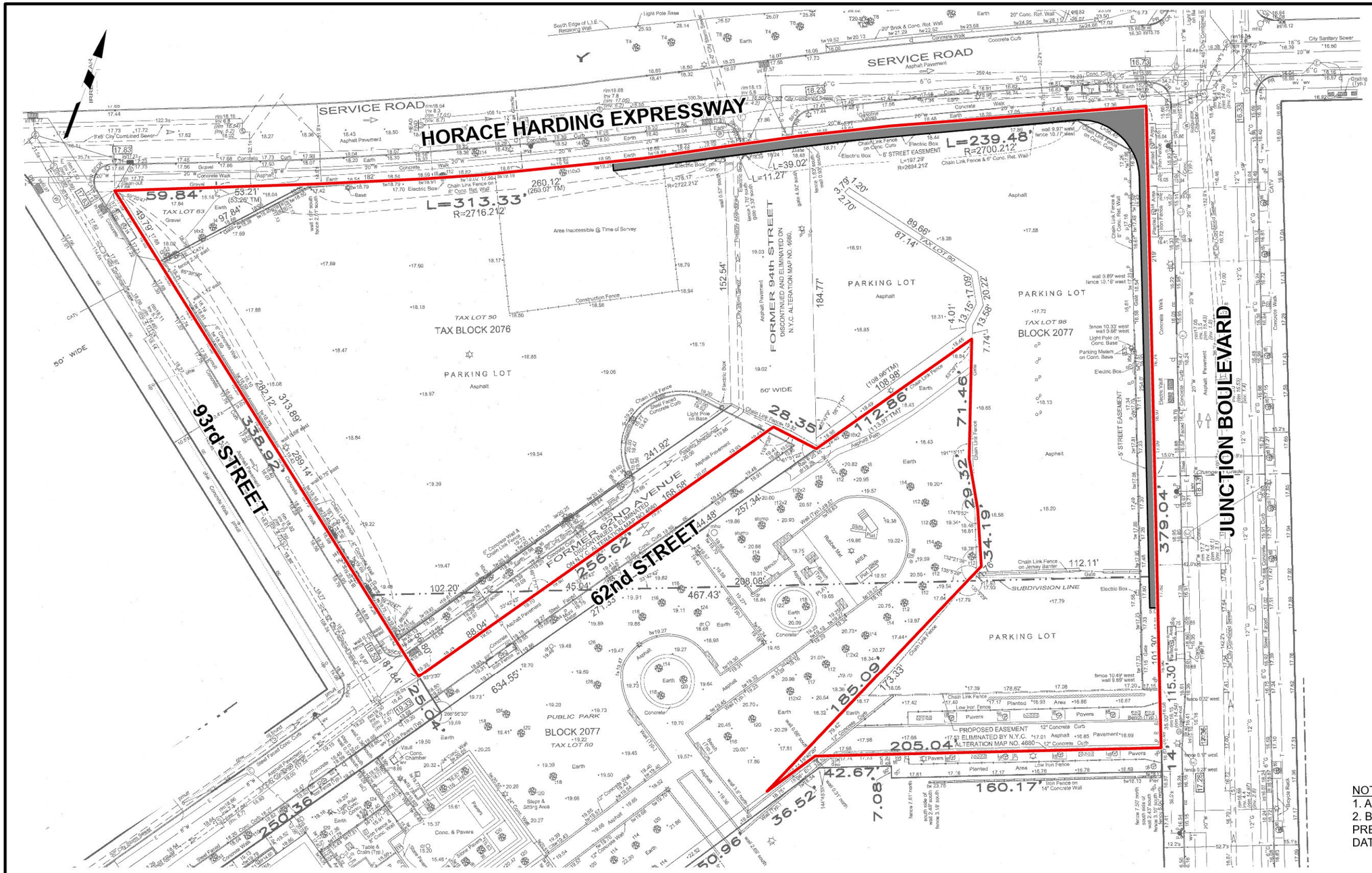
BASE MAP IS REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) 7.5–MINUTE SERIES BROOKLYN, N.Y., AND JAMAICA N.Y., QUADRANGLE MAPS, DATED 2016

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
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan

Project	REGO PARK CENTER III BLOCK No. 2076, LOT No. 50 QUEENS NEW YORK
Figure Title	SITE LOCATION MAP
Project No.	170683801
Figure No.	1
Date	6/28/2021
Scale	N.T.S
Drawn By	JG
Checked By	JL
Submission Date	–

Filename: \\langan.com\data\NY\data8\170683801\Project Data\CAD-PW\01\SheetFiles\Environmental\RIWP\Figure 1 - Site Location Map.dwg Date: 3/31/2022 Time: 09:05 User: fbrazier Style Table: Langan.stb Layout: ANSIA-BP



LEGEND

- SITE BOUNDARY
- NEW YORK CITY EASEMENT, DATED JANUARY 8, 2003

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.

80 0 80
SCALE IN FEET

LANGAN
Langan Engineering and Environmental Services, Inc.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
SITE PLAN

Project No. 170683801	Figure 2
Date 3/31/2022	
Scale 1" = 80'	
Drawn By MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx

Location	SB1	SB1	SB1
Sample Name	SB1_0-2	SODUP05_012622	SB1_13-15
Sample Date	01/26/2022	01/26/2022	01/26/2022
Sample Depth	0-2	0-2	13-15
VOCs (mg/kg)			
Acetone	0.05 J	0.028 J	0.028
Methyl Ethyl Ketone (2-Butanone)	0.0072 J	<0.014 U	0.0058 J
SVOCs (mg/kg)			
Benzo(a)anthracene	**4.3 J**	**1.4 J**	**12**
Benzo(a)pyrene	**3.6 J**	**1.3 J**	**12**
Benzo(b)fluoranthene	**4.6 J**	**1.6 J**	**16**
Benzo(k)fluoranthene	**1.2 J**	0.47 J	**3.1**
Chrysene	**4.2 J**	**1.4 J**	**13**
Dibenz(a,h)anthracene	**0.37**	0.16	**1.7**
Indeno(1,2,3-cd)pyrene	**2 J**	**0.83 J**	**8.8**
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	**0.00165 J**	0.000512 J	0.0002 J

Location	SB5	SB5	SB5
Sample Name	SB5_1-3	SODUP04_012622	SB5_14-15
Sample Date	01/26/2022	01/26/2022	01/26/2022
Sample Depth	1-3	1-3	14-15
VOCs (mg/kg)			
Acetone	0.032	0.033	0.015
Methyl Ethyl Ketone (2-Butanone)	0.0055 J	0.0063 J	0.0022 J
SVOCs (mg/kg)			
Benzo(a)anthracene	0.19	0.067 J	0.24
Benzo(a)pyrene	0.22	0.077 J	0.26
Benzo(b)fluoranthene	0.25	0.089 J	0.36
Benzo(k)fluoranthene	0.095 J	0.036 J	0.11
Chrysene	0.18	0.068 J	0.3
Dibenz(a,h)anthracene	0.031 J	<0.11 U	0.048 J
Indeno(1,2,3-cd)pyrene	0.16	0.06 J	0.22
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	<0.000282 U	<0.000256 U	<0.000266 U

Location	SB6	SB6	SB6
Sample Name	SB6_1-3	SB6_13-15	
Sample Date	01/26/2022	01/26/2022	
Sample Depth	1-3	13-15	
VOCs (mg/kg)			
Acetone	0.0095 J	0.02	
Methyl Ethyl Ketone (2-Butanone)	<0.012 U	<0.011 U	
SVOCs (mg/kg)			
Benzo(a)anthracene	**1.1**	0.2	
Benzo(a)pyrene	**1.1**	0.21	
Benzo(b)fluoranthene	1	0.27	
Benzo(k)fluoranthene	0.4	0.087 J	
Chrysene	**1.1**	0.22	
Dibenz(a,h)anthracene	0.13	0.034 J	
Indeno(1,2,3-cd)pyrene	**0.56**	0.16	
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	<0.000262 U	<0.00026 U	

Location	SB2	SB2	SB2
Sample Name	SB2_1-3	SB2_13-15	SB2_18-20
Sample Date	01/26/2022	01/26/2022	01/26/2022
Sample Depth	1-3	13-15	18-20
VOCs (mg/kg)			
Acetone	**0.08**	<0.026 U	**0.2**
Methyl Ethyl Ketone (2-Butanone)	0.02	<0.026 U	0.038
SVOCs (mg/kg)			
Benzo(a)anthracene	0.28	**1.3**	<0.17 U
Benzo(a)pyrene	0.32	**1.3**	<0.22 U
Benzo(b)fluoranthene	0.39	**1.7**	<0.17 U
Benzo(k)fluoranthene	0.14	0.56	<0.17 U
Chrysene	0.29	**1.4**	<0.17 U
Dibenz(a,h)anthracene	0.044 J	0.17	<0.17 U
Indeno(1,2,3-cd)pyrene	0.24	**0.93**	<0.22 U
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	<0.000259 U	<0.000296 U	<0.00156 U

Location	SB7	SB7
Sample Name	SB7_2-4	SB7_13-15
Sample Date	01/26/2022	01/26/2022
Sample Depth	2-4	13-15
VOCs (mg/kg)		
Acetone	0.012	0.018
Methyl Ethyl Ketone (2-Butanone)	<0.0096 U	<0.011 U
SVOCs (mg/kg)		
Benzo(a)anthracene	0.59	0.28
Benzo(a)pyrene	0.62	0.28
Benzo(b)fluoranthene	0.77	0.28
Benzo(k)fluoranthene	0.25	0.11 J
Chrysene	0.57	0.26
Dibenz(a,h)anthracene	0.082 J	0.03 J
Indeno(1,2,3-cd)pyrene	0.42	0.14 J
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000265 U	<0.000284 U

Location	SB3	SB3
Sample Name	SB3_1-3	SB3_8-10
Sample Date	01/26/2022	01/26/2022
Sample Depth	1-3	8-10
VOCs (mg/kg)		
Acetone	0.031	<0.017 U
Methyl Ethyl Ketone (2-Butanone)	0.0043 J	<0.017 U
SVOCs (mg/kg)		
Benzo(a)anthracene	0.61	0.97 J
Benzo(a)pyrene	0.65	**1.1 J**
Benzo(b)fluoranthene	0.8	**1.3**
Benzo(k)fluoranthene	0.2	0.41 J
Chrysene	0.64	1 J
Dibenz(a,h)anthracene	0.1 J	<1.3 U
Indeno(1,2,3-cd)pyrene	0.47	**0.79 J**
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000273 U	<0.000308 U

Location	SB8	SB8
Sample Name	SB8_0-2	SB8_13-15
Sample Date	02/09/2022	02/09/2022
Sample Depth	0-2	13-15
VOCs (mg/kg)		
Acetone	<0.014 U	0.049
Methyl Ethyl Ketone (2-Butanone)	<0.014 U	0.01 J
SVOCs (mg/kg)		
Benzo(a)anthracene	**2.1**	0.2
Benzo(a)pyrene	**1.6**	0.15
Benzo(b)fluoranthene	**2.3**	0.21
Benzo(k)fluoranthene	0.63	0.073 J
Chrysene	**1.7**	0.23
Dibenz(a,h)anthracene	0.23	0.028 J
Indeno(1,2,3-cd)pyrene	**1.2**	0.11 J
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	**0.0145**	<0.000263 U

Location	SB9	SB9
Sample Name	SB9_1-3	SB9_14-15
Sample Date	01/28/2022	01/28/2022
Sample Depth	1-3	14-15
VOCs (mg/kg)		
Acetone	0.019	0.011 J
Methyl Ethyl Ketone (2-Butanone)	0.0043 J	<0.0077 U
SVOCs (mg/kg)		
Benzo(a)anthracene	0.1 J	0.093 J
Benzo(a)pyrene	0.1 J	0.08 J
Benzo(b)fluoranthene	0.16	0.11
Benzo(k)fluoranthene	0.04 J	0.033 J
Chrysene	0.1 J	0.085 J
Dibenz(a,h)anthracene	<0.12 U	<0.11 U
Indeno(1,2,3-cd)pyrene	0.078 J	0.059 J
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000272 UJ	<0.00025 U

Location	SB4	SB4
Sample Name	SB4_2-4	SB4_12-14
Sample Date	01/28/2022	01/28/2022
Sample Depth	2-4	12-14
VOCs (mg/kg)		
Acetone	0.027	0.016
Methyl Ethyl Ketone (2-Butanone)	0.005 J	0.003 J
SVOCs (mg/kg)		
Benzo(a)anthracene	**1.4**	<0.12 U
Benzo(a)pyrene	**1.3**	<0.15 U
Benzo(b)fluoranthene	**1.8**	<0.12 U
Benzo(k)fluoranthene	0.53	<0.12 U
Chrysene	**1.4**	<0.12 U
Dibenz(a,h)anthracene	0.21	<0.12 U
Indeno(1,2,3-cd)pyrene	**1**	<0.15 U
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000264 U	<0.000254 U

Location	SB10	SB10	SB10
Sample Name	SB10_1-3	SB10_12-14	
Sample Date	01/28/2022	01/28/2022	
Sample Depth	1-3	12-14	
VOCs (mg/kg)			
Acetone	0.038	0.044	
Methyl Ethyl Ketone (2-Butanone)	0.01 J	<0.013 U	
SVOCs (mg/kg)			
Benzo(a)anthracene	0.076 J	**5.2**	
Benzo(a)pyrene	0.071 J	**4.2**	
Benzo(b)fluoranthene	0.1 J	**5.8**	
Benzo(k)fluoranthene	<0.12 U	**1.7**	
Chrysene	0.078 J	**4.5**	
Dibenz(a,h)anthracene	<0.12 U	**0.78**	
Indeno(1,2,3-cd)pyrene	0.053 J	**3**	
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	<0.00028 U	<0.000262 U	

Location	SB11	SB11
Sample Name	SB11_1-3	SB11_13-15
Sample Date	01/28/2022	01/28/2022
Sample Depth	1-3	13-15
VOCs (mg/kg)		
Acetone	0.029	0.023
Methyl Ethyl Ketone (2-Butanone)	0.0061 J	0.0036 J
SVOCs (mg/kg)		
Benzo(a)anthracene	0.23	<0.12 U
Benzo(a)pyrene	0.24	<0.16 U
Benzo(b)fluoranthene	0.24	<0.12 U
Benzo(k)fluoranthene	0.078 J	<0.12 U
Chrysene	0.24	<0.12 U
Dibenz(a,h)anthracene	0.046 J	<0.12 U
Indeno(1,2,3-cd)pyrene	0.2	<0.16 U
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000269 U	<0.000275 U

Location	SB14	SB14	SB14
Sample Name	SB14_0-2	SB14_13-15	
Sample Date	01/21/2022	01/21/2022	
Sample Depth	0-2	13-15	
VOCs (mg/kg)			
Acetone	<0.0095 U	0.019	
Methyl Ethyl Ketone (2-Butanone)	<0.0095 U	0.0028 J	
SVOCs (mg/kg)			
Benzo(a)anthracene	0.67	0.35	
Benzo(a)pyrene	0.61 J	0.25	
Benzo(b)fluoranthene	0.96	0.45	
Benzo(k)fluoranthene	0.34 J	0.14	
Chrysene	0.72	0.44	
Dibenz(a,h)anthracene	0.14 J	0.04 J	
Indeno(1,2,3-cd)pyrene	**0.57 J**	0.23	
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	<0.00025 U	<0.000257 U	

Location	SB15	SB15
Sample Name	SB15_1-3	SB15_14-16
Sample Date	01/21/2022	01/21/2022
Sample Depth	1-3	14-16
VOCs (mg/kg)		
Acetone	0.049	0.016
Methyl Ethyl Ketone (2-Butanone)	0.0082 J	<0.0082 U
SVOCs (mg/kg)		
Benzo(a)anthracene	0.28	<0.1 U
Benzo(a)pyrene	0.27	<0.14 U
Benzo(b)fluoranthene	0.38	<0.1 U
Benzo(k)fluoranthene	0.1 J	<0.1 U
Chrysene	0.31	<0.1 U
Dibenz(a,h)anthracene	0.044 J	<0.1 U
Indeno(1,2,3-cd)pyrene	0.19	<0.14 U
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000273 U	<0.000245 U

Location	SB17	SB17
Sample Name	SB17_1-3	SB17_13-15
Sample Date	01/19/2022	01/19/2022
Sample Depth	1-3	13-15
VOCs (mg/kg)		
Acetone	<0.016 U	<0.011 U
Methyl Ethyl Ketone (2-Butanone)	<0.016 U	<0.011 U
SVOCs (mg/kg)		
Benzo(a)anthracene	0.3	0.15 J
Benzo(a)pyrene	0.3	<0.7 U
Benzo(b)fluoranthene	0.41	0.17 J
Benzo(k)fluoranthene	0.12	<0.52 U
Chrysene	0.3	0.14 J
Dibenz(a,h)anthracene	0.054 J	<0.52 U
Indeno(1,2,3-cd)pyrene	0.23	<0.7 U
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	0.000261 J	<0.00025 U

Location	SB18	SB18	SB18
Sample Name	SB18_0-2	SB18_13-15	SB18_18-20
Sample Date	01/21/2022	01/21/2022	01/21/2022
Sample Depth	0-2	13-15	18-20
VOCs (mg/kg)			
Acetone	0.047	0.028	**0.64**
Methyl Ethyl Ketone (2-Butanone)	0.01 J	<0.023 U	**0.17**
SVOCs (mg/kg)			
Benzo(a)anthracene	0.12	0.56	<0.23 U
Benzo(a)pyrene	0.13 J	0.48	<0.31 U
Benzo(b)fluoranthene	0.18	0.67	<0.23 U
Benzo(k)fluoranthene	0.064 J	0.2	<0.23 U
Chrysene	0.13	0.57	<0.23 U
Dibenz(a,h)anthracene	0.029 J	0.085 J	<0.23 U
Indeno(1,2,3-cd)pyrene	0.12 J	0.35	<0.31 U
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	0.00039	<0.000277 U	<0.000555 U

Location	SB16	SB16
Sample Name	SB16_1-3	SB16_13-15
Sample Date	01/21/2022	01/21/2022
Sample Depth	1-3	13-15
VOCs (mg/kg)		
Acetone	0.046	0.032
Methyl Ethyl Ketone (2-Butanone)	0.008 J	0.0047 J
SVOCs (mg/kg)		
Benzo(a)anthracene	0.16	**2.7**
Benzo(a)pyrene	0.17	**2.1**
Benzo(b)fluoranthene	0.22	**2.5**
Benzo(k)fluoranthene	0.079 J	**0.82**
Chrysene	0.18	**2.9**
Dibenz(a,h)anthracene	0.028 J	0.29 J
Indeno(1,2,3-cd)pyrene	0.13 J	**1.2**
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000246 U	<0.000242 U

Location	SB19	SB19	SB19
Sample Name	SB19_8-10	SB19_12-14	SB19_16-18
Sample Date	01/21/2022	01/21/2022	01/21/2022
Sample Depth	8-10	12-14	16-18
VOCs (mg/kg)			
Acetone	**0.16**	**0.32**	**0.55**
Methyl Ethyl Ketone (2-Butanone)	0.039	0.087	**0.13**
SVOCs (mg/kg)			
Benzo(a)anthracene	0.14	<0.2 U	0.15 J
Benzo(a)pyrene	0.14 J	<0.27 U	0.19 J
Benzo(b)fluoranthene	0.3	<0.2 U	0.25
Benzo(k)fluoranthene	0.084 J	<0.2 U	0.088 J
Chrysene	0.24	<0.2 U	0.14 J
Dibenz(a,h)anthracene	0.038 J	<0.2 U	0.037 J
Indeno(1,2,3-cd)pyrene	0.16 J	<0.27 U	0.16 J
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	0.000667	0.000473 F	<0.000401 U

Location	SB20	SB20
Sample Name	SB20_1-3	SB20_13-15
Sample Date	01/19/2022	01/19/2022
Sample Depth	1-3	13-15
VOCs (mg/kg)		
Acetone	0.03	**0.1**
Methyl Ethyl Ketone (2-Butanone)	<0.015 U	0.027
SVOCs (mg/kg)		
Benzo(a)anthracene	**2.4**	<0.13 U
Benzo(a)pyrene	**2.2**	<0.17 U
Benzo(b)fluoranthene	**2.9**	<0.13 U
Benzo(k)fluoranthene	**0.93 J**	<0.13 U
Chrysene	**2.2**	<0.13 U
Dibenz(a,h)anthracene	**0.4 J**	<0.13 U
Indeno(1,2,3-cd)pyrene	**1.6**	<0.17 U
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	0.000292	<0.000311 U

Location	SB30	SB30
Sample Name	SB30_2-4	SB30_13-15
Sample Date	02/11/2022	02/11/2022
Sample Depth	2-4	13-15
VOCs (mg/kg)		
Acetone	**0.22**	0.036
Methyl Ethyl Ketone (2-Butanone)	0.051	0.008 J
SVOCs (mg/kg)		
Benzo(a)anthracene	0.05 J	**3**
Benzo(a)pyrene	0.046 J	**3.2**
Benzo(b)fluoranthene	0.05 J	**3.5**
Benzo(k)fluoranthene	<0.11 U	**1.2**
Chrysene	0.041 J	**2.8**
Dibenz(a,h)anthracene	<0.11 U	**0.38**
Indeno(1,2,3-cd)pyrene	0.029 J	**2.3**

Location	SB21	SB21
Sample Name	SB21_2-4	SB21_13-15
Sample Date	01/19/2022	01/19/2022
Sample Depth	2-4	13-15
VOCs (mg/kg)		
Acetone	0.026	**0.37 J**
Methyl Ethyl Ketone (2-Butanone)	<0.017 U	0.12 J
SVOCs (mg/kg)		
Benzo(a)anthracene	0.038 J	0.11 J
Benzo(a)pyrene	<0.15 U	0.12 J
Benzo(b)fluoranthene	0.043 J	0.15
Benzo(k)fluoranthene	<0.11 U	0.052 J
Chrysene	0.036 J	0.11 J
Dibenz(a,h)anthracene	<0.11 U	0.029 J
Indeno(1,2,3-cd)pyrene	0.032 J	0.11 J
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000026 U	<0.000355 U

Location	SB31	SB31
Sample Name	SB31_2-4	SB31_13-15
Sample Date	02/11/2022	02/11/2022
Sample Depth	2-4	13-15
VOCs (mg/kg)		
Acetone	0.028	0.029
Methyl Ethyl Ketone (2-Butanone)	0.0033 J	0.0056 J
SVOCs (mg/kg)		
Benzo(a)anthracene	<0.11 U	0.32
Benzo(a)pyrene	<0.15 U	0.28
Benzo(b)fluoranthene	<0.11 U	0.35
Benzo(k)fluoranthene	<0.11 U	0.11
Chrysene	<0.11 U	0.28
Dibenz(a,h)anthracene	<0.11 U	0.049 J
Indeno(1,2,3-cd)pyrene	<0.15 U	0.2

Location	SB12	SB12	SB12
Sample Name	SB12_1-3	SODUP06_012822	SB12_13-15
Sample Date	01/28/2022	01/28/2022	01/28/2022
Sample Depth	1-3	1-3	13-15
VOCs (mg/kg)			
Acetone	0.048	**0.061**	**0.056**
Methyl Ethyl Ketone (2-Butanone)	0.01 J	0.014 J	0.01
SVOCs (mg/kg)			
Benzo(a)anthracene	0.35	0.19	<0.12 U
Benzo(a)pyrene	0.33	0.16	<0.16 U
Benzo(b)fluoranthene	0.45 J	0.2 J	<0.12 U
Benzo(k)fluoranthene	0.16	0.062 J	<0.12 U
Chrysene	0.36	0.18	<0.12 U
Dibenz(a,h)anthracene	0.062 J	0.029 J	<0.12 U
Indeno(1,2,3-cd)pyrene	0.26	0.098 J	<0.16 U
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	**0.00105 J**	<0.00109 UJ	<0.000294 U

Location	SB24	SB24	SB24
Sample Name	SB24_1-3	SB24_13-15	
Sample Date	01/19/2022	01/19/2022	
Sample Depth	1-3	13-15	
VOCs (mg/kg)			
Acetone	0.019	0.017	
Methyl Ethyl Ketone (2-Butanone)	<0.0099 U	<0.0098 U	
SVOCs (mg/kg)			
Benzo(a)anthracene	0.95	**1.9**	
Benzo(a)pyrene	0.89	**1.7**	
Benzo(b)fluoranthene	**1.1**	**2.1**	
Benzo(k)fluoranthene	0.37 J	0.68	
Chrysene	0.81	**1.7**	
Dibenz(a,h)anthracene	0.17 J	0.32	
Indeno(1,2,3-cd)pyrene	**0.67 J**	**1.2**	
PFAS (mg/kg)			
Perfluorooctanesulfonic Acid (PFOS)	<0.000273 U	<0.00031 U	

Location	SB23	SB23
Sample Name	SB23_3-5	SB23_12-14
Sample Date	01/18/2022	01/18/2022
Sample Depth	3-5	12-14
VOCs (mg/kg)		
Acetone	0.023	**0.15**
Methyl Ethyl Ketone (2-Butanone)	<0.0089 U	0.036 J
SVOCs (mg/kg)		
Benzo(a)anthracene	**2.5**	**3.8**
Benzo(a)pyrene	**2.4**	**3.1**
Benzo(b)fluoranthene	**3**	**4.2**
Benzo(k)fluoranthene	**1.1**	**1.3**
Chrysene	**2.3**	**3.5**
Dibenz(a,h)anthracene	**0.37**	**0.47**
Indeno(1,2,3-cd)pyrene	**1.6**	**2**
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000269 U	0.000193 J

Location	SB22	SB22
Sample Name	SB22_3-5	SB22_12-14
Sample Date	01/18/2022	01/18/2022
Sample Depth	3-5	12-14
VOCs (mg/kg)		
Acetone	0.034	0.0098 J
Methyl Ethyl Ketone (2-Butanone)	0.0074 J	<0.011 U
SVOCs (mg/kg)		
Benzo(a)anthracene	<0.54 U	**7.8**
Benzo(a)pyrene	<0.72 U	**6.5**
Benzo(b)fluoranthene	<0.54 U	**8**
Benzo(k)fluoranthene	<0.54 U	**2.8**
Chrysene	0.12 J	**6.5**
Dibenz(a,h)anthracene	<0.54 U	**0.97**
Indeno(1,2,3-cd)pyrene	<0.72 U	**4.2**
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000245 U	<0.000273 U

Location	SB13	SB13
Sample Name	SB13_0-2	SB13_13-15
Sample Date	02/09/2022	02/09/2022
Sample Depth	0-2	13-15
VOCs (mg/kg)		
Acetone	<0.012 U	0.021
Methyl Ethyl Ketone (2-Butanone)	<0.012 U	0.0045 J
SVOCs (mg/kg)		
Benzo(a)anthracene	0.27 J	**1.1**
Benzo(a)pyrene	0.27 J	0.92
Benzo(b)fluoranthene	0.36 J	0.89
Benzo(k)fluoranthene	<0.57 U	0.26 J
Chrysene	0.28 J	**1.3**
Dibenz(a,h)anthracene	<0.57 U	0.14 J
Indeno(1,2,3-cd)pyrene	0.21 J	**0.53 J**
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	**0.00151**	<0.000274 U

Location	SB25	SB25
Sample Name	SB25_1-3	SB25_12-14
Sample Date	01/19/2022	01/19/2022
Sample Depth	1-3	12-14
VOCs (mg/kg)		
Acetone	<0.0096 U	0.018
Methyl Ethyl Ketone (2-Butanone)	<0.0096 U	<0.018 U
SVOCs (mg/kg)		
Benzo(a)anthracene	0.46	**2**
Benzo(a)pyrene	0.42	**1.6 J**
Benzo(b)fluoranthene	0.52	**2.3**
Benzo(k)fluoranthene	0.2 J	0.77 J
Chrysene	0.4	**1.8**
Dibenz(a,h)anthracene	0.07 J	**0.35 J**
Indeno(1,2,3-cd)pyrene	0.32	**1.3 J**
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	<0.000251 U	<0.000434 U

Location	SB26	SB26
Sample Name	SB26_1-3	SB26_13-15
Sample Date	01/19/2022	01/19/2022
Sample Depth	1-3	13-15
VOCs (mg/kg)		
Acetone	<0.01 U	0.0091 J
Methyl Ethyl Ketone (2-Butanone)	<0.01 U	<0.016 U
SVOCs (mg/kg)		
Benzo(a)anthracene	<0.11 U	0.039 J
Benzo(a)pyrene	<0.15 U	<0.23 U
Benzo(b)fluoranthene	<0.11 U	0.1 J
Benzo(k)fluoranthene	<0.11 U	<0.17 U
Chrysene	<0.11 U	0.042 J
Dibenz(a,h)anthracene	<0.11 U	<0.17 U
Indeno(1,2,3-cd)pyrene	<0.15 U	0.076 J
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	0.000538 J	<0.000403 U

LEGEND

- SB-7 — SOIL SAMPLE
- SB-1/MW-1 — SOIL SAMPLE AND GROUNDWATER MONITORING WELL SAMPLE
- SITE BOUNDARY

Analyte	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs
VOCs (mg/kg)		
Acetone	0.05	100
Methyl Ethyl Ketone (2-Butanone)	0.12	100
SVOCs (mg/kg)		
Benzo(a)anthracene	1	1
Benzo(a)pyrene	1	1
Benzo(b)fluoranthene	1	1
Benzo(k)fluoranthene	0.8	3.9
Chrysene	1	3.9
Dibenz(a,h)anthracene	0.33	0.33
Indeno(1,2,3-cd)pyrene	0.5	0.5
PFAS (mg/kg)		
Perfluorooctanesulfonic Acid (PFOS)	0.00088	0.044

Exceedance Summary:

10 - Result exceeds Unrestricted Use SCOs

10 - Result exceeds Restricted Use Restricted-Residential SCOs

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE AND RESTRICTED USE RESTRICTED -RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCO).
4. CRITERION COMPARISONS FOR 3- & 4-METHYLPHENOL (M&P CRESOL) ARE PROVIDED FOR REFERENCE. PROMULGATED SCOS ARE FOR 3-METHYLPHENOL (M-CRESOL) AND 4-METHYLPHENOL (P-CRESOL).
5. CONTAMINANTS EXCEEDING PART 375 UNRESTRICTED USE AND RESTRICTED USE-RESTRICTED RESIDENTIAL SCOS ARE SHOWN.
6. mg/kg = MILLIGRAM PER KILOGRAM
7. VOCs = VOLATILE ORGANIC COMPOUNDS
8. SVOCs = SEMI-VOLATILE ORGANIC COMPOUNDS
9. PFAS = PER-AND POLYFLUOROALKYL SUBSTANCES

QUALIFIER:
J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT (MDL), BUT BELOW THE RL; THEREFORE, THE RESULT IS AN ESTIMATED CONCENTRATION.
P = THE RELATIVE PERCENT DIFFERENCE (RPD) BETWEEN THE RESULTS FOR THE TWO COLUMNS EXCEEDS THE METHOD-SPECIFIED CRITERIA.
UJ = THE ANALYTE WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE RL; HOWEVER, THE REPORTED RL IS APPROXIMATE AND MAY BE INACCURATE OR IMPRECISE.

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: REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title: SOIL SAMPLE LOCATION AND RESULTS MAP – VOCs, SVOCs AND PFAS

Project No.	170683801
Date	4/15/2022
Scale	1" = 60 feet
Drawn By	MG
Submission Date	
Figure	3A

Location	SB1	SB1	SB1
Sample Name	SB1_0-2	SODUP05_012622	SB1_13-15
Sample Date	01/26/2022	01/26/2022	01/26/2022
Sample Depth	0-2	0-2	13-15
Pesticides (mg/kg)			
4,4'-DDD	<0.00185 U	<0.00185 U	<0.0017 U
4,4'-DDE	<0.00185 U	<0.00185 U	<0.0017 U
4,4'-DDT	<0.00346 U	<0.00347 U	<0.00318 U
PCBs (mg/kg)			
Total PCBs	<0.0384 U	<0.0396 U	<0.0369 U
Metals (mg/kg)			
Arsenic	3.01 J	7 J	3.75
Barium	91.9 J	**674 J**	62.9
Cadmium	0.603 J	1.5	1.14
Chromium, Trivalent	18	20	15
Copper	41.4 J	**189 J**	18
Lead	**212 J**	**1,630 J**	61.7
Mercury	0.091 J	**0.959 J**	0.107
Nickel	9.06 J	16 J	9.86
Selenium	<1.83 U	0.336 J	<1.69 U
Silver	<0.913 U	0.673 J	<0.847 U
Zinc	**134 J**	**1,010 J**	62.6

Location	SB5	SB5	SB5
Sample Name	SB5_1-3	SODUP04_012622	SB5_14-15
Sample Date	01/26/2022	01/26/2022	01/26/2022
Sample Depth	1-3	1-3	14-15
Pesticides (mg/kg)			
4,4'-DDD	**0.00723 J**	<0.00177 U	<0.0172 U
4,4'-DDE	**0.00473 J**	<0.00177 U	<0.0172 U
4,4'-DDT	<0.00348 U	<0.00332 U	<0.0323 U
PCBs (mg/kg)			
Total PCBs	0.00612 J	0.0123 J	0.0229 J
Metals (mg/kg)			
Arsenic	7.68 J	5.99	2.26
Barium	182 J	134	64.6
Cadmium	0.818 J	1.19	0.561 J
Chromium, Trivalent	19	20	13
Copper	**56.8 J**	**170 J**	35.1
Lead	**205**	**274**	**84.3**
Mercury	**0.226**	**0.236**	**0.237**
Nickel	12.6 J	26.8 J	8.3
Selenium	0.327 J	<1.78 U	<1.75 U
Silver	0.364 J	<0.892 U	<0.876 U
Zinc	**357 J**	**1,080 J**	86.4

Location	SB6	SB6
Sample Name	SB6_1-3	SB6_13-15
Sample Date	01/26/2022	01/26/2022
Sample Depth	1-3	13-15
Pesticides (mg/kg)		
4,4'-DDD	<0.00175 U	<0.0174 UJ
4,4'-DDE	<0.00175 U	<0.0174 UJ
4,4'-DDT	<0.00328 U	<0.00327 UJ
PCBs (mg/kg)		
Total PCBs	0.00692 J	0.0262 J
Metals (mg/kg)		
Arsenic	1.95	3.26
Barium	64.4	49.2
Cadmium	0.352 J	0.589 J
Chromium, Trivalent	8.6	15
Copper	24.2	29.7
Lead	49.6	**75**
Mercury	0.108	0.079
Nickel	10.2	10.9
Selenium	<1.68 U	<1.71 U
Silver	<0.839 U	<0.854 U
Zinc	54.5	101

Location	SB2	SB2	SB2
Sample Name	SB2_1-3	SB2_13-15	SB2_18-20
Sample Date	01/26/2022	01/26/2022	01/26/2022
Sample Depth	1-3	13-15	18-20
Pesticides (mg/kg)			
4,4'-DDD	<0.00174 U	<0.00207 U	<0.00263 U
4,4'-DDE	<0.00174 U	<0.00207 U	<0.00263 U
4,4'-DDT	<0.00326 U	<0.00388 U	<0.00494 U
PCBs (mg/kg)			
Total PCBs	<0.0374 U	<0.0425 U	<0.0549 U
Metals (mg/kg)			
Arsenic	11.7	3.95	0.764 J
Barium	152	40	21.7
Cadmium	2.48	0.388 J	0.158 J
Chromium, Trivalent	27	4	4.1
Copper	**432**	**50.9**	1.9
Lead	**178**	18.4	<6.59 U
Mercury	**0.256**	<0.09 U	<0.108 U
Nickel	**134**	7.61	1.21 J
Selenium	<1.78 U	1.96 J	0.514 J
Silver	0.455 J	<1.02 U	<1.32 U
Zinc	**277**	**115**	5.64 J

Location	SB7	SB7
Sample Name	SB7_2-4	SB7_13-15
Sample Date	01/26/2022	01/26/2022
Sample Depth	2-4	13-15
Pesticides (mg/kg)		
4,4'-DDD	**0.00354**	<0.00192 U
4,4'-DDE	0.00214	<0.00192 U
4,4'-DDT	<0.00348 U	<0.00359 U
PCBs (mg/kg)		
Total PCBs	0.00877 J	<0.0391 U
Metals (mg/kg)		
Arsenic	3.02	1.87
Barium	140	41.2
Cadmium	0.839 J	0.347 J
Chromium, Trivalent	28	12
Copper	29.1	17.2
Lead	**75**	22.4
Mercury	**0.184**	<0.082 U
Nickel	24	9.78
Selenium	<1.86 U	<1.93 U
Silver	<0.932 U	<0.963 U
Zinc	87	35.1

Location	SB3	SB3	SB3
Sample Name	SB3_1-3	SB3_8-10	
Sample Date	01/26/2022	01/26/2022	
Sample Depth	1-3	8-10	
Pesticides (mg/kg)			
4,4'-DDD	**0.0195**	<0.0201 U	
4,4'-DDE	**0.0147**	<0.0201 U	
4,4'-DDT	<0.00326 U	<0.0377 U	
PCBs (mg/kg)			
Total PCBs	0.0671 J	0.0334 J	
Metals (mg/kg)			
Arsenic	4.48	2.18	
Barium	140	43.3	
Cadmium	0.978	0.398 J	
Chromium, Trivalent	15	13	
Copper	**82.9**	25.7	
Lead	**214**	**103**	
Mercury	**0.495**	0.071 J	
Nickel	19.2	8.95	
Selenium	<1.73 U	<1.99 U	
Silver	<0.865 U	<0.994 U	
Zinc	**231**	62.4	

Location	SB9	SB9
Sample Name	SB9_1-3	SB9_14-15
Sample Date	01/28/2022	01/28/2022
Sample Depth	1-3	14-15
Pesticides (mg/kg)		
4,4'-DDD	0.00248	0.00166 J
4,4'-DDE	<0.00186 U	<0.0018 U
4,4'-DDT	<0.00349 U	<0.00337 U
PCBs (mg/kg)		
Total PCBs	<0.0387 U	0.021 J
Metals (mg/kg)		
Arsenic	4.33	2.75
Barium	74.4	46.8
Cadmium	0.567 J	<0.888 U
Chromium, Trivalent	20	11
Copper	26.7	25.3
Lead	62.9	42
Mercury	**0.226 J**	0.07 J
Nickel	11.7	7.09
Selenium	<4.54 U	<1.78 U
Silver	<2.27 U	<0.888 U
Zinc	70.6	52.8

Location	SB4	SB4
Sample Name	SB4_2-4	SB4_12-14
Sample Date	01/28/2022	01/28/2022
Sample Depth	2-4	12-14
Pesticides (mg/kg)		
4,4'-DDD	<0.00168 U	<0.0018 U
4,4'-DDE	<0.00168 U	<0.0018 U
4,4'-DDT	<0.00316 U	<0.00337 U
PCBs (mg/kg)		
Total PCBs	<0.0369 U	<0.0367 U
Metals (mg/kg)		
Arsenic	1.72	2.84
Barium	27.6	61
Cadmium	<0.836 U	<0.906 U
Chromium, Trivalent	10	19
Copper	12.4	25.5
Lead	16.8	**79.3**
Mercury	0.13	**0.237**
Nickel	6.29	9.97
Selenium	<1.67 U	<1.81 U
Silver	<0.836 U	<0.906 U
Zinc	23.6	67.4

Location	SB11	SB11
Sample Name	SB11_1-3	SB11_13-15
Sample Date	01/28/2022	01/28/2022
Sample Depth	1-3	13-15
Pesticides (mg/kg)		
4,4'-DDD	**0.0361**	<0.00185 U
4,4'-DDE	**0.00942**	<0.00185 U
4,4'-DDT	<0.0159 U	<0.00346 U
PCBs (mg/kg)		
Total PCBs	0.0474	<0.0388 U
Metals (mg/kg)		
Arsenic	2.32	2.25
Barium	81.3	32.5
Cadmium	0.173 J	<0.946 U
Chromium, Trivalent	14	15
Copper	44.3	12.5
Lead	**112**	12.6
Mercury	**0.214**	<0.078 U
Nickel	9.08	7.08
Selenium	<1.73 U	<1.89 U
Silver	<0.898 U	<0.946 U
Zinc	100	26.9

Location	SB10	SB10
Sample Name	SB10_1-3	SB10_12-14
Sample Date	01/28/2022	01/28/2022
Sample Depth	1-3	12-14
Pesticides (mg/kg)		
4,4'-DDD	<0.00185 U	<0.00169 U
4,4'-DDE	<0.00185 U	<0.00169 U
4,4'-DDT	<0.00347 U	<0.00317 U
PCBs (mg/kg)		
Total PCBs	<0.0388 U	0.0161 J
Metals (mg/kg)		
Arsenic	2.66	2.16
Barium	100	41.5
Cadmium	<0.908 U	<0.875 U
Chromium, Trivalent	14	16
Copper	25.7	13.5
Lead	57.9	23.5
Mercury	0.087	0.11
Nickel	8.8	9.77
Selenium	<1.82 U	<1.75 U
Silver	<0.908 U	<0.875 U
Zinc	80.2	28.8

Location	SB12	SB12	SB12
Sample Name	SB12_1-3	SODUP06_012822	SB12_13-15
Sample Date	01/28/2022	01/28/2022	01/28/2022
Sample Depth	1-3	1-3	13-15
Pesticides (mg/kg)			
4,4'-DDD	**0.00501 J**	0.00168 J	<0.00192 U
4,4'-DDE	**0.00707 J**	<0.00185 UJ	<0.00192 U
4,4'-DDT	0.0015 J	<0.00347 U	<0.00361 U
PCBs (mg/kg)			
Total PCBs	0.0458 J	<0.0385 U	<0.0387 U
Metals (mg/kg)			
Arsenic	**21.2 J**	3.14 J	2.27
Barium	53.8 J	153 J	31.2
Cadmium	0.284 J	<0.919 U	<0.916 U
Chromium, Trivalent	20	13	13
Copper	43.5 J	**203 J**	12
Lead	**171 J**	**328 J**	15.3
Mercury	0.142	0.121	0.087
Nickel	10.6	10.6	7.5
Selenium	1.22 J	0.285 J	<1.83 U
Silver	<0.915 U	0.294 J	<0.916 U
Zinc	95.6 J	**169 J**	22.8

Location	SB8	SB8
Sample Name	SB8_0-2	SB8_13-15
Sample Date	02/09/2022	02/09/2022
Sample Depth	0-2	13-15
Pesticides (mg/kg)		
4,4'-DDD	<0.00201 U	<0.00174 U
4,4'-DDE	<0.00201 U	<0.00174 U
4,4'-DDT	<0.00376 U	<0.00326 U
PCBs (mg/kg)		
Total PCBs	0.0234 J	0.0123 J
Metals (mg/kg)		
Arsenic	9.43	5.48
Barium	211	**403**
Cadmium	2.45	0.596 J
Chromium, Trivalent	23	12
Copper	**187**	41.9
Lead	**527**	**122**
Mercury	**0.322**	0.128
Nickel	26	14.6
Selenium	1.04 J	0.342 J
Silver	0.463 J	<0.876 U
Zinc	**426**	**328**

Location	SB13	SB13
Sample Name	SB13_0-2	SB13_13-15
Sample Date	02/09/2022	02/09/2022
Sample Depth	0-2	13-15
Pesticides (mg/kg)		
4,4'-DDD	**0.15 J**	**0.0389**
4,4'-DDE	**0.0991 J**	<0.0189 U
4,4'-DDT	**0.0157 J**	<0.0352 U
PCBs (mg/kg)		
Total PCBs	**0.11**	**0.216**
Metals (mg/kg)		
Arsenic	1.28 J	4.9
Barium	12	116
Cadmium	0.186 J	1.68
Chromium, Trivalent	5.7	23
Copper	5.96 J	**138**
Lead	10.6 J	**156**
Mercury	<0.077 U	**0.359**
Nickel	6.9 J	12.1
Selenium	<1.77 U	0.304 J
Silver	<0.885 U	<0.922 U
Zinc	10.7	**188**

Location	SB24	SB24
Sample Name	SB24_1-3	SB24_13-15
Sample Date	01/19/2022	01/19/2022
Sample Depth	1-3	13-15
Pesticides (mg/kg)		
4,4'-DDD	**0.0134 P**	0.00102 JP
4,4'-DDE	**0.00627 P**	<0.00205 U
4,4'-DDT	**0.0113 P**	<0.00394 U
PCBs (mg/kg)		
Total PCBs	**0.102 J**	<0.042 U
Metals (mg/kg)		
Arsenic	4.68	**13.3**
Barium	125	**439**
Cadmium	1.09	2.04
Chromium, Trivalent	16	17
Copper	**71.4**	**197**
Lead	**428**	**753**
Mercury	**0.262**	**0.797**
Nickel	13.4	17.2
Selenium	<1.7 U	1.04 J
Silver	<0.851 U	0.67 J
Zinc	**216**	**709**

Location	SB15	SB15
Sample Name	SB15_1-3	SB15_14-16
Sample Date	01/21/2022	01/21/2022
Sample Depth	1-3	14-16
Pesticides (mg/kg)		
4,4'-DDD	**0.0285**	0.00179 P
4,4'-DDE	**0.00831 J**	<0.00166 U
4,4'-DDT	<0.0318 U	<0.00311 U
PCBs (mg/kg)		
Total PCBs	0.0747	<0.0358 U
Metals (mg/kg)		
Arsenic	3.35	2.6
Barium	50.5	51
Cadmium	1.01	0.54 J
Chromium, Trivalent	16	15
Copper	**83.7**	27.8
Lead	**360**	42.4
Mercury	0.167	<0.077 U
Nickel	12.9	10.4
Selenium	<1.72 U	<1.69 U
Silver	<0.86 U	<0.844 U
Zinc	**443**	72.5

Location	SB14	SB14
Sample Name	SB14_0-2	SB14_13-15
Sample Date	01/21/2022	01/21/2022
Sample Depth	0-2	13-15
Pesticides (mg/kg)		
4,4'-DDD	<0.0165 U	<0.0169 U
4,4'-DDE	<0.0165 U	<0.0169 U
4,4'-DDT	<0.031 U	<0.0317 U
PCBs (mg/kg)		
Total PCBs	0.0458	<0.0348 U
Metals (mg/kg)		
Arsenic	5.6	1.73
Barium	116	47.4
Cadmium	1.6	0.382 J
Chromium, Trivalent	14	16
Copper	**157**	23.8
Lead	**328**	3.57 J
Mercury	**0.315**	<0.072 U
Nickel	19	20.6
Selenium	<1.71 U	<1.7 U
Silver	<0.854 U	<0.849 U
Zinc	**550**	18.8

Location	SB17	SB17
Sample Name	SB17_1-3	SB17_13-15
Sample Date	01/19/2022	01/19/2022
Sample Depth	1-3	13-15
Pesticides (mg/kg)		
4,4'-DDD	<0.00196 U	<0.0164 U
4,4'-DDE	<0.00196 U	<0.0164 U
4,4'-DDT	<0.00367 U	<0.0307 U
PCBs (mg/kg)		
Total PCBs	0.0317 J	<0.0338 U
Metals (mg/kg)		
Arsenic	5.84	4.47
Barium	205	132
Cadmium	1.31	1.11
Chromium, Trivalent	29	10
Copper	**547**	41
Lead	**246**	**115**
Mercury	**0.585**	0.179
Nickel	14.1	9.91
Selenium	<1.98 U	0.38 J
Silver	<0.99 U	<0.81 U
Zinc	**191**	**638**

Location	SB18	SB18	SB18
Sample Name	SB18_0-2	SB18_13-15	SB18_18-20
Sample Date	01/21/2022	01/21/2022	01/21/2022
Sample Depth	0-2	13-15	18-20
Pesticides (mg/kg)			
4,4'-DDD	**0.0717**	<0.0188 U	<0.00369 U
4,4'-DDE	**0.0628**	<0.0188 U	<0.00369 U
4,4'-DDT	**0.052**	<0.0352 U	<0.00691 U
PCBs (mg/kg)			
Total PCBs	0.0656	0.0473	<0.0752 U
Metals (mg/kg)			
Arsenic	4.97	**20.4**	**276**
Barium	129	**706**	268
Cadmium	0.772 J	**7.77**	**3.38**
Chromium, Trivalent	17	18	**35**
Copper	**73.8**	**314**	**352**
Lead	**143**	**1,270**	**500**
Mercury	0.152	**1.66**	**2.37**
Nickel	12.9	21.2	**34**
Selenium	<1.88 U	**4.09**	<3.58 U
Silver	<0.941 U	1.56	1.77 J
Zinc	**141**	**2,480**	**677**

Location	SB16	SB16
Sample Name	SB16_1-3	SB16_13-15
Sample Date	01/21/2022	01/21/2022
Sample Depth	1-3	13-15
Pesticides (mg/kg)		
4,4'-DDD	**0.0321**	<0.00174 U
4,4'-DDE	<0.0172 U	<0.00174 U
4,4'-DDT	<0.0323 U	<0.00327 U
PCBs (mg/kg)		
Total PCBs	**0.309**	<0.0358 U
Metals (mg/kg)		
Arsenic	6.64	2.55
Barium	88.6	34.7
Cadmium	1.08	0.364 J
Chromium, Trivalent	15	11
Copper	48.7	13.1
Lead	**136**	18.5
Mercury	0.161	<0.079 U
Nickel	10.8	8.24
Selenium	<1.74 U	<1.73 U
Silver	<0.87 U	<0.866 U
Zinc	**174**	275

Location	SB19	SB19	SB19
Sample Name	SB19_8-10	SB19_12-14	SB19_16-18
Sample Date	01/21/2022	01/21/2022	01/21/2022
Sample Depth	8-10	12-14	16-18
Pesticides (mg/kg)			
4,4'-DDD	<0.00202 U	<0.00321 U	<0.0545 U
4,4'-DDE	<0.00202 U	<0.00321 U	<0.0545 U
4,4'-DDT	<0.00378 U	<0.00602 U	<0.102 U
PCBs (mg/kg)			
Total PCBs	<0.0413 U	<0.0662 U	<0.056 U
Metals (mg/kg)			
Arsenic	**35.3 J**	7.15	9.76
Barium	**544**	204	162
Cadmium	**8.52 J**	0.595 J	0.91 J
Chromium, Trivalent	**31**	5.2	6
Copper	**249**	26.1	38.1
Lead	**361**	**87.8**	**150**
Mercury	**0.368 J**	0.117 J	<0.125 U
Nickel	21.5 J	10.9	**33.4**
Selenium	**15.6 J**	<3.07 U	<2.6 U
Silver	1.52 J	<1.53 U	<1.3 U
Zinc	**463 J**	79	**144**

Location	SB20	SB20
Sample Name	SB20_1-3	SB20_13-15
Sample Date	01/19/2022	01/19/2022
Sample Depth	1-3	13-15
Pesticides (mg/kg)		
4,4'-DDD	**0.101**	<0.00207 U
4,4'-DDE	**0.0174 J**	<0.00207 U
4,4'-DDT	<0.0335 U	<0.00387 U
PCBs (mg/kg)		
Total PCBs	0.0703	<0.0438 U
Metals (mg/kg)		
Arsenic	2.48	5.88
Barium	34.6	120
Cadmium	0.346 J	**4.4**
Chromium, Trivalent	14	20
Copper	12.1	**58.6**
Lead	12.6	**117**
Mercury	<0.073 U	0.11
Nickel	9.78	14.3
Selenium	<1.82 U	<2.06 U
Silver	<0.912 U	<1.03 U
Zinc	25.8	**1,140**

Location	SB30	SB30
Sample Name	SB30_2-4	SB30_13-15
Sample Date	02/11/2022	02/11/2022
Sample Depth	2-4	13-15
Pesticides (mg/kg)		
4,4'-DDD	<0.00172 U	<0.00226 U
4,4'-DDE	<0.00172 U	<0.00226 U
4,4'-DDT	<0.00322 U	<0.00425 U
PCBs (mg/kg)		
Total PCBs	<0.0372 U	<0.0454 U
Metals (mg/kg)		
Arsenic	<0.884 U	**17.1**
Barium	39.7 J	**1,320**
Cadmium	0.318 J	**8.12**
Chromium, Trivalent	16	**57**
Copper	10.1	**1,760**
Lead	5.83 J	**2,010**
Mercury	<0.08 U	**0.224**
Nickel	9.64	**57.6**
Selenium	<1.77 U	**5.31**
Silver	<0.884 U	**2.73**
Zinc	21.6	**37,100**

Location	SB21	SB21
Sample Name	SB21_2-4	SB21_13-15
Sample Date	01/19/2022	01/19/2022
Sample Depth	2-4	13-15
Pesticides (mg/kg)		
4,4'-DDD	<0.00178 U	<0.023 U
4,4'-DDE	<0.00178 U	<0.023 U
4,4'-DDT	<0.00335 U	<0.0431 U
PCBs (mg/kg)		
Total PCBs	<0.0373 U	<0.049 U
Metals (mg/kg)		
Arsenic	1.61	**39.8**
Barium	46.8	**1,340**
Cadmium	0.413 J	**8.88**
Chromium, Trivalent	15	**60**
Copper	17.8	**868**
Lead	25.8	**10,100**
Mercury	<0.074 U	**0.296**
Nickel	9.62	26.4
Selenium	<1.76 U	3.34
Silver	<0.879 U	**5.2**
Zinc	48	**11,000**

Location	SB31	SB31
Sample Name	SB31_2-4	SB31_13-15
Sample Date	02/11/2022	02/11/2022
Sample Depth	2-4	13-15
Pesticides (mg/kg)		
4,4'-DDD	<0.00182 U	**0.00538**
4,4'-DDE	<0.00182 U	0.000805 J
4,4'-DDT	<0.00342 U	<0.00315 U
PCBs (mg/kg)		
Total PCBs	<0.0377 U	<0.0344 U
Metals (mg/kg)		
Arsenic	0.649 J	1.7
Barium	42.1	579
Cadmium	0.333 J	0.637 J
Chromium, Trivalent	16	9.3
Copper	18.6	31.2
Lead	33.6	**154**
Mercury	<0.077 U	0.078
Nickel	10.5	8.32
Selenium	<1.75 U	0.492 J
Silver	<0.877 U	<0.838 U
Zinc	33.3	**136**

Location	SB22	SB22
Sample Name	SB22_3-5	SB22_12-14
Sample Date	01/18/2022	01/18/2022
Sample Depth	3-5	12-14
Pesticides (mg/kg)		
4,4'-DDD	<0.00871 U	<0.0187 U
4,4'-DDE	<0.00871 U	<0.0187 U
4,4'-DDT	<0.0163 U	<0.0351 U
PCBs (mg/kg)		
Total PCBs	0.0222 J	0.051 J
Metals (mg/kg)		
Arsenic	1.9	2.03
Barium	31.7	44.6
Cadmium	0.434 J	0.245 J
Chromium, Trivalent	11	13
Copper	10.4	13.7
Lead	14.8	10.2
Mercury	<0.07 U	<0.082 U
Nickel	7.82	10.4
Selenium	<1.67 U	<1.89 U
Silver	<0.835 U	<0.943 U
Zinc	39.1	24.2

Location	SB23	SB23
Sample Name	SB23_3-5	SB23_12-14
Sample Date	01/18/2022	01/18/2022
Sample Depth	3-5	12-14
Pesticides (mg/kg)		
4,4'-DDD	<0.00171 U	**0.00414 J**
4,4'-DDE	<0.00171 U	<0.0112 U
4,4'-DDT	<0.0032 U	<0.021 U
PCBs (mg/kg)		
Total PCBs	0.0561	0.00905 J
Metals (mg/kg)		
Arsenic	2.31	**13.6**
Barium	55.5	210
Cadmium	0.496 J	1.26
Chromium, Trivalent	14	11
Copper	25.8	43.4
Lead	**90**	**128**
Mercury	<0.077 U	**0.39**
Nickel	10.1	12.4
Selenium	<1.71 U	1.59 J
Silver	<0.855 U	<1.1 U
Zinc	59.4	**156**

Analyte	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs
Pesticides (mg/kg)		
4,4'-DDD	0.0033	13
4,4'-DDE	0.0033	8.9
4,4'-DDT	0.0033	7.9
PCBs (mg/kg)		
Total PCBs	0.1	1
Metals (mg/kg)		
Arsenic	13	16
Barium	350	400
Cadmium	2.5	4.3
Chromium, Trivalent	30	180
Copper	50	270
Lead	63	400
Mercury	0.18	0.81
Nickel	30	310
Selenium	3.9	180
Silver	2	180
Zinc	109	10000

Exceedance Summary:

10 - Result exceeds Unrestricted Use SCOs

10 - Result exceeds Restricted Use Restricted-Residential SCOs

LEGEND

SB-7 SOIL SAMPLE

SB-1/MW-1 SOIL SAMPLE AND GROUNDWATER MONITORING WELL SAMPLE

SITE BOUNDARY

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE AND RESTRICTED USE RESTRICTED -RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCO).
4. CRITERION COMPARISONS FOR 3- & 4-METHYLPHENOL (M&P CRESOL) ARE PROVIDED FOR REFERENCE. PROMULGATED SCOS ARE FOR 3-METHYLPHENOL (M-CRESOL) AND 4-METHYLPHENOL (P-CRESOL).
5. CONTAMINANTS EXCEEDING PART 375 UNRESTRICTED USE AND RESTRICTED USE-RESTRICTED RESIDENTIAL SCOs ARE SHOWN.
6. mg/kg = MILLIGRAM PER KILOGRAM
7. PCBs = POLYCHLORINATED BIPHENYLS

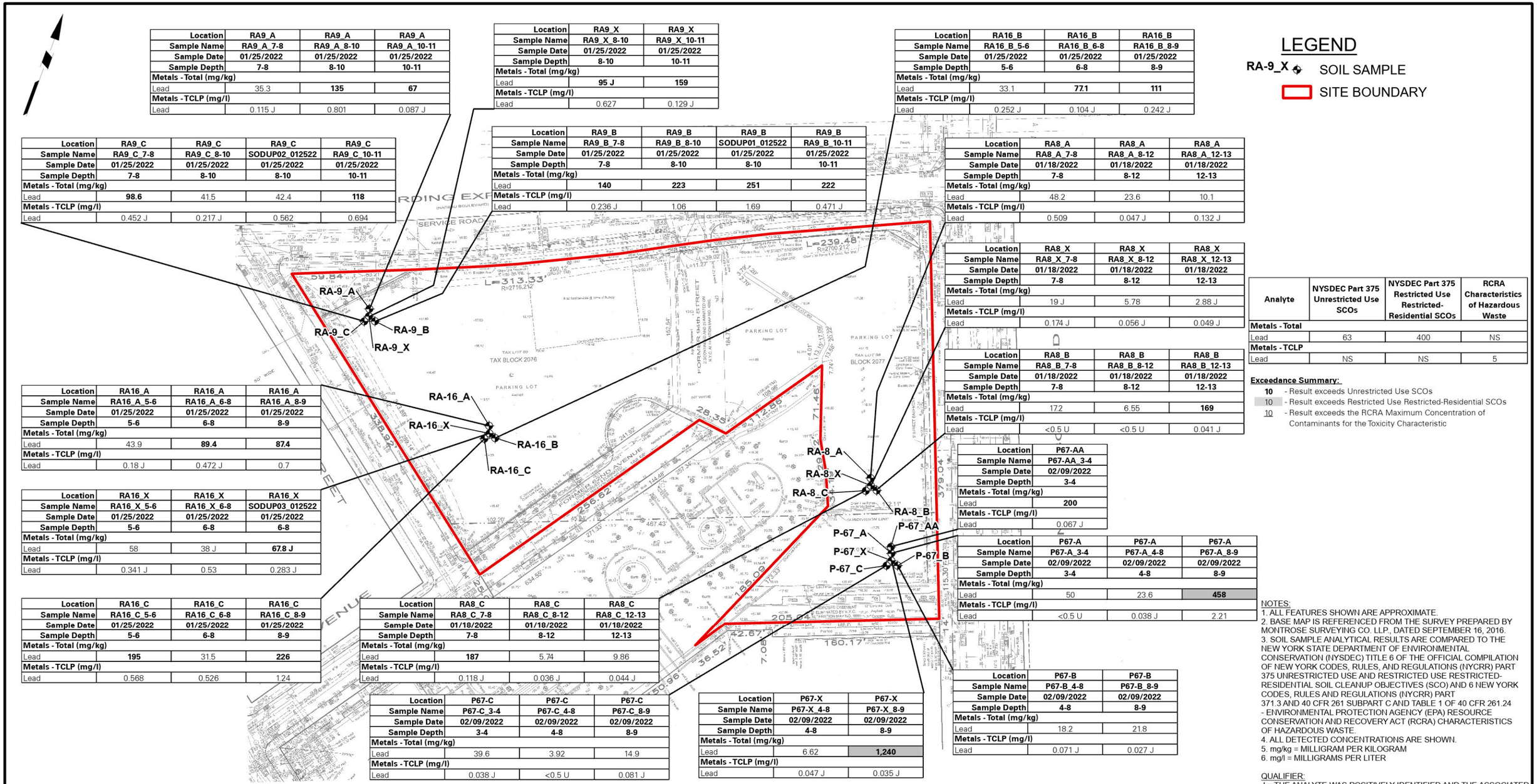
QUALIFIER:
J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT (MDL), BUT BELOW THE RL; THEREFORE, THE RESULT IS AN ESTIMATED CONCENTRATION.
P = THE RELATIVE PERCENT DIFFERENCE (RPD) BETWEEN THE RESULTS FOR THE TWO COLUMNS EXCEEDS THE METHOD-SPECIFIED CRITERIA.
UJ = THE ANALYTE WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE RL; HOWEVER, THE REPORTED RL IS APPROXIMATE AND MAY BE INACCURATE OR IMPRECISE.

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
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
SOIL SAMPLE LOCATION AND RESULTS MAP – PESTICIDES, PCBS, AND METALS

Project No.	170683801
Date	4/15/2022
Scale	1" = 60 feet
Drawn By	MG
Submission Date	
Figure	3B



Location	RA9_A	RA9_A	RA9_A
Sample Name	RA9_A_7-8	RA9_A_8-10	RA9_A_10-11
Sample Date	01/25/2022	01/25/2022	01/25/2022
Sample Depth	7-8	8-10	10-11
Metals - Total (mg/kg)			
Lead	35.3	**135**	**67**
Metals - TCLP (mg/l)			
Lead	0.115 J	0.801	0.087 J

Location	RA9_X	RA9_X
Sample Name	RA9_X_8-10	RA9_X_10-11
Sample Date	01/25/2022	01/25/2022
Sample Depth	8-10	10-11
Metals - Total (mg/kg)		
Lead	**95 J**	**159**
Metals - TCLP (mg/l)		
Lead	0.627	0.129 J

Location	RA16_B	RA16_B	RA16_B
Sample Name	RA16_B_5-6	RA16_B_6-8	RA16_B_8-9
Sample Date	01/25/2022	01/25/2022	01/25/2022
Sample Depth	5-6	6-8	8-9
Metals - Total (mg/kg)			
Lead	33.1	**77.1**	**111**
Metals - TCLP (mg/l)			
Lead	0.252 J	0.104 J	0.242 J

Location	RA9_C	RA9_C	RA9_C	RA9_C
Sample Name	RA9_C_7-8	RA9_C_8-10	SODUP02_012522	RA9_C_10-11
Sample Date	01/25/2022	01/25/2022	01/25/2022	01/25/2022
Sample Depth	7-8	8-10	8-10	10-11
Metals - Total (mg/kg)				
Lead	**98.6**	41.5	42.4	**118**
Metals - TCLP (mg/l)				
Lead	0.452 J	0.217 J	0.562	0.694

Location	RA9_B	RA9_B	RA9_B	RA9_B
Sample Name	RA9_B_7-8	RA9_B_8-10	SODUP01_012522	RA9_B_10-11
Sample Date	01/25/2022	01/25/2022	01/25/2022	01/25/2022
Sample Depth	7-8	8-10	8-10	10-11
Metals - Total (mg/kg)				
Lead	**140**	**223**	**251**	**222**
Metals - TCLP (mg/l)				
Lead	0.236 J	1.06	1.69	0.471 J

Location	RA8_A	RA8_A	RA8_A
Sample Name	RA8_A_7-8	RA8_A_8-12	RA8_A_12-13
Sample Date	01/18/2022	01/18/2022	01/18/2022
Sample Depth	7-8	8-12	12-13
Metals - Total (mg/kg)			
Lead	48.2	23.6	10.1
Metals - TCLP (mg/l)			
Lead	0.509	0.047 J	0.132 J

Location	RA8_X	RA8_X	RA8_X
Sample Name	RA8_X_7-8	RA8_X_8-12	RA8_X_12-13
Sample Date	01/18/2022	01/18/2022	01/18/2022
Sample Depth	7-8	8-12	12-13
Metals - Total (mg/kg)			
Lead	19 J	5.78	2.88 J
Metals - TCLP (mg/l)			
Lead	0.174 J	0.056 J	0.049 J

Location	RA8_B	RA8_B	RA8_B
Sample Name	RA8_B_7-8	RA8_B_8-12	RA8_B_12-13
Sample Date	01/18/2022	01/18/2022	01/18/2022
Sample Depth	7-8	8-12	12-13
Metals - Total (mg/kg)			
Lead	17.2	6.55	**169**
Metals - TCLP (mg/l)			
Lead	<0.5 U	<0.5 U	0.041 J

Location	P67-AA
Sample Name	P67-AA_3-4
Sample Date	02/09/2022
Sample Depth	3-4
Metals - Total (mg/kg)	
Lead	**200**
Metals - TCLP (mg/l)	
Lead	0.067 J

Location	RA16_A	RA16_A	RA16_A
Sample Name	RA16_A_5-6	RA16_A_6-8	RA16_A_8-9
Sample Date	01/25/2022	01/25/2022	01/25/2022
Sample Depth	5-6	6-8	8-9
Metals - Total (mg/kg)			
Lead	43.9	**89.4**	**87.4**
Metals - TCLP (mg/l)			
Lead	0.18 J	0.472 J	0.7

Location	RA16_X	RA16_X	RA16_X
Sample Name	RA16_X_5-6	RA16_X_6-8	SODUP03_012522
Sample Date	01/25/2022	01/25/2022	01/25/2022
Sample Depth	5-6	6-8	6-8
Metals - Total (mg/kg)			
Lead	58	38 J	**67.8 J**
Metals - TCLP (mg/l)			
Lead	0.341 J	0.53	0.283 J

Location	P67-A	P67-A	P67-A
Sample Name	P67-A_3-4	P67-A_4-8	P67-A_8-9
Sample Date	02/09/2022	02/09/2022	02/09/2022
Sample Depth	3-4	4-8	8-9
Metals - Total (mg/kg)			
Lead	50	23.6	**458**
Metals - TCLP (mg/l)			
Lead	<0.5 U	0.038 J	2.21

Location	RA16_C	RA16_C	RA16_C
Sample Name	RA16_C_5-6	RA16_C_6-8	RA16_C_8-9
Sample Date	01/25/2022	01/25/2022	01/25/2022
Sample Depth	5-6	6-8	8-9
Metals - Total (mg/kg)			
Lead	**195**	31.5	**226**
Metals - TCLP (mg/l)			
Lead	0.568	0.526	1.24

Location	RA8_C	RA8_C	RA8_C
Sample Name	RA8_C_7-8	RA8_C_8-12	RA8_C_12-13
Sample Date	01/18/2022	01/18/2022	01/18/2022
Sample Depth	7-8	8-12	12-13
Metals - Total (mg/kg)			
Lead	**187**	5.74	9.86
Metals - TCLP (mg/l)			
Lead	0.118 J	0.036 J	0.044 J

Location	P67-B	P67-B
Sample Name	P67-B_4-8	P67-B_8-9
Sample Date	02/09/2022	02/09/2022
Sample Depth	4-8	8-9
Metals - Total (mg/kg)		
Lead	18.2	21.8
Metals - TCLP (mg/l)		
Lead	0.071 J	0.027 J

Location	P67-C	P67-C	P67-C
Sample Name	P67-C_3-4	P67-C_4-8	P67-C_8-9
Sample Date	02/09/2022	02/09/2022	02/09/2022
Sample Depth	3-4	4-8	8-9
Metals - Total (mg/kg)			
Lead	39.6	3.92	14.9
Metals - TCLP (mg/l)			
Lead	0.038 J	<0.5 U	0.081 J

Location	P67-X	P67-X
Sample Name	P67-X_4-8	P67-X_8-9
Sample Date	02/09/2022	02/09/2022
Sample Depth	4-8	8-9
Metals - Total (mg/kg)		
Lead	6.62	**1,240**
Metals - TCLP (mg/l)		
Lead	0.047 J	0.035 J

LEGEND

RA-9_X — SOIL SAMPLE

SITE BOUNDARY

Analyte	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	RCRA Characteristics of Hazardous Waste
Metals - Total			
Lead	63	400	NS
Metals - TCLP			
Lead	NS	NS	5

Exceedance Summary:

10 - Result exceeds Unrestricted Use SCOs

10 - Result exceeds Restricted Use Restricted-Residential SCOs

10 - Result exceeds the RCRA Maximum Concentration of Contaminants for the Toxicity Characteristic

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE AND RESTRICTED USE RESTRICTED-RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCO) AND 6 NEW YORK CODES, RULES AND REGULATIONS (NYCRR) PART 371.3 AND 40 CFR 261 SUBPART C AND TABLE 1 OF 40 CFR 261.24 - ENVIRONMENTAL PROTECTION AGENCY (EPA) RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CHARACTERISTICS OF HAZARDOUS WASTE.
4. ALL DETECTED CONCENTRATIONS ARE SHOWN.
5. mg/kg = MILLIGRAM PER KILOGRAM
6. mg/l = MILLIGRAMS PER LITER

QUALIFIER:
J = THE ANALYTE WAS POSITIVELY IDENTIFIED AND THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.

120 0 120
SCALE IN FEET

LANGAN
Langan Engineering and Environmental Services, Inc.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
LEAD DELINEATION SAMPLE LOCATION AND RESULTS MAP

Project No.	Figure
170683801	3C
Date: 4/14/2022	
Scale: 1" = 120'	
Drawn By: MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801_old\170683801.aprx

Location	MW01
Sample Name	MW01_020222
Sample Date	02/02/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	0.77
Benzo(a)anthracene	**0.03 J**
Benzo(a)pyrene	**0.03 J**
Benzo(b)fluoranthene	**0.03 J**
Benzo(k)fluoranthene	<0.1 U
Chrysene	**0.02 J**
Indeno(1,2,3-cd)pyrene	**0.02 J**
Phenol	<5 U

Location	MW02
Sample Name	MW02_020222
Sample Date	02/02/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	0.03 J
Benzo(a)anthracene	<0.1 U
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	<0.1 U
Benzo(k)fluoranthene	<0.1 U
Chrysene	<0.1 U
Indeno(1,2,3-cd)pyrene	<0.1 U
Phenol	<5 U

Location	MW06
Sample Name	MW06_020322
Sample Date	02/03/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	0.27
Benzo(a)anthracene	**0.09 J**
Benzo(a)pyrene	**0.09 J**
Benzo(b)fluoranthene	**0.12**
Benzo(k)fluoranthene	**0.03 J**
Chrysene	**0.08 J**
Indeno(1,2,3-cd)pyrene	**0.1**
Phenol	0.96 J

Location	MW03	MW03
Sample Name	MW03_020222	GWDUP01_020222
Sample Date	02/02/2022	02/02/2022
VOCs (µg/L)		
Chlorobenzene	<2.5 U	<2.5 U
SVOCs (µg/L)		
Acenaphthene	0.22	0.22
Benzo(a)anthracene	**0.03 J**	**0.02 J**
Benzo(a)pyrene	<0.1 U	<0.1 U
Benzo(b)fluoranthene	**0.02 J**	**0.01 J**
Benzo(k)fluoranthene	<0.1 U	<0.1 U
Chrysene	**0.02 J**	<0.1 U
Indeno(1,2,3-cd)pyrene	**0.01 J**	<0.1 U
Phenol	<5 U	<5 U

Location	MW04
Sample Name	MW04_020922
Sample Date	02/09/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	1
Benzo(a)anthracene	**0.04 J**
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	**0.02 J**
Benzo(k)fluoranthene	<0.1 U
Chrysene	**0.02 J**
Indeno(1,2,3-cd)pyrene	<0.1 U
Phenol	<5 U

Location	MW10
Sample Name	MW10_020822
Sample Date	02/08/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	<0.1 U
Benzo(a)anthracene	<0.1 U
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	<0.1 U
Benzo(k)fluoranthene	<0.1 U
Chrysene	<0.1 U
Indeno(1,2,3-cd)pyrene	<0.1 U
Phenol	<5 U

Location	MW11
Sample Name	MW11_020722
Sample Date	02/07/2022
VOCs (µg/L)	
Chlorobenzene	1.6 J
SVOCs (µg/L)	
Acenaphthene	0.5
Benzo(a)anthracene	**0.02 J**
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	**0.02 J**
Benzo(k)fluoranthene	**0.01 J**
Chrysene	**0.02 J**
Indeno(1,2,3-cd)pyrene	**0.01 J**
Phenol	<5 U

Location	MW14
Sample Name	MW14_020722
Sample Date	02/07/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	1.4
Benzo(a)anthracene	<0.1 U
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	**0.02 J**
Benzo(k)fluoranthene	<0.1 U
Chrysene	<0.1 U
Indeno(1,2,3-cd)pyrene	<0.1 U
Phenol	<5 U

Location	MW17
Sample Name	MW17_020722
Sample Date	02/07/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	<0.1 U
Benzo(a)anthracene	<0.1 U
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	<0.1 U
Benzo(k)fluoranthene	<0.1 U
Chrysene	<0.1 U
Indeno(1,2,3-cd)pyrene	<0.1 U
Phenol	<5 U

Location	MW20
Sample Name	MW20_020822
Sample Date	02/08/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	<0.1 U
Benzo(a)anthracene	<0.1 U
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	<0.1 U
Benzo(k)fluoranthene	<0.1 U
Chrysene	<0.1 U
Indeno(1,2,3-cd)pyrene	<0.1 U
Phenol	<5 U

Location	MW21
Sample Name	MW21_020922
Sample Date	02/09/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	0.04 J
Benzo(a)anthracene	**0.04 J**
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	**0.02 J**
Benzo(k)fluoranthene	**0.01 J**
Chrysene	**0.02 J**
Indeno(1,2,3-cd)pyrene	<0.1 U
Phenol	<5 U

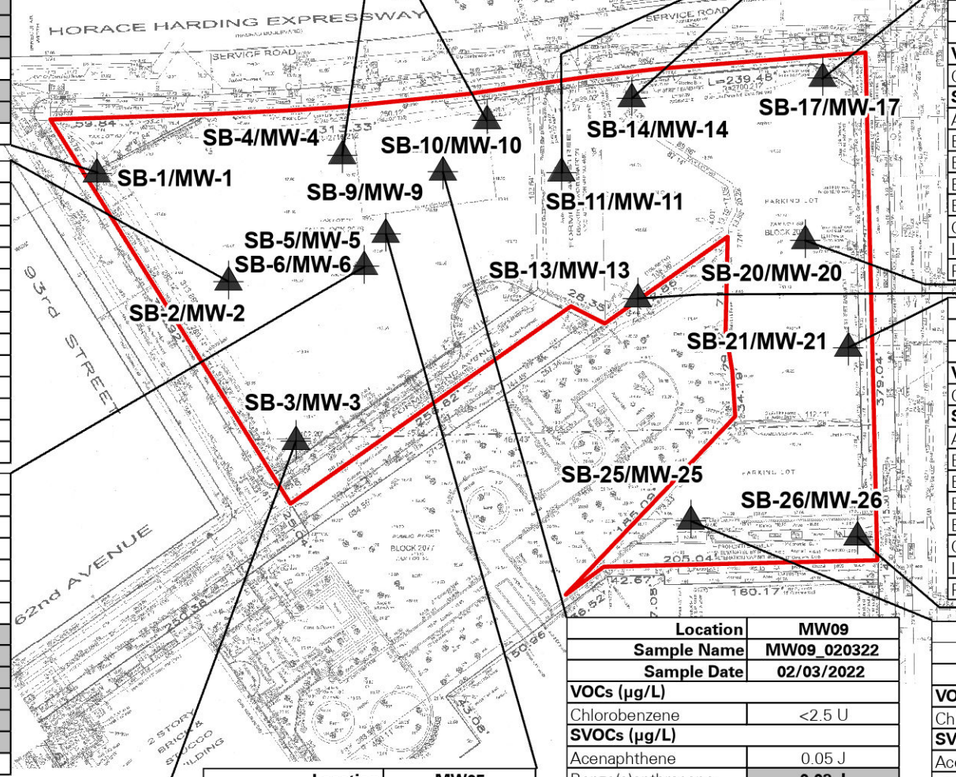
Location	MW13
Sample Name	MW13_021722
Sample Date	02/17/2022
VOCs (µg/L)	
Chlorobenzene	**31**
SVOCs (µg/L)	
Acenaphthene	**58**
Benzo(a)anthracene	**0.45**
Benzo(a)pyrene	**0.15**
Benzo(b)fluoranthene	**0.22**
Benzo(k)fluoranthene	**0.08 J**
Chrysene	**0.32**
Indeno(1,2,3-cd)pyrene	**0.09 J**
Phenol	<5 UJ

Location	MW09
Sample Name	MW09_020322
Sample Date	02/03/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	0.05 J
Benzo(a)anthracene	**0.03 J**
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	**0.02 J**
Benzo(k)fluoranthene	**0.01 J**
Chrysene	**0.02 J**
Indeno(1,2,3-cd)pyrene	**0.02 J**
Phenol	<5 U

Location	MW25
Sample Name	MW25_020922
Sample Date	02/09/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	1.8
Benzo(a)anthracene	**0.09 J**
Benzo(a)pyrene	**0.07 J**
Benzo(b)fluoranthene	**0.12**
Benzo(k)fluoranthene	**0.03 J**
Chrysene	**0.07 J**
Indeno(1,2,3-cd)pyrene	**0.08 J**
Phenol	<5 U

Location	MW26
Sample Name	MW26_020822
Sample Date	02/08/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	0.05 J
Benzo(a)anthracene	<0.1 U
Benzo(a)pyrene	<0.1 U
Benzo(b)fluoranthene	<0.1 U
Benzo(k)fluoranthene	<0.1 U
Chrysene	<0.1 U
Indeno(1,2,3-cd)pyrene	<0.1 U
Phenol	<5 U

Location	MW05
Sample Name	MW05_020322
Sample Date	02/03/2022
VOCs (µg/L)	
Chlorobenzene	<2.5 U
SVOCs (µg/L)	
Acenaphthene	2
Benzo(a)anthracene	**0.09 J**
Benzo(a)pyrene	**0.04 J**
Benzo(b)fluoranthene	**0.06 J**
Benzo(k)fluoranthene	**0.02 J**
Chrysene	**0.05 J**
Indeno(1,2,3-cd)pyrene	**0.04 J**
Phenol	**1.2 J**



LEGEND

SB-1/MW-1 — CO-LOCATED SOIL SAMPLE AND GROUNDWATER MONITORING WELL SAMPLE

SITE BOUNDARY

Analyte	NYSDEC SGVs
VOCs (µg/L)	
Chlorobenzene	5
SVOCs (µg/L)	
Acenaphthene	20
Benzo(a)anthracene	0.002
Benzo(a)pyrene	0
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Chrysene	0.002
Indeno(1,2,3-cd)pyrene	0.002
Phenol	1

Exceedance Summary:

10 - Result exceeds NYSDEC SGVs

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 703.5 AND THE NYSDEC TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER (HEREIN COLLECTIVELY REFERENCED AS "NYSDEC SGVs").
4. CONTAMINANTS EXCEEDING NYSDEC SGVs ARE SHOWN
5. ug/l = MICROGRAM PER LITER
6. VOCs = VOLATILE ORGANIC COMPOUNDS
7. SVOCs = SEMI-VOLATILE ORGANIC COMPOUNDS

QUALIFIER:
J = THE ANALYTE WAS POSITIVELY IDENTIFIED AND THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.
UJ = THE ANALYTE WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE RL; HOWEVER, THE REPORTED RL IS APPROXIMATE AND MAY BE INACCURATE OR IMPRECISE.
U = THE ANALYTE WAS ANALYZED FOR, BUT WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE LEVEL OF THE RL OR THE SAMPLE CONCENTRATION FOR RESULTS IMPACTED BY BLANK CONTAMINATION.

LANGAN

Langan Engineering and Environmental Services, Inc.

21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727

T: 212.479.5400 F: 212.479.5444 www.langan.com

Project: REGO PARK CENTER III

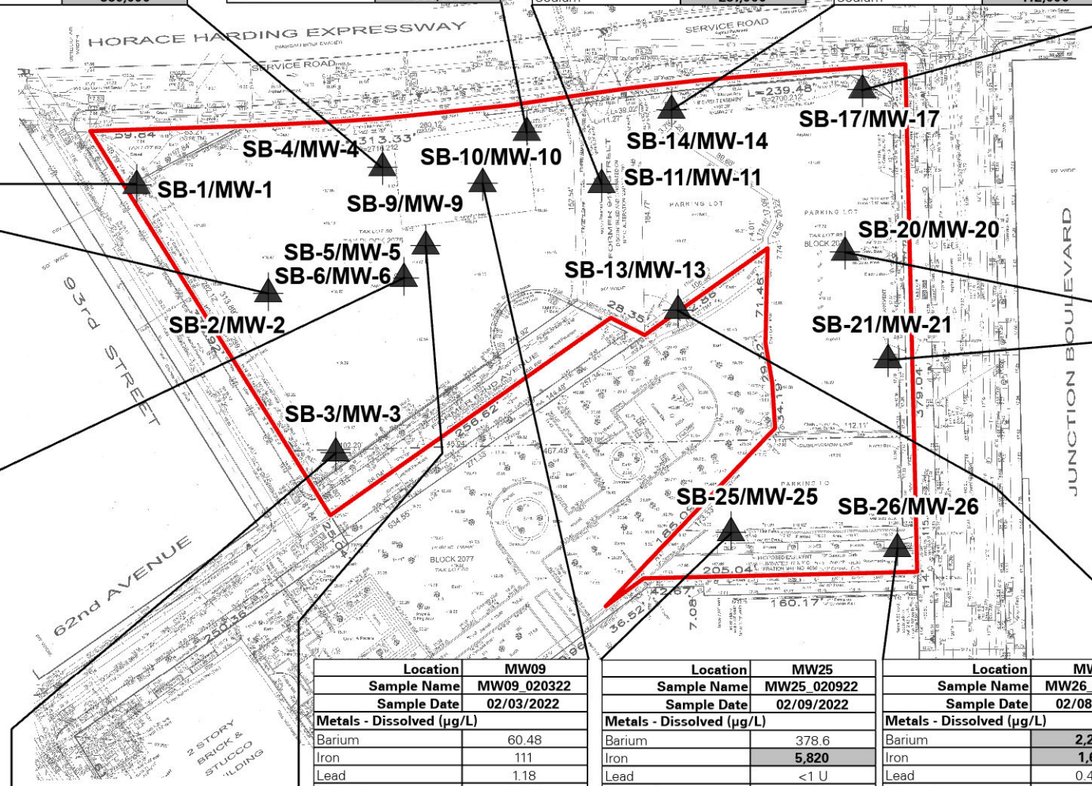
BLOCK No. 2076, LOT No. 50

QUEENS NEW YORK

Figure Title: GROUNDWATER SAMPLE LOCATION AND RESULTS MAP - VOCs AND SVOCs

Project No.	Figure
170683801	4A
Date: 4/14/2022	
Scale: 1" = 150'	
Drawn By: MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx



Location	MW01
Sample Name	MW01_020222
Sample Date	02/02/2022
Metals - Dissolved (µg/L)	
Barium	**2,525**
Iron	<50 U
Lead	<1 U
Magnesium	**46,700**
Manganese	**853.4**
Sodium	**780,000**
Metals - Total (µg/L)	
Barium	**2,772**
Iron	**14,500**
Lead	**27.34**
Magnesium	**46,200**
Manganese	**910**
Sodium	**728,000**

Location	MW02
Sample Name	MW02_020222
Sample Date	02/02/2022
Metals - Dissolved (µg/L)	
Barium	352
Iron	**15,300**
Lead	0.99 J
Magnesium	21,700
Manganese	**701.1**
Sodium	**176,000**
Metals - Total (µg/L)	
Barium	416.2
Iron	**31,500**
Lead	2.74 J
Magnesium	21,600
Manganese	**748**
Sodium	**186,000**

Location	MW06
Sample Name	MW06_020322
Sample Date	02/03/2022
Metals - Dissolved (µg/L)	
Barium	**1,367**
Iron	244 J
Lead	<10 U
Magnesium	**56,400**
Manganese	**506.2**
Sodium	**4,610,000**
Metals - Total (µg/L)	
Barium	**1,542**
Iron	**10,800**
Lead	**73.85**
Magnesium	**62,100**
Manganese	**609.3**
Sodium	**4,950,000**

Location	MW03	MW03
Sample Name	MW03_020222	GWDUP01_020222
Sample Date	02/02/2022	02/02/2022
Metals - Dissolved (µg/L)		
Barium	279.3	274.1
Iron	218 J	227 J
Lead	<1 U	<1 U
Magnesium	20,700	20,500
Manganese	**511**	**488.6**
Sodium	**320,000**	**315,000**
Metals - Total (µg/L)		
Barium	323.4	325.6
Iron	**7,040**	**7,000**
Lead	7.64	5.7
Magnesium	21,800	21,700
Manganese	**561.8**	**551.7**
Sodium	**329,000**	**331,000**

Location	MW04
Sample Name	MW04_020922
Sample Date	02/09/2022
Metals - Dissolved (µg/L)	
Barium	**1,976**
Iron	**3,550**
Lead	<1 U
Magnesium	**46,400**
Manganese	**459.8**
Sodium	**557,000**
Metals - Total (µg/L)	
Barium	**2,277**
Iron	**23,500**
Lead	**64.51**
Magnesium	**36,500**
Manganese	**400**
Sodium	**580,000**

Location	MW10
Sample Name	MW10_020822
Sample Date	02/08/2022
Metals - Dissolved (µg/L)	
Barium	60.86
Iron	25 J
Lead	0.56 J
Magnesium	10,100
Manganese	5.67
Sodium	**583,000**
Metals - Total (µg/L)	
Barium	59
Iron	96.4
Lead	1.52
Magnesium	10,500
Manganese	6.41
Sodium	**500,000**

Location	MW11
Sample Name	MW11_020722
Sample Date	02/07/2022
Metals - Dissolved (µg/L)	
Barium	344
Iron	**10,300**
Lead	<1 U
Magnesium	**45,000**
Manganese	**966.4**
Sodium	**272,000**
Metals - Total (µg/L)	
Barium	487.3
Iron	**27,100**
Lead	1.59
Magnesium	**39,100**
Manganese	**1,107**
Sodium	**257,000**

Location	MW14
Sample Name	MW14_020722
Sample Date	02/07/2022
Metals - Dissolved (µg/L)	
Barium	342.3
Iron	**466**
Lead	<1 U
Magnesium	25,500
Manganese	**1,686**
Sodium	**115,000**
Metals - Total (µg/L)	
Barium	393.5
Iron	**6,520**
Lead	1.34
Magnesium	25,500
Manganese	**2,077**
Sodium	**112,000**

Location	MW17
Sample Name	MW17_020722
Sample Date	02/07/2022
Metals - Dissolved (µg/L)	
Barium	764.1
Iron	283
Lead	<1 U
Magnesium	26,000
Manganese	**462**
Sodium	**883,000**
Metals - Total (µg/L)	
Barium	785.9
Iron	**5,770**
Lead	11.57
Magnesium	26,400
Manganese	**569.9**
Sodium	**800,000**

Location	MW20
Sample Name	MW20_020822
Sample Date	02/08/2022
Metals - Dissolved (µg/L)	
Barium	**2,976**
Iron	**526**
Lead	7.83
Magnesium	**45,400**
Manganese	121.8
Sodium	**743,000**
Metals - Total (µg/L)	
Barium	**3,602**
Iron	**23,300**
Lead	21.06
Magnesium	**37,000**
Manganese	103.4
Sodium	**566,000**

Location	MW21
Sample Name	MW21_020922
Sample Date	02/09/2022
Metals - Dissolved (µg/L)	
Barium	**4,516**
Iron	**516**
Lead	<1 U
Magnesium	**48,200**
Manganese	83.13
Sodium	**498,000**
Metals - Total (µg/L)	
Barium	**4,676**
Iron	**18,000**
Lead	7.74
Magnesium	**39,400**
Manganese	77.38
Sodium	**568,000**

Location	MW05
Sample Name	MW05_020322
Sample Date	02/03/2022
Metals - Dissolved (µg/L)	
Barium	138.1
Iron	**652**
Lead	**34.5**
Magnesium	4,600
Manganese	12.32
Sodium	**977,000 J**
Metals - Total (µg/L)	
Barium	147.1
Iron	**1,270**
Lead	**39.44**
Magnesium	5,070
Manganese	21.81
Sodium	**973,000**

Location	MW09
Sample Name	MW09_020322
Sample Date	02/03/2022
Metals - Dissolved (µg/L)	
Barium	60.48
Iron	111
Lead	1.18
Magnesium	6,230
Manganese	5.53 J
Sodium	**392,000**
Metals - Total (µg/L)	
Barium	93.75
Iron	**4,580**
Lead	**41.34**
Magnesium	8,450
Manganese	87.36
Sodium	**418,000**

Location	MW25
Sample Name	MW25_020922
Sample Date	02/09/2022
Metals - Dissolved (µg/L)	
Barium	378.6
Iron	**5,820**
Lead	<1 U
Magnesium	13,100
Manganese	**390.9**
Sodium	**53,200**
Metals - Total (µg/L)	
Barium	444.2
Iron	**17,000**
Lead	**166.3**
Magnesium	11,900
Manganese	**350.7**
Sodium	**48,000**

Location	MW26
Sample Name	MW26_020822
Sample Date	02/08/2022
Metals - Dissolved (µg/L)	
Barium	**2,245**
Iron	**1,660**
Lead	0.49 J
Magnesium	20,600
Manganese	**350.4**
Sodium	**142,000**
Metals - Total (µg/L)	
Barium	**2,576**
Iron	**15,100**
Lead	**38.75**
Magnesium	20,600
Manganese	**330**
Sodium	**118,000**

Location	MW13
Sample Name	MW13_021722
Sample Date	02/17/2022
Metals - Dissolved (µg/L)	
Barium	523
Iron	**2,850 J**
Lead	<1 U
Magnesium	24,800
Manganese	**882**
Sodium	**447,000**
Metals - Total (µg/L)	
Barium	791.2
Iron	**29,800**
Lead	**34.81**
Magnesium	24,900
Manganese	**1,046**
Sodium	**583,000**

150 0 150
SCALE IN FEET

LEGEND

SB-1/MW-1 — CO-LOCATED SOIL SAMPLE AND GROUNDWATER MONITORING WELL SAMPLE

SITE BOUNDARY

Analyte	NYSDEC SGVs
Metals - Dissolved (µg/L)	
Barium	1000
Iron	300
Lead	25
Magnesium	35000
Manganese	300
Sodium	20000
Metals - Total (µg/L)	
Barium	1000
Iron	300
Lead	25
Magnesium	35000
Manganese	300
Sodium	20000

Exceedance Summary:

10 - Result exceeds NYSDEC SGVs

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 703.5 AND THE NYSDEC TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER (HEREIN COLLECTIVELY REFERENCED AS "NYSDEC SGVs").
4. CONTAMINANTS EXCEEDING NYSDEC GUIDANCE VALUES ARE SHOWN.
5. ug/l = MICROGRAM PER LITER

QUALIFIER:
U = THE ANALYTE WAS ANALYZED FOR, BUT WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE LEVEL OF THE RL OR THE SAMPLE CONCENTRATION FOR RESULTS IMPACTED BY BLANK CONTAMINATION.
F = THE RATIO OF QUANTIFIER ION RESPONSE TO QUALIFIER ION RESPONSE FALLS OUTSIDE OF THE LABORATORY CRITERIA. RESULTS ARE CONSIDERED TO BE AN ESTIMATED MAXIMUM CONCENTRATION.

LANGAN

Langan Engineering and Environmental Services, Inc.

21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727

T: 212.479.5400 F: 212.479.5444 www.langan.com

Project: REGO PARK CENTER III

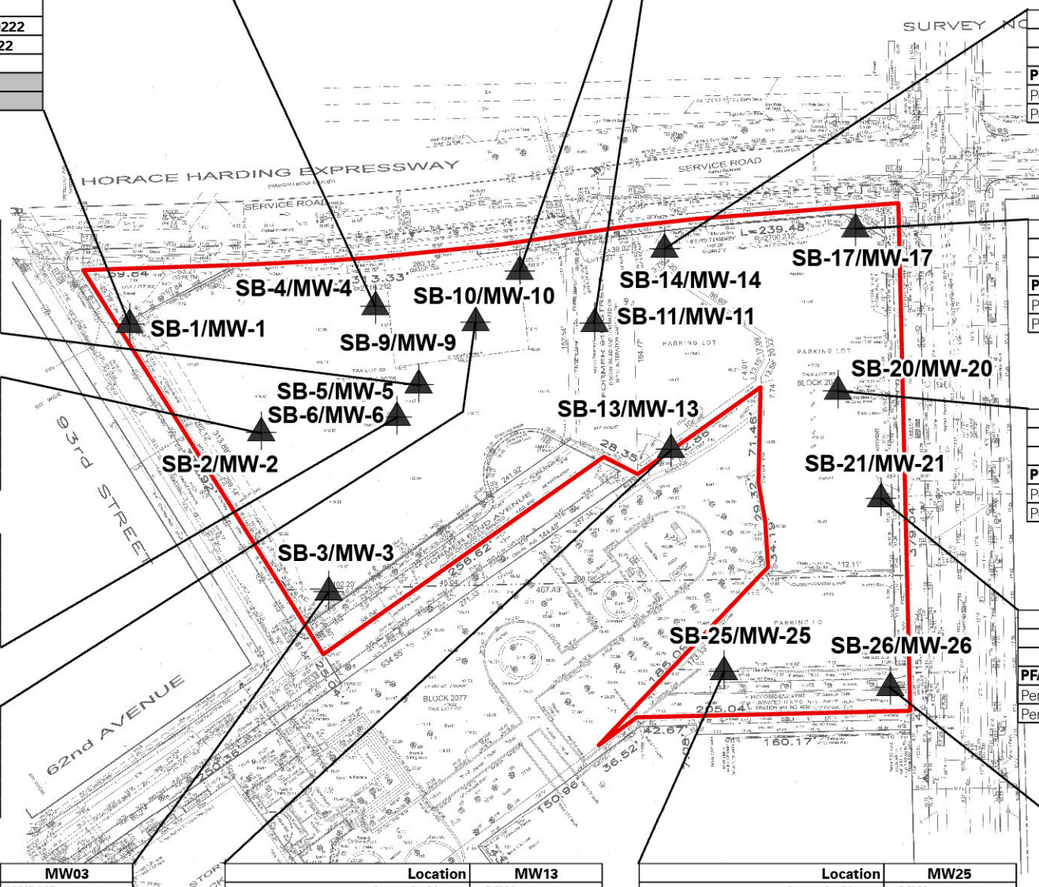
BLOCK No. 2076, LOT No. 50

QUEENS NEW YORK

Figure Title: GROUNDWATER SAMPLE LOCATION AND RESULTS MAP - METALS

Project No.	Figure
170683801	4B
Date: 4/14/2022	
Scale: 1" = 150'	
Drawn By: MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801_old\170683801.aprx



Location	MW04
Sample Name	MW04_020922
Sample Date	02/09/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	**0.029**
Perfluorooctanoic Acid (PFOA)	**0.0445**

Location	MW10
Sample Name	MW10_020822
Sample Date	02/08/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	**0.0163 F**
Perfluorooctanoic Acid (PFOA)	0.005

Location	MW11
Sample Name	MW11_020722
Sample Date	02/07/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	0.00607
Perfluorooctanoic Acid (PFOA)	**0.0128**

Location	MW01
Sample Name	MW01_020222
Sample Date	02/02/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	**0.0514**
Perfluorooctanoic Acid (PFOA)	**0.0483**

Location	MW14
Sample Name	MW14_020722
Sample Date	02/07/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	0.00903
Perfluorooctanoic Acid (PFOA)	**0.0272**

Location	MW05
Sample Name	MW05_020322
Sample Date	02/03/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	<0.00181 U
Perfluorooctanoic Acid (PFOA)	**0.0248**

Location	MW17
Sample Name	MW17_020722
Sample Date	02/07/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	**0.0199 F**
Perfluorooctanoic Acid (PFOA)	**0.0316**

Location	MW02
Sample Name	MW02_020222
Sample Date	02/02/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	0.00647
Perfluorooctanoic Acid (PFOA)	**0.0195**

Location	MW20
Sample Name	MW20_020822
Sample Date	02/08/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	**0.0113**
Perfluorooctanoic Acid (PFOA)	**0.0238**

Location	MW06
Sample Name	MW06_020322
Sample Date	02/03/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	<0.00181 U
Perfluorooctanoic Acid (PFOA)	**0.0146**

Location	MW21
Sample Name	MW21_020922
Sample Date	02/09/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	0.00779
Perfluorooctanoic Acid (PFOA)	**0.028**

Location	MW09
Sample Name	MW09_020322
Sample Date	02/03/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	0.00251
Perfluorooctanoic Acid (PFOA)	0.00207

Location	MW26
Sample Name	MW26_020822
Sample Date	02/08/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	0.00303 F
Perfluorooctanoic Acid (PFOA)	**0.0237**

Location	MW03	MW03
Sample Name	MW03_020222	GWDUP01_020222
Sample Date	02/02/2022	02/02/2022
PFAS		
Perfluorooctanesulfonic Acid (PFOS)	**0.0185**	**0.0213**
Perfluorooctanoic Acid (PFOA)	**0.0143**	**0.0146**

Location	MW13
Sample Name	MW13_021722
Sample Date	02/17/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	**0.0217**
Perfluorooctanoic Acid (PFOA)	**0.0182**

Location	MW25
Sample Name	MW25_020922
Sample Date	02/09/2022
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	0.00924
Perfluorooctanoic Acid (PFOA)	**0.0288**

LEGEND

SB-1/MW-1 — CO-LOCATED SOIL SAMPLE AND GROUNDWATER MONITORING WELL SAMPLE

SITE BOUNDARY

Analyte	NYSDEC Guidance Values
PFAS	
Perfluorooctanesulfonic Acid (PFOS)	0.01
Perfluorooctanoic Acid (PFOA)	0.01

Exceedance Summary:

10 - Result exceeds NYSDEC Guidance Values

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) PART 375 REMEDIAL PROGRAMS GUIDELINES FOR SAMPLING AND ANALYSIS OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) (JUNE 2021).
4. CONTAMINANTS EXCEEDING NYSDEC GUIDANCE VALUES ARE SHOWN.
5. ug/l = MICROGRAM PER LITER

QUALIFIER:
U = THE ANALYTE WAS ANALYZED FOR, BUT WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE LEVEL OF THE RL OR THE SAMPLE CONCENTRATION FOR RESULTS IMPACTED BY BLANK CONTAMINATION.
F = THE RATIO OF QUANTIFIER ION RESPONSE TO QUALIFIER ION RESPONSE FALLS OUTSIDE OF THE LABORATORY CRITERIA. RESULTS ARE CONSIDERED TO BE AN ESTIMATED MAXIMUM CONCENTRATION.

150 0 150
SCALE IN FEET

LANGAN
Langan Engineering and Environmental Services, Inc.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project: REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title: GROUNDWATER SAMPLE LOCATION AND RESULTS MAP - PFAS

Project No.	Figure
170683801	4C
Date: 4/14/2022	
Scale: 1" = 150'	
Drawn By: MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801_old\170683801.aprx

Location	SV-1
Sample Name	SV-1_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	117 J
1,3,5-Trimethylbenzene (Mesitylene)	33.1 J
1,3-Butadiene	<0.442 UJ
2,2,4-Trimethylpentane	317 J
2-Hexanone (MBK)	<0.82 UJ
4-Ethyltoluene	23.6 J
Acetone	97.4 J
Benzene	18.4 J
Carbon Disulfide	1.66 J
Chloroethane	1.66 J
Chloroform	<0.977 UJ
Chloromethane	25 J
Cis-1,2-Dichloroethene	<0.793 UJ
Cyclohexane	33.3 J
Dichlorodifluoromethane	1.07 J
Ethanol	<9.42 UJ
Ethylbenzene	5.04 J
Isopropanol	1.94 J
M,P-Xylene	19 J
Methyl Ethyl Ketone (2-Butanone)	15 J
n-Heptane	48.8 J
n-Hexane	100 J
o-Xylene (1,2-Dimethylbenzene)	16.6 J
Tert-Butyl Alcohol	<1.52 UJ
Tetrahydrofuran	<1.47 UJ
Toluene	7.16 J
Total Xylenes	35.7 J
Trichlorofluoromethane	<1.12 UJ
Vinyl Chloride	<0.511 UJ

Location	SV-2
Sample Name	SV-2_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	65.4 J
1,3,5-Trimethylbenzene (Mesitylene)	20.1 J
1,3-Butadiene	<0.615 UJ
2,2,4-Trimethylpentane	227 J
2-Hexanone (MBK)	<1.14 UJ
4-Ethyltoluene	16.6 J
Acetone	83.9 J
Benzene	1.98 J
Carbon Disulfide	8.07 J
Chloroethane	<0.734 UJ
Chloroform	<1.36 UJ
Chloromethane	<0.574 UJ
Cis-1,2-Dichloroethene	<1.1 UJ
Cyclohexane	104 J
Dichlorodifluoromethane	<1.37 UJ
Ethanol	<13.1 UJ
Ethylbenzene	3.39 J
Isopropanol	2.68 J
M,P-Xylene	13.4 J
Methyl Ethyl Ketone (2-Butanone)	12.4 J
n-Heptane	21.4 J
n-Hexane	54.6 J
o-Xylene (1,2-Dimethylbenzene)	16.3 J
Tert-Butyl Alcohol	2.45 J
Tetrahydrofuran	<2.05 UJ
Toluene	3.49 J
Total Xylenes	29.7 J
Trichlorofluoromethane	<1.56 UJ
Vinyl Chloride	<0.711 UJ

Location	SV-3
Sample Name	SV-3_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	127
1,3,5-Trimethylbenzene (Mesitylene)	36.7
1,3-Butadiene	<0.442 U
2,2,4-Trimethylpentane	6.26
2-Hexanone (MBK)	<0.82 U
4-Ethyltoluene	28.5
Acetone	69.4
Benzene	<0.639 U
Carbon Disulfide	0.676
Chloroethane	<0.528 U
Chloroform	<0.977 U
Chloromethane	<0.413 U
Cis-1,2-Dichloroethene	<0.793 U
Cyclohexane	1.01
Dichlorodifluoromethane	1.78
Ethanol	<9.42 U
Ethylbenzene	5.34
Isopropanol	<1.23 U
M,P-Xylene	23.4
Methyl Ethyl Ketone (2-Butanone)	2.61
n-Heptane	<0.82 U
n-Hexane	<0.705 U
o-Xylene (1,2-Dimethylbenzene)	24.9
Tert-Butyl Alcohol	<1.52 U
Tetrahydrofuran	<1.47 U
Toluene	2.69
Total Xylenes	48.2
Trichlorofluoromethane	<1.12 U
Vinyl Chloride	<0.511 U

Location	AA-1
Sample Name	AA-1_012822
Sample Date	01/28/2022
Sample Type	AA
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	<0.983 U
1,3,5-Trimethylbenzene (Mesitylene)	<0.983 U
1,3-Butadiene	<0.442 U
2,2,4-Trimethylpentane	<0.934 U
2-Hexanone (MBK)	<0.82 U
4-Ethyltoluene	<0.983 U
Acetone	5.34
Benzene	1.28
Carbon Disulfide	<0.623 U
Chloroethane	<0.528 U
Chloroform	<0.977 U
Chloromethane	1.22
Cis-1,2-Dichloroethene	<0.793 U
Cyclohexane	<0.688 U
Dichlorodifluoromethane	2.61
Ethanol	76.9
Ethylbenzene	<0.869 U
Isopropanol	15.8
M,P-Xylene	1.9
Methyl Ethyl Ketone (2-Butanone)	1.58
n-Heptane	0.877
n-Hexane	1.02
o-Xylene (1,2-Dimethylbenzene)	<0.869 U
Tert-Butyl Alcohol	<1.52 U
Tetrahydrofuran	<1.47 U
Toluene	3.32
Total Xylenes	1.9
Trichlorofluoromethane	1.16
Vinyl Chloride	<0.511 U

Location	SV-4
Sample Name	SV-4_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	53.1 J
1,3,5-Trimethylbenzene (Mesitylene)	14.3 J
1,3-Butadiene	1.15 J
2,2,4-Trimethylpentane	282 J
2-Hexanone (MBK)	<0.873 UJ
4-Ethyltoluene	17.7 J
Acetone	3.09 J
Benzene	15 J
Carbon Disulfide	12.3 J
Chloroethane	<0.562 UJ
Chloroform	<1.04 UJ
Chloromethane	<0.44 UJ
Cis-1,2-Dichloroethene	1.78 J
Cyclohexane	175 J
Dichlorodifluoromethane	<1.05 UJ
Ethanol	<10 UJ
Ethylbenzene	5.34 J
Isopropanol	<1.31 UJ
M,P-Xylene	25.4 J
Methyl Ethyl Ketone (2-Butanone)	<1.57 UJ
n-Heptane	31.8 J
n-Hexane	149 J
o-Xylene (1,2-Dimethylbenzene)	21 J
Tert-Butyl Alcohol	2.28 J
Tetrahydrofuran	<1.57 UJ
Toluene	6.1 J
Total Xylenes	46.5 J
Trichlorofluoromethane	<1.2 UJ
Vinyl Chloride	1.35 J

Location	SV-5
Sample Name	SV-5_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	1.08
1,3,5-Trimethylbenzene (Mesitylene)	<0.983 U
1,3-Butadiene	<0.442 U
2,2,4-Trimethylpentane	1.05
2-Hexanone (MBK)	<0.82 U
4-Ethyltoluene	<0.983 U
Acetone	14.5
Benzene	1.75
Carbon Disulfide	<0.623 U
Chloroethane	<0.528 U
Chloroform	<0.977 U
Chloromethane	1.22
Cis-1,2-Dichloroethene	<0.793 U
Cyclohexane	<0.688 U
Dichlorodifluoromethane	2.61
Ethanol	76.9
Ethylbenzene	<0.869 U
Isopropanol	15.8
M,P-Xylene	1.9
Methyl Ethyl Ketone (2-Butanone)	1.58
n-Heptane	0.877
n-Hexane	1.02
o-Xylene (1,2-Dimethylbenzene)	<0.869 U
Tert-Butyl Alcohol	<1.52 U
Tetrahydrofuran	<1.47 U
Toluene	3.32
Total Xylenes	1.9
Trichlorofluoromethane	1.16
Vinyl Chloride	<0.511 U

Location	SV-6
Sample Name	SV-6_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	143 J
1,3,5-Trimethylbenzene (Mesitylene)	47.5 J
1,3-Butadiene	<11.1 UJ
2,2,4-Trimethylpentane	<23.4 UJ
2-Hexanone (MBK)	<20.6 UJ
4-Ethyltoluene	26.2 J
Acetone	<59.6 UJ
Benzene	<16 UJ
Carbon Disulfide	33.3 J
Chloroethane	<13.2 UJ
Chloroform	<24.5 UJ
Chloromethane	<10.4 UJ
Cis-1,2-Dichloroethene	2.59 J
Cyclohexane	2,280 J
Dichlorodifluoromethane	<24.8 UJ
Ethanol	<237 UJ
Ethylbenzene	<21.8 UJ
Isopropanol	<31 UJ
M,P-Xylene	52.6 J
Methyl Ethyl Ketone (2-Butanone)	472 J
n-Heptane	79.1 J
n-Hexane	320 J
o-Xylene (1,2-Dimethylbenzene)	31 J
Tert-Butyl Alcohol	<38.2 UJ
Tetrahydrofuran	<37.2 UJ
Toluene	<18.9 UJ
Total Xylenes	83.4 J
Trichlorofluoromethane	<28.2 UJ
Vinyl Chloride	**43.2 J**

Location	SV-7
Sample Name	SV-7_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	83.6 J
1,3,5-Trimethylbenzene (Mesitylene)	23.1 J
1,3-Butadiene	17.6 J
2,2,4-Trimethylpentane	<1.34 UJ
2-Hexanone (MBK)	<1.17 UJ
4-Ethyltoluene	25.8 J
Acetone	138 J
Benzene	52.7 J
Carbon Disulfide	27.5 J
Chloroethane	<0.755 UJ
Chloroform	<1.4 UJ
Chloromethane	<0.591 UJ
Cis-1,2-Dichloroethene	2.93 J
Cyclohexane	212 J
Dichlorodifluoromethane	1.58 J
Ethanol	<13.5 UJ
Ethylbenzene	7.12 J
Isopropanol	2.97 J
M,P-Xylene	26.3 J
Methyl Ethyl Ketone (2-Butanone)	31.9 J
n-Heptane	43 J
n-Hexane	139 J
o-Xylene (1,2-Dimethylbenzene)	21.1 J
Tert-Butyl Alcohol	<2.16 UJ
Tetrahydrofuran	<2.11 UJ
Toluene	16.6 J
Total Xylenes	47.3 J
Trichlorofluoromethane	<1.61 UJ
Vinyl Chloride	**26.6 J**

Location	SV-8
Sample Name	SV-8_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	67.8
1,3,5-Trimethylbenzene (Mesitylene)	18.3
1,3-Butadiene	<0.442 U
2,2,4-Trimethylpentane	8.64
2-Hexanone (MBK)	<0.82 U
4-Ethyltoluene	21.3
Acetone	22.2
Benzene	1.21
Carbon Disulfide	4.36
Chloroethane	<0.528 U
Chloroform	11.1
Chloromethane	<0.413 U
Cis-1,2-Dichloroethene	<0.793 U
Cyclohexane	0.836
Dichlorodifluoromethane	2.24
Ethanol	<9.42 U
Ethylbenzene	7.69
Isopropanol	<1.23 U
M,P-Xylene	32
Methyl Ethyl Ketone (2-Butanone)	3.36
n-Heptane	2.7
n-Hexane	1.88
o-Xylene (1,2-Dimethylbenzene)	26.5
Tert-Butyl Alcohol	4.43
Tetrahydrofuran	<1.47 U
Toluene	5.8
Total Xylenes	58.6
Trichlorofluoromethane	<1.12 U
Vinyl Chloride	<0.511 U

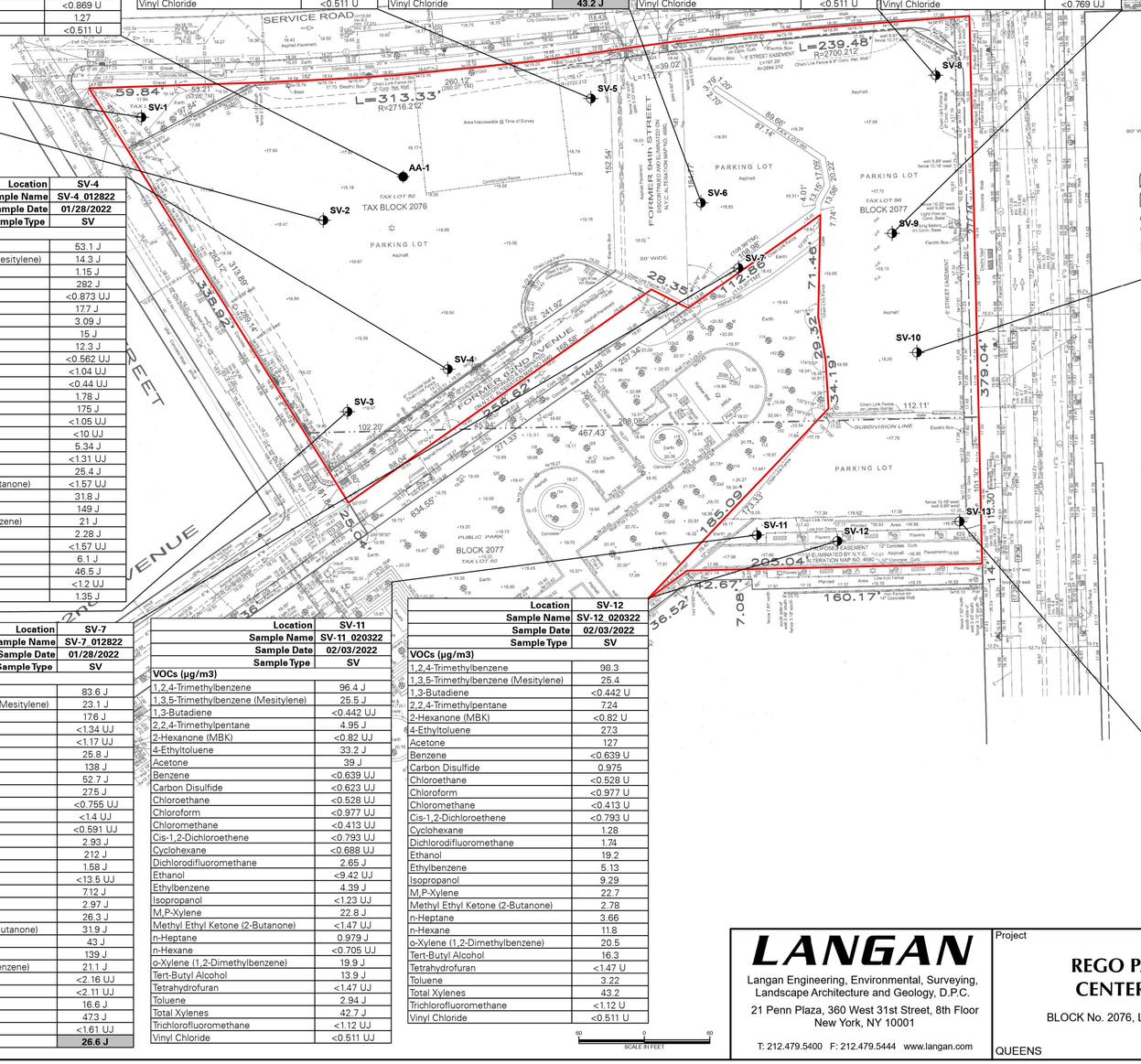
Location	SV-9
Sample Name	SV-9_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	65.4 J
1,3,5-Trimethylbenzene (Mesitylene)	17 J
1,3-Butadiene	<0.666 UJ
2,2,4-Trimethylpentane	<1.41 UJ
2-Hexanone (MBK)	14 J
4-Ethyltoluene	22.3 J
Acetone	106 J
Benzene	2.73 J
Carbon Disulfide	1.44 J
Chloroethane	<0.794 UJ
Chloroform	<1.47 UJ
Chloromethane	<0.622 UJ
Cis-1,2-Dichloroethene	<1.19 UJ
Cyclohexane	28.6 J
Dichlorodifluoromethane	<1.49 UJ
Ethanol	<14.2 UJ
Ethylbenzene	7.17 J
Isopropanol	4.74 J
M,P-Xylene	27.5 J
Methyl Ethyl Ketone (2-Butanone)	26.6 J
n-Heptane	7.87 J
n-Hexane	52.5 J
o-Xylene (1,2-Dimethylbenzene)	25.1 J
Tert-Butyl Alcohol	2.58 J
Tetrahydrofuran	<2.22 UJ
Toluene	6.78 J
Total Xylenes	52.6 J
Trichlorofluoromethane	<1.69 UJ
Vinyl Chloride	<0.769 UJ

Location	SV-10
Sample Name	SV-10_012822
Sample Date	01/28/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	123
1,3,5-Trimethylbenzene (Mesitylene)	32.1
1,3-Butadiene	41.1
2,2,4-Trimethylpentane	<0.934 U
2-Hexanone (MBK)	<0.82 U
4-Ethyltoluene	39.7
Acetone	100
Benzene	40.6
Carbon Disulfide	50.4
Chloroethane	<0.528 U
Chloroform	<0.977 U
Chloromethane	3.92
Cis-1,2-Dichloroethene	<0.793 U
Cyclohexane	80.9
Dichlorodifluoromethane	1.03
Ethanol	<9.42 U
Ethylbenzene	7.73
Isopropanol	3.39
M,P-Xylene	26.9
Methyl Ethyl Ketone (2-Butanone)	41
n-Heptane	27.7
n-Hexane	92.7
o-Xylene (1,2-Dimethylbenzene)	21.1
Tert-Butyl Alcohol	<1.52 U
Tetrahydrofuran	2.1
Toluene	8.97
Total Xylenes	47.8
Trichlorofluoromethane	<1.12 U
Vinyl Chloride	<0.511 U

Location	SV-11
Sample Name	SV-11_020322
Sample Date	02/03/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	96.4 J
1,3,5-Trimethylbenzene (Mesitylene)	25.5 J
1,3-Butadiene	<0.442 UJ
2,2,4-Trimethylpentane	4.95 J
2-Hexanone (MBK)	<0.82 UJ
4-Ethyltoluene	33.2 J
Acetone	39 J
Benzene	<0.639 UJ
Carbon Disulfide	<0.623 UJ
Chloroethane	<0.528 UJ
Chloroform	<0.977 UJ
Chloromethane	<0.413 UJ
Cis-1,2-Dichloroethene	<0.793 UJ
Cyclohexane	<0.688 UJ
Dichlorodifluoromethane	2.65 J
Ethanol	<9.42 UJ
Ethylbenzene	4.39 J
Isopropanol	<1.23 UJ
M,P-Xylene	22.8 J
Methyl Ethyl Ketone (2-Butanone)	<1.47 UJ
n-Heptane	0.979 J
n-Hexane	<0.705 UJ
o-Xylene (1,2-Dimethylbenzene)	19.9 J
Tert-Butyl Alcohol	13.9 J
Tetrahydrofuran	<1.47 UJ
Toluene	2.94 J
Total Xylenes	42.7 J
Trichlorofluoromethane	<1.12 UJ
Vinyl Chloride	<0.511 UJ

Location	SV-12
Sample Name	SV-12_020322
Sample Date	02/03/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	98.3
1,3,5-Trimethylbenzene (Mesitylene)	25.4
1,3-Butadiene	<0.442 U
2,2,4-Trimethylpentane	724
2-Hexanone (MBK)	<0.82 U
4-Ethyltoluene	27.3
Acetone	127
Benzene	<0.639 U
Carbon Disulfide	0.975
Chloroethane	<0.528 U
Chloroform	<0.977 U
Chloromethane	<0.413 U
Cis-1,2-Dichloroethene	<0.793 U
Cyclohexane	1.28
Dichlorodifluoromethane	1.74
Ethanol	19.2
Ethylbenzene	5.13
Isopropanol	9.29
M,P-Xylene	22.7
Methyl Ethyl Ketone (2-Butanone)	2.78
n-Heptane	3.66
n-Hexane	11.8
o-Xylene (1,2-Dimethylbenzene)	20.5
Tert-Butyl Alcohol	16.3
Tetrahydrofuran	<1.47 U
Toluene	3.22
Total Xylenes	43.2
Trichlorofluoromethane	<1.12 U
Vinyl Chloride	<0.511 U

Location	SV-13
Sample Name	SV-13_020322
Sample Date	02/03/2022
Sample Type	SV
VOCs (µg/m3)	
1,2,4-Trimethylbenzene	973
1,3,5-Trimethylbenzene (Mesitylene)	26.2
1,3-Butadiene	<0.442 U
2,2,4-Trimethylpentane	6.91
2-Hexanone (MBK)	<0.82 U
4-Ethyltoluene	35.8
Acetone	27.1
Benzene	1.87
Carbon Disulfide	2.88
Chloroethane	<0.528 U
Chloroform	<0.977 U
Chloromethane	<0.413 U
Cis-1,2-Dichloroethene	<0.793 U
Cyclohexane	3.75
Dichlorodifluoromethane	2.15
Ethanol	86.9
Ethylbenzene	5.13
Isopropanol	5.46
M,P-Xylene	23.2
Methyl Ethyl Ketone (2-Butanone)	4.48
n-Heptane	9.75
n-Hexane	38.4
o-Xylene (1,2-Dimethylbenzene)	21.7
Tert-Butyl Alcohol	9
Tetrahydrofuran	<1.47 U
Toluene	3.68
Total Xylenes	45.2
Trichlorofluoromethane	<1.12 U
Vinyl Chloride	<0.511 U



62442-1

62442-1.DWG
62442-1.CRD

LEGEND

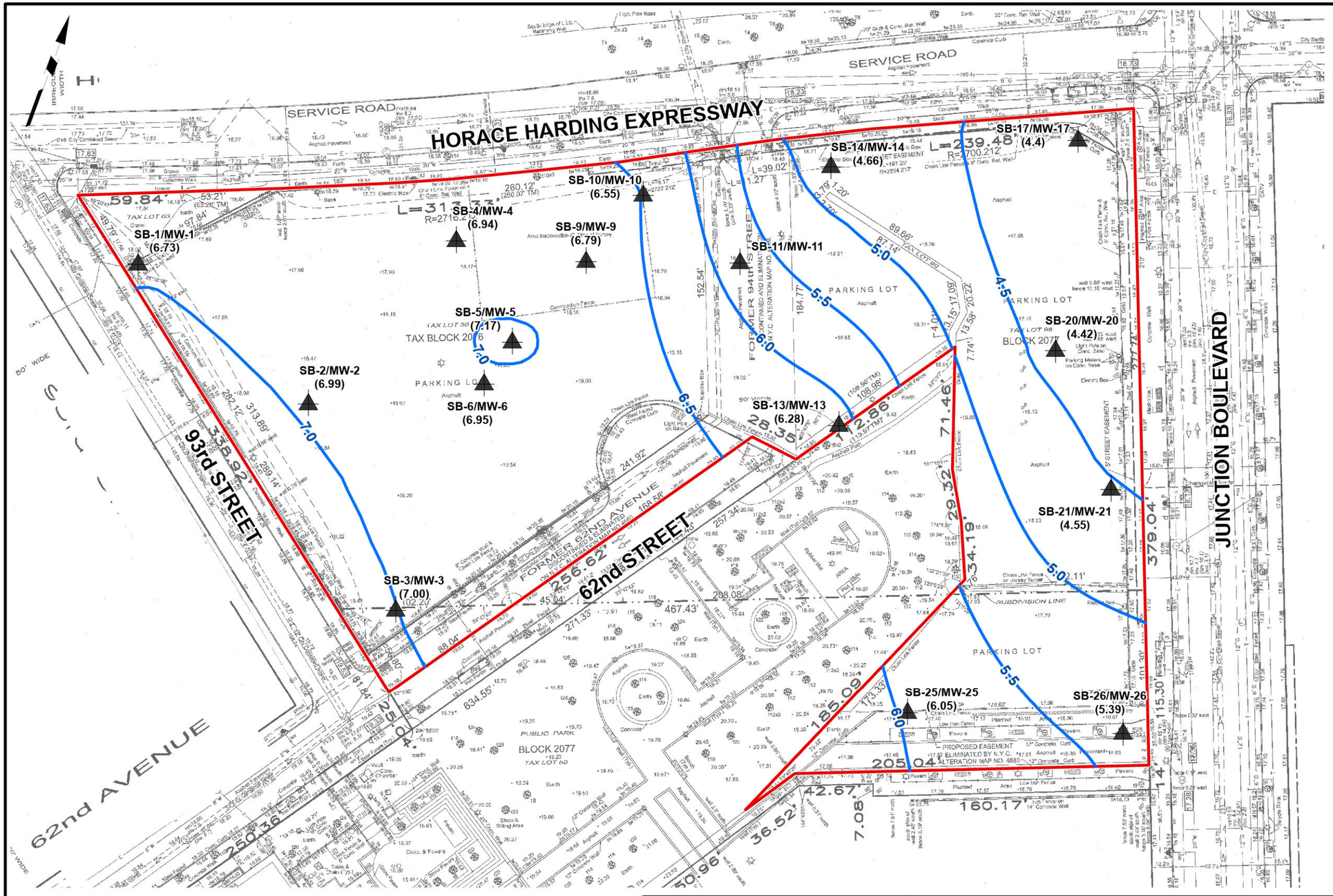
- AMBIENT AIR SAMPLE
- SOIL VAPOR SAMPLE
- SITE BOUNDARY

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. SOIL VAPOR SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE MINIMUM SOIL VAPOR CONCENTRATIONS AT WHICH MITIGATION IS RECOMMENDED AS SET FORTH IN THE NEW YORK STATE DEPARTMENT OF HEALTH (NYSDOH) OCTOBER 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK DECISION MATRICES FOR SUB-SLAB VAPOR AND INDOOR AIR AND SUBSEQUENT UPDATES (2017).
4. RESULTS EXCEEDING MINIMUM SOIL VAPOR CONCENTRATIONS RECOMMENDING MITIGATION ARE SHADED AND BOLDED
5. ug/m3 = MICROGRAM PER CUBIC METER

QUALIFIER:
J = THE ANALYTE WAS POSITIVELY IDENTIFIED AND THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.
UJ = THE ANALYTE WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE RL; HOWEVER, THE REPORTED RL IS APPROXIMATE AND MAY BE INACCURATE OR IMPRECISE.
U = THE ANALYTE WAS ANALYZED FOR, BUT WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE LEVEL OF THE RL OR THE SAMPLE CONCENTRATION FOR RESULTS IMPACTED BY BLANK CONTAMINATION.

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	REGO PARK CENTER III BLOCK No. 2076, LOT No. 50 QUEENS NEW YORK
Figure Title	SOIL VAPOR SAMPLE LOCATION AND RESULTS MAP
Project No.	170683801
Date	4/14/2022
Scale	1" = 60 feet
Drawn By	MG
Submission Date	
Figure	5



LEGEND

- SB-1/MW-1 (6.73) — SOIL SAMPLE AND GROUNDWATER MONITORING WELL SAMPLE (GROUNDWATER ELEVATION)
- (5.0) — GROUNDWATER ELEVATION CONTOUR
- SITE BOUNDARY

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. ELEVATIONS ARE RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988.

LANGAN

Langan Engineering and Environmental Services, Inc.

21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727

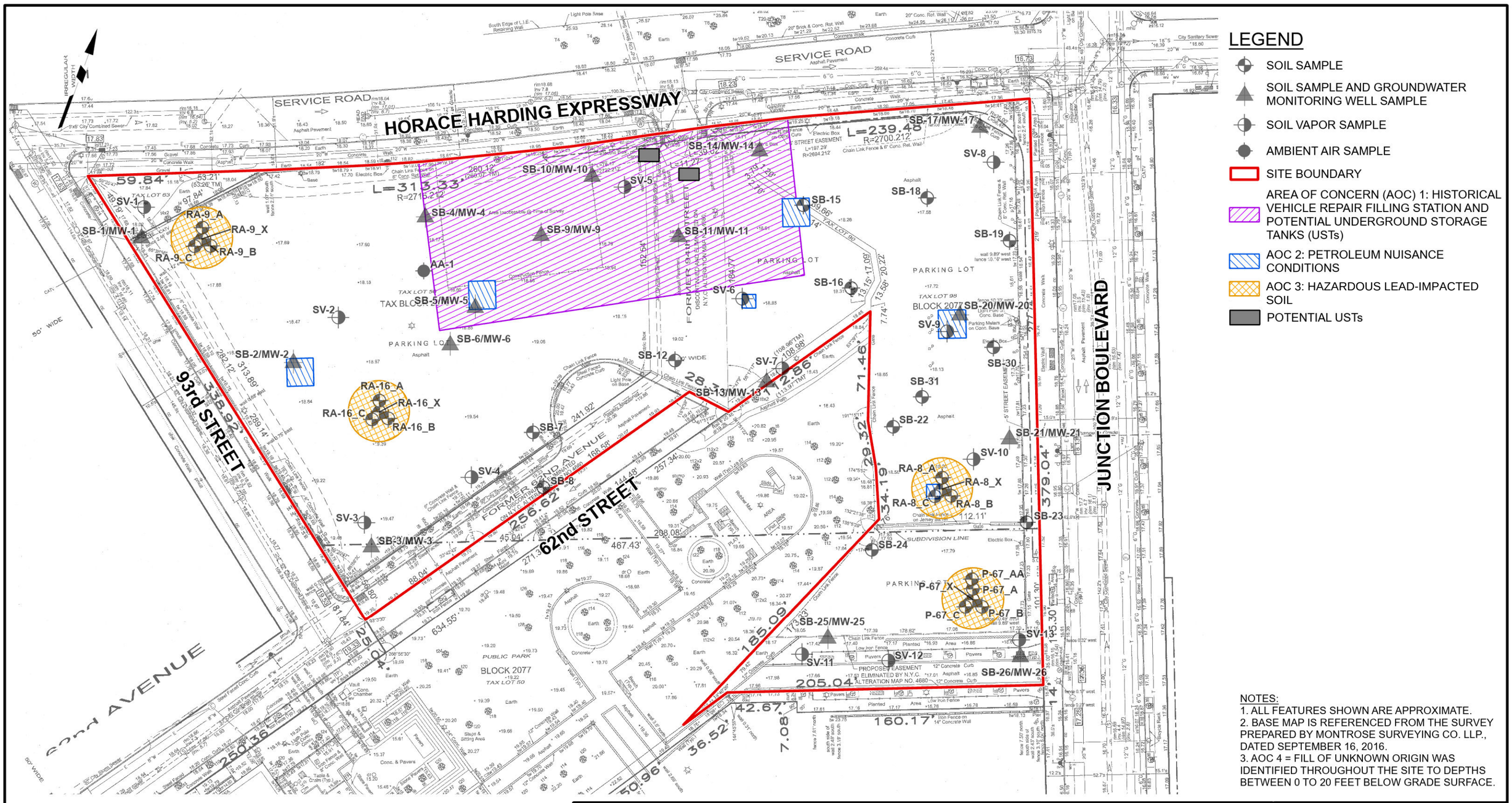
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
GROUNDWATER CONTOUR MAP

Project No. 170683801	Figure 6
Date 4/15/2022	
Scale 1" = 80'	
Drawn By MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx



LEGEND

- SOIL SAMPLE
- SOIL SAMPLE AND GROUNDWATER MONITORING WELL SAMPLE
- SOIL VAPOR SAMPLE
- AMBIENT AIR SAMPLE
- SITE BOUNDARY
- AREA OF CONCERN (AOC) 1: HISTORICAL VEHICLE REPAIR FILLING STATION AND POTENTIAL UNDERGROUND STORAGE TANKS (USTs)
- AOC 2: PETROLEUM NUISANCE CONDITIONS
- AOC 3: HAZARDOUS LEAD-IMPACTED SOIL
- POTENTIAL USTs

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. AOC 4 = FILL OF UNKNOWN ORIGIN WAS IDENTIFIED THROUGHOUT THE SITE TO DEPTHS BETWEEN 0 TO 20 FEET BELOW GRADE SURFACE.

80 0 80
SCALE IN FEET

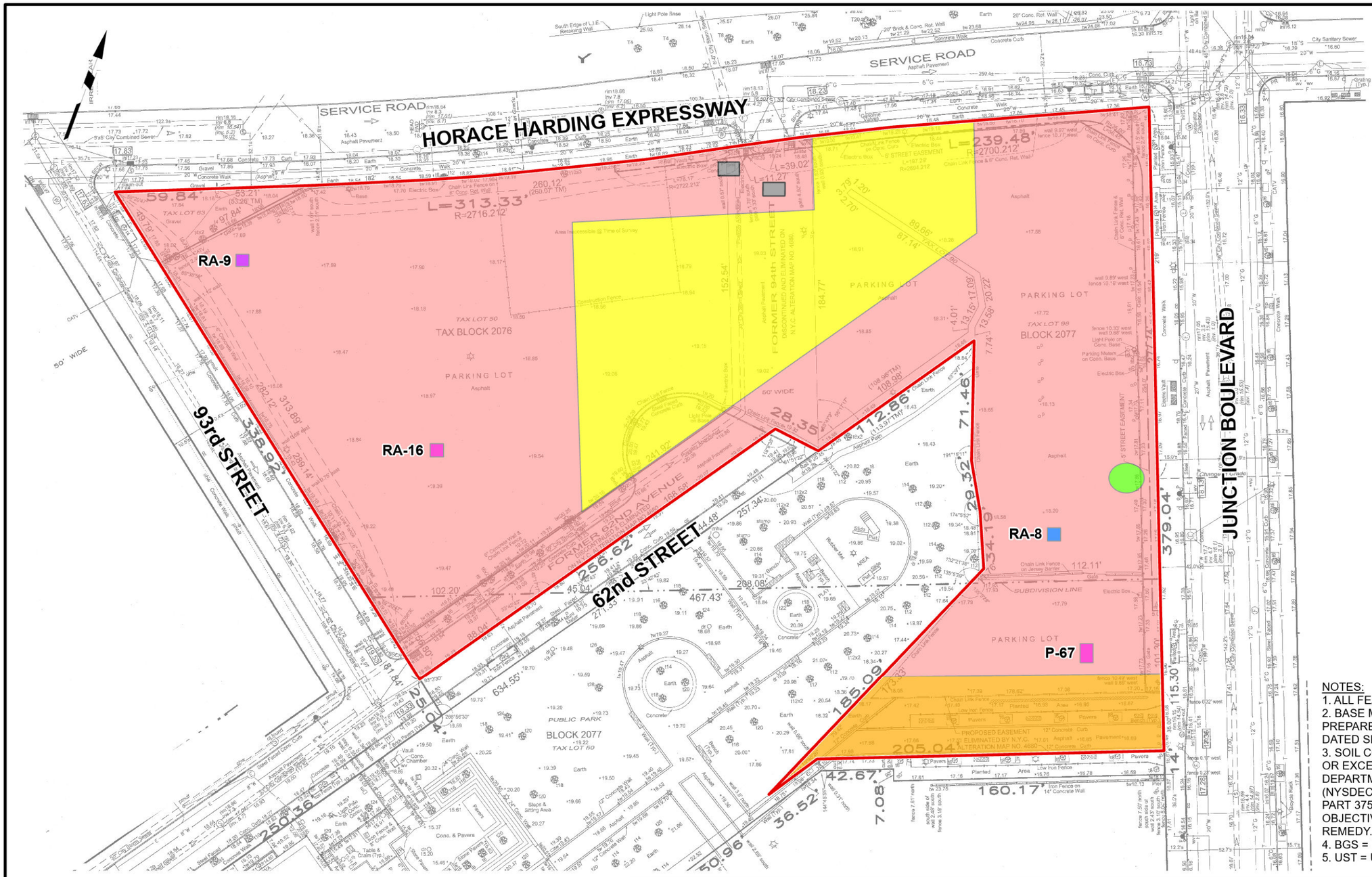
LANGAN
Langan Engineering and Environmental Services, Inc.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
AREAS OF CONCERN MAP

Project No. 170683801	Figure 7
Date 4/14/2022	
Scale 1" = 80'	
Drawn By MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx



LEGEND

- SITE BOUNDARY
- APPROXIMATE SUSPECTED UST AREA
- APPROXIMATE AREA OF HAZARDOUS LEAD EXCAVATION TO ABOUT 5 FEET BGS
- APPROXIMATE AREA OF NUISANCE CONDITION EXCAVATION TO 5 FEET BGS
- APPROXIMATE AREA OF HAZARDOUS LEAD EXCAVATION TO ABOUT 9 FEET BGS
- APPROXIMATE AREA OF HAZARDOUS LEAD EXCAVATION TO ABOUT 11 FEET BGS
- APPROXIMATE AREA OF EXCAVATION TO ABOUT 14 FEET BGS
- APPROXIMATE AREA OF EXCAVATION TO ABOUT 20 FEET BGS
- APPROXIMATE AREA OF EXCAVATION TO ABOUT 25 FEET BGS

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. SOIL CONTAINING CONTAMINANT SOURCE MATERIAL OR EXCEEDING THE TITLE 6 OF THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE (UU) SOIL CLEANUP OBJECTIVES (SCOs) WILL BE REMOVED UNDER A TRACK 1 REMEDY.
4. BGS = BELOW GRADE SURFACE
5. UST = UNDERGROUND STORAGE TANK

80 0 80
SCALE IN FEET

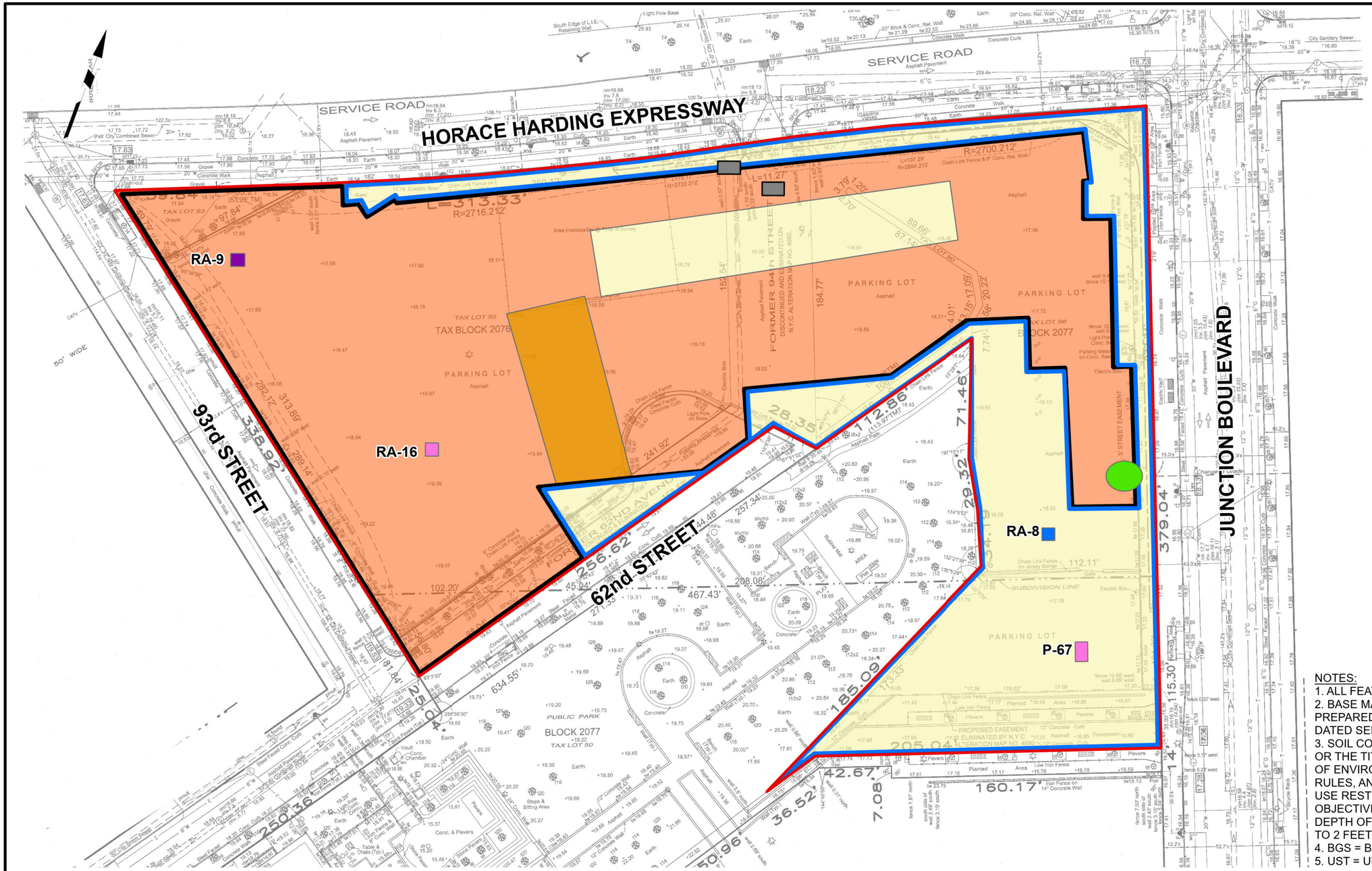
LANGAN
Langan Engineering and Environmental Services, Inc.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
ALTERNATIVE I – TRACK 1 CLEANUP

Project No.	Figure
170683801	8
Date: 6/1/2022	
Scale: 1" = 80'	
Drawn By: MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx



LEGEND

- SITE BOUNDARY
- APPROXIMATE BOUNDARY OF THE TRACK 4 REMEDY
- APPROXIMATE BOUNDARY OF THE TRACK 2 REMEDY
- APPROXIMATE SUSPECTED UST AREA
- APPROXIMATE AREA OF EXCAVATION TO ABOUT 2 FEET BGS
- APPROXIMATE AREA OF EXCAVATION TO ABOUT 5 FEET BGS
- APPROXIMATE AREA OF NUISANCE CONDITION EXCAVATION TO 5 FEET BGS
- APPROXIMATE AREA OF HAZARDOUS LEAD EXCAVATION TO ABOUT 5 FEET BGS
- APPROXIMATE AREA OF HAZARDOUS LEAD EXCAVATION TO ABOUT 9 FEET BGS
- APPROXIMATE AREA OF HAZARDOUS LEAD EXCAVATION TO ABOUT 11 FEET BGS
- APPROXIMATE AREA OF EXCAVATION TO ABOUT 15 FEET BGS

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
3. SOIL CONTAINING CONTAMINANT SOURCE MATERIAL OR THE TITLE 6 OF THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) CODES, RULES, AND REGULATIONS (NYCRR) PART 375 RESTRICTED USE RESTRICTED-RESIDENTIAL (RURR) SOIL CLEANUP OBJECTIVES (SCOs) WILL BE REMOVED TO A MAXIMUM DEPTH OF 15 FEET BGS FOR THE TRACK 2 REMEDY AND TO 2 FEET BGS FOR THE TRACK 4 REMEDY.
4. BGS = BELOW GRADE SURFACE
5. UST = UNDERGROUND STORAGE TANK

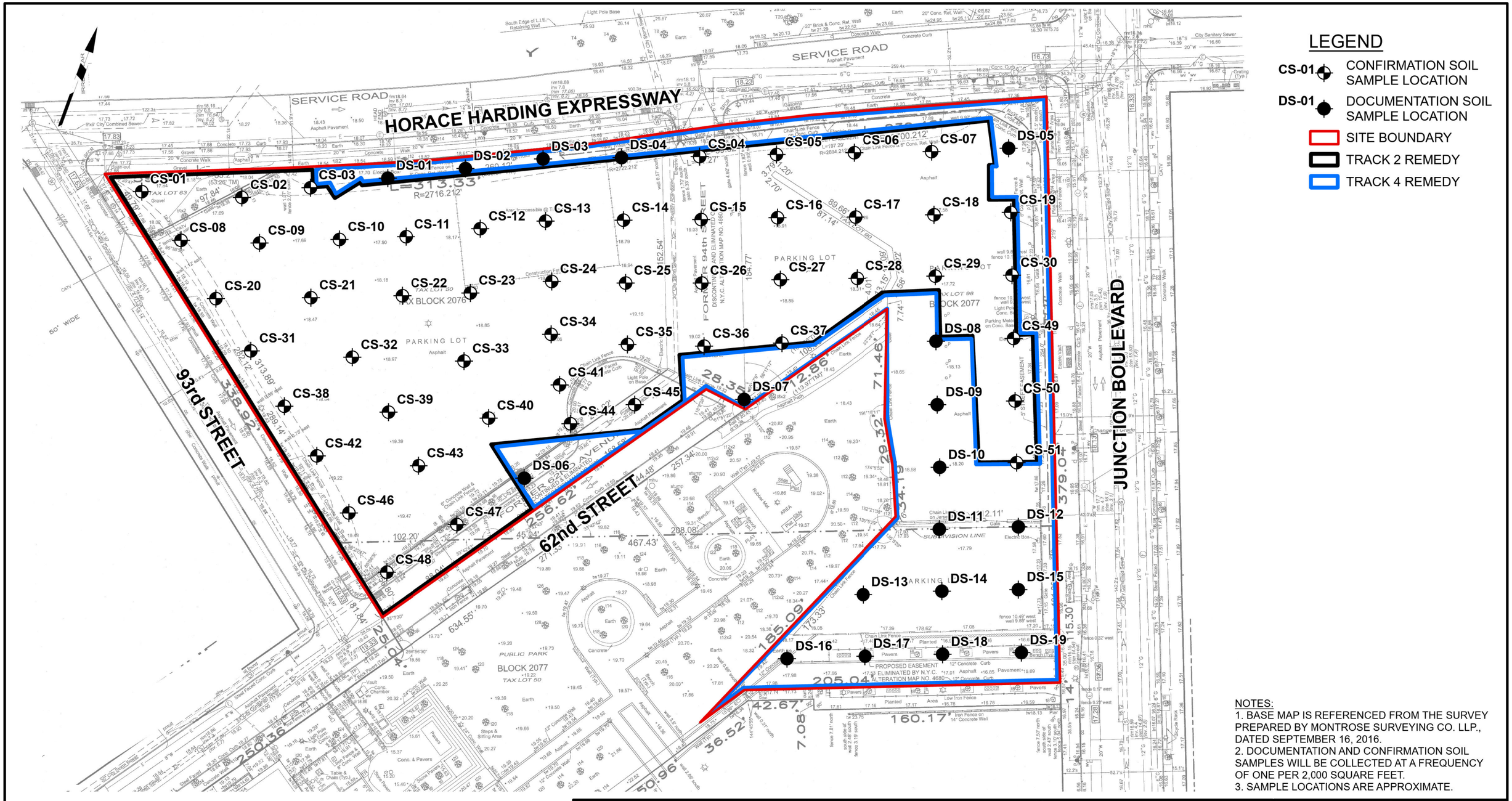
LANGAN
Langan Engineering and Environmental Services, Inc.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
ALTERNATIVE II – TRACK 2/TRACK 4 CLEANUP

Project No. 170683801	Figure 9
Date 8/2/2022	
Scale 1" = 80'	
Drawn By MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx



LEGEND

- CS-01 — CONFIRMATION SOIL SAMPLE LOCATION
- DS-01 — DOCUMENTATION SOIL SAMPLE LOCATION
- SITE BOUNDARY
- TRACK 2 REMEDY
- TRACK 4 REMEDY

NOTES:
1. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.
2. DOCUMENTATION AND CONFIRMATION SOIL SAMPLES WILL BE COLLECTED AT A FREQUENCY OF ONE PER 2,000 SQUARE FEET.
3. SAMPLE LOCATIONS ARE APPROXIMATE.

80 0 80
SCALE IN FEET

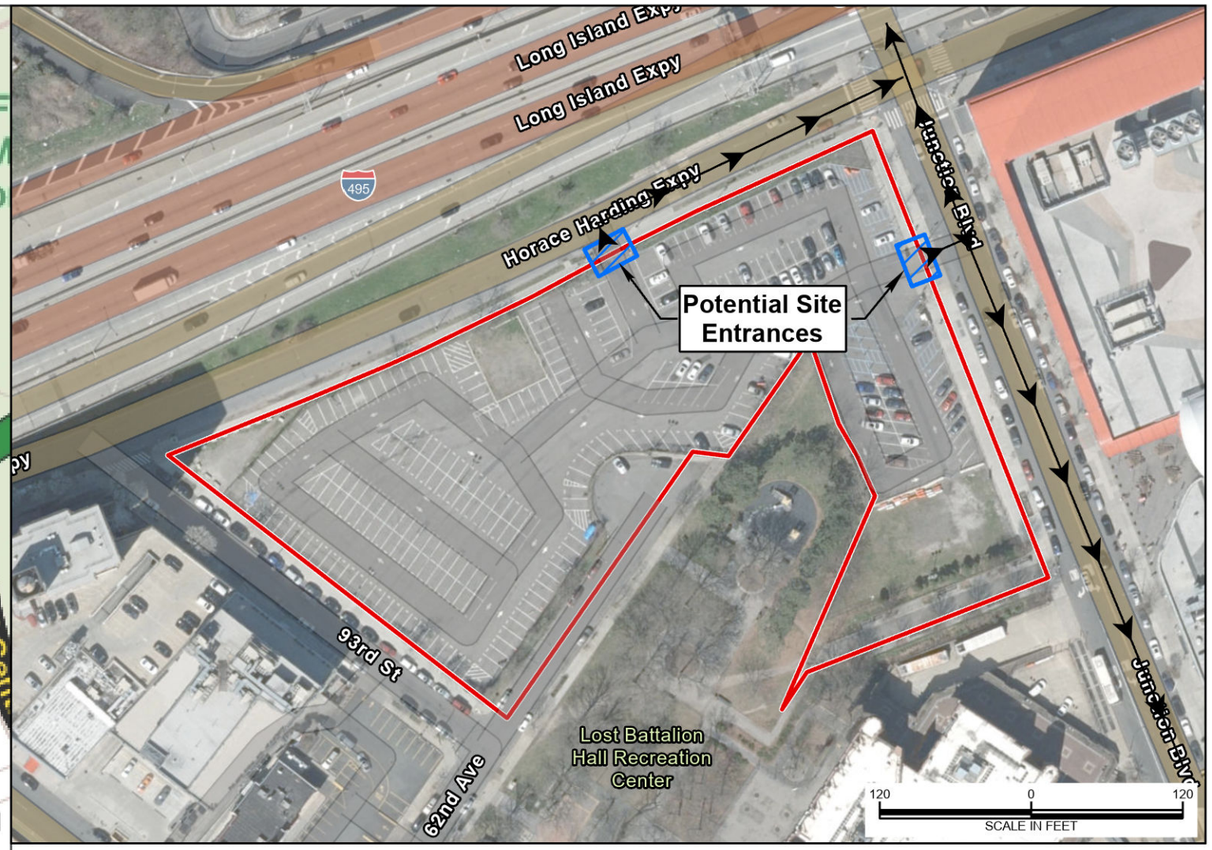
LANGAN
Langan Engineering and Environmental Services, Inc.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
PROPOSED CONFIRMATION AND DOCUMENTATION SAMPLE LOCATION PLAN

Project No. 170683801	Figure 10
Date 8/3/2022	
Scale 1" = 80'	
Drawn By MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx



Truck Routes

Local Truck Route
Trucks with an origin or destination for the purpose of delivery, loading or servicing within the respective Borough, shall only operate on designated local routes, except that an operator may operate on a non-designated street for the purpose of arriving at their destination. This shall be accomplished by leaving a designated truck route at the intersection that is nearest to their destination, proceeding by the most direct route, and then returning to the nearest designated truck route by the most direct route. If the operator has additional destinations in the same general area, they may proceed by the most direct route to their next destination without returning to a designated truck route, provided that the operator's next destination does not require that they cross a designated truck route.

Through Truck Route
Trucks having neither an origin nor a destination within the respective Borough shall restrict the operation of such vehicles to those street segments designated as Through Truck Routes.

Through Truck Route on Expressway

53 FT Trailer Exception

Connecting Road Outside NYC

Restricted Routes

No Commercial Vehicles

Hazards

Alert: see additional information

Low Vertical Clearance (14 feet and under)

Navigation / Landmarks

Highway Exit

Major Highway

Industrial Business Zone

Parks and Open Spaces

Limited Truck Zone

LEGEND

APPROXIMATE SITE BOUNDARY

TRUCK ROUTE FROM SITE

NOTES:
1. BASEMAP TAKEN FROM THE 2022 NEW YORK CITY DEPARTMENT OF TRANSPORTATION "NEW YORK CITY TRUCK ROUTE MAP."
2. SITE ENTRANCE LOCATION MAY CHANGE BASED ON CONSTRUCTION LOGISTICS.
3. WORLD AERIAL IMAGERY BASEMAP IS PROVIDED THROUGH LANGAN'S ESRI ARCGIS SOFTWARE LICENSING AND ARCGIS ONLINE.

LANGAN

Langan Engineering and Environmental Services, Inc.

21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727

T: 212.479.5400 F: 212.479.5444 www.langan.com

Project

REGO PARK CENTER III

BLOCK No. 2076, LOT No. 50

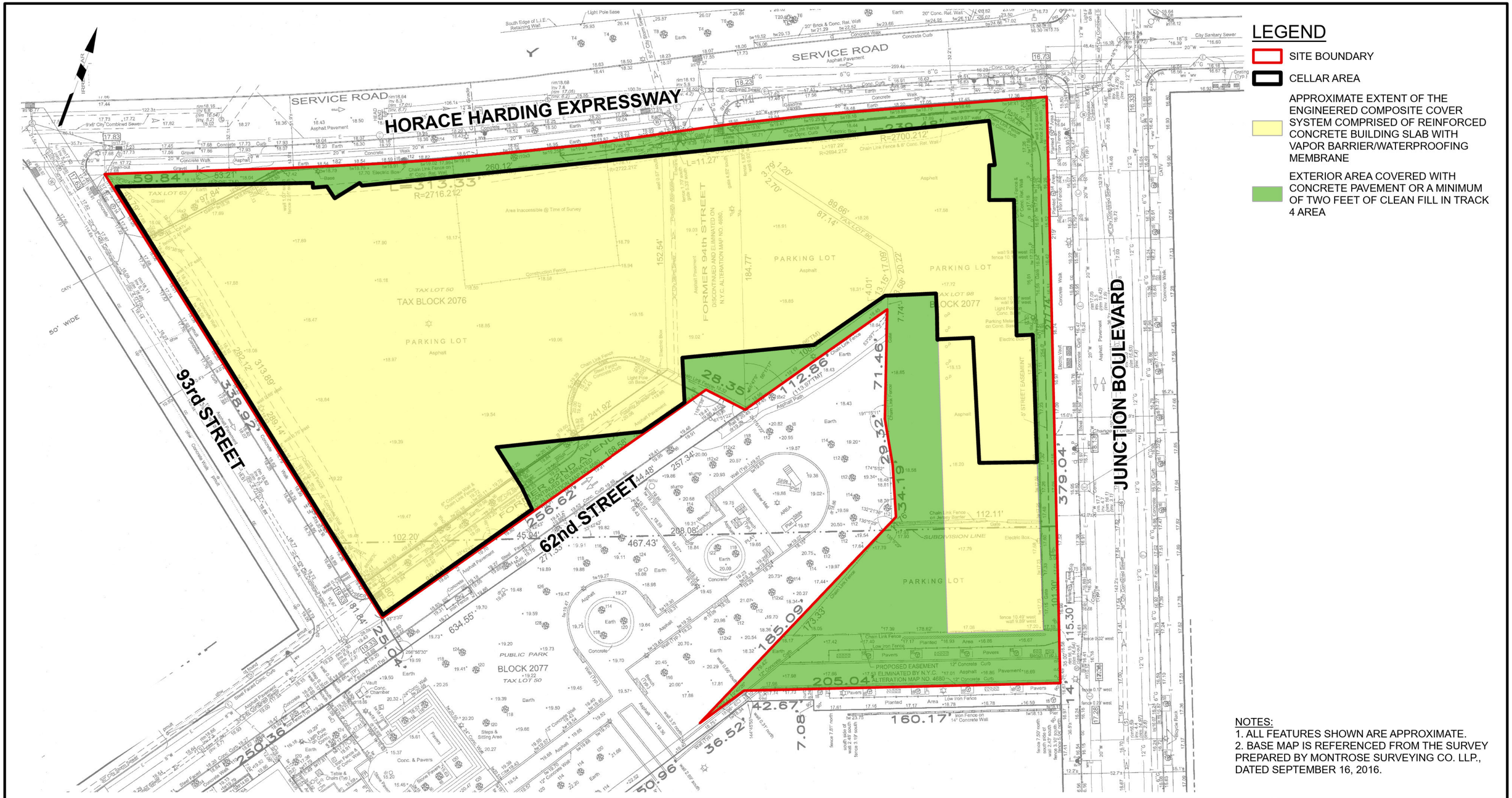
QUEENS NEW YORK

Figure Title

TRUCK ROUTE MAP

Project No. 170683801	Figure 11
Date 6/1/2022	
Scale 1" = 1,500'	
Drawn By MG	

Path: \\langan.com\data\NY\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx



LEGEND

- SITE BOUNDARY
- CELLAR AREA
- APPROXIMATE EXTENT OF THE ENGINEERED COMPOSITE COVER SYSTEM COMPRISED OF REINFORCED CONCRETE BUILDING SLAB WITH VAPOR BARRIER/WATERPROOFING MEMBRANE
- EXTERIOR AREA COVERED WITH CONCRETE PAVEMENT OR A MINIMUM OF TWO FEET OF CLEAN FILL IN TRACK 4 AREA

NOTES:
1. ALL FEATURES SHOWN ARE APPROXIMATE.
2. BASE MAP IS REFERENCED FROM THE SURVEY PREPARED BY MONTROSE SURVEYING CO. LLP., DATED SEPTEMBER 16, 2016.

80 0 80
SCALE IN FEET

LANGAN
Langan Engineering and Environmental Services, Inc.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
REGO PARK CENTER III
BLOCK No. 2076, LOT No. 50
QUEENS NEW YORK

Figure Title
SITE COVER PLAN

Project No. 170683801	Figure 12
Date 3/3/2023	
Scale 1" = 80'	
Drawn By MG	

Path: \\langan.com\data\NYC\data8\170683801\Project Data\ArcGIS\APRX\170683801\170683801.aprx

TABLES

Table 1
Remedial Action Work Plan
Track 1 Unrestricted Use SCOs

Rego Park Center III
Rego Park, NY
BCP Site No.: C241259
Langan Project No.: 170683801

VOCs	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2,4-Trimethylbenzene	3.6
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,3,5-Trimethylbenzene	8.4
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
2-Butanone	0.12
Acetone	0.05
Benzene	0.06
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
cis-1,2-Dichloroethene	0.25
Ethylbenzene	1
Methyl tert butyl ether	0.93
Methylene chloride	0.05
Naphthalene	12
n-Butylbenzene	12
n-Propylbenzene	3.9
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
trans-1,2-Dichloroethene	0.19
Trichloroethene	0.47
Vinyl chloride	0.02
Xylenes, Total	0.26
SVOCs	
1,2-Dichlorobenzene	1.1
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
2-Methylphenol	0.33
3-Methylphenol/4-Methylphenol	0.33
Acenaphthene	20
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(ghi)perylene	100
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenzo(a,h)anthracene	0.33
Dibenzofuran	7
Fluoranthene	100
Fluorene	30
Hexachlorobenzene	0.33
Indeno(1,2,3-cd)pyrene	0.5
Naphthalene	12
Pentachlorophenol	0.8
Phenanthrene	100
Phenol	0.33
Pyrene	100

Metals	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Copper	50
Lead	63
Manganese	1600
Mercury	0.18
Nickel	30
Selenium	3.9
Silver	2
Zinc	109
Pesticides	
4,4'-DDD	0.0033
4,4'-DDE	0.0033
4,4'-DDT	0.0033
Aldrin	0.005
Alpha-BHC	0.02
Beta-BHC	0.036
cis-Chlordane	0.094
Delta-BHC	0.04
Dieldrin	0.005
Endosulfan I	2.4
Endosulfan II	2.4
Endosulfan sulfate	2.4
Endrin	0.014
Heptachlor	0.042
Lindane	0.1
PCBs	
Aroclor 1016	0.1
Aroclor 1221	0.1
Aroclor 1232	0.1
Aroclor 1242	0.1
Aroclor 1248	0.1
Aroclor 1254	0.1
Aroclor 1260	0.1
Aroclor 1262	0.1
Aroclor 1268	0.1
PCBs, Total	0.1

Notes:

1. SCO = Soil Cleanup Objective
2. SVOC = Semivolatile organic compound
3. VOC = Volatile organic compound
4. PCB = Polychlorinated biphenyl
5. mg/kg = Milligram per kilogram
6. All SCOs are presented in mg/kg

Table 2
Remedial Action Work Plan
Track 2/Track 4 Restricted Use Restricted-Residential SCOs

Rego Park Center III
Rego Park, NY
BCP Site No.: C241259
Langan Project No.: 170683801

VOCS (mg/kg)	
1,1,1-Trichloroethane	100
1,1-Dichloroethane	26
1,1-Dichloroethylene	100
1,2-Dichlorobenzene	100
1,2-Dichloroethane	3.1
cis-1,2-Dichloroethene	100
trans-1,2-Dichloroethene	100
1,3-Dichlorobenzene	49
1,4-Dichlorobenzene	13
1,4-Dioxane	13
2-Butanone (methly ethyl ketone)	100
Acetone	100
Benzene	4.8
n-Butylbenzene	100
Carbon tetrachloride	2.4
Chlorobenzene	100
Chloroform	49
Ethyl Benzene	41
Hexachlorobenzene	1.2
Methyl tert-butyl ether (MTBE)	100
Methylene chloride	100
n-Propylbenzene	100
sec-Butylbenzene	100
tert-Butylbenzene	100
Tetrachloroethylene	19
Toluene	100
Trichloroethylene	21
1,2,4-Trimethylbenzene	52
1,3,5-Trimethylbenzene	52
Vinyl Chloride	0.9
Xylenes, Total	100
Metals (mg/kg)	
Arsenic	16
Barium	400
Beryllium	72
Cadmium	4.3
Chromium, hexavalent	110
Chromium, trivalent	180
Copper	270
Total Cyanide	27
Lead	400
Manganese	2000
Mercury	0.81
Nickel	310
Selenium	180
Silver	180
Zinc	10000

SVOCS (mg/kg)	
Acenaphthene	100
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	3.9
Chrysene	3.9
Dibenzo(a,h)anthracene	0.33
Fluoranthene	100
Fluorene	100
Indeno(1,2,3-cd)pyrene	0.5
m-Cresol	100
Naphthalene	100
o-Cresol	100
p-Cresol	100
Pentachlorophenol	6.7
Phenanthrene	100
Phenol	100
Pyrene	100
PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	100
4,4'-DDE	8.9
4,4'-DDT	7.9
4,4'-DDD	13
Aldrin	0.097
alpha-BHC	0.48
beta-BHC	0.36
Chlordane (alpha)	4.2
delta-BHC	100
Dibenzofuran	59
Dieldrin	0.2
Endosulfan I	24
Endosulfan II	24
Endosulfan sulfate	24
Endrin	11
Heptachlor	2.1
Lindane	1.3
Polychlorinated biphenyls	1

Notes:
SCO: Soil Cleanup Objective
SVOC: semivolatile organic compound
VOC: volatile organic compound
PCB: polychlorinated biphenyl
mg/kg: milligram per kilogram

Table 3
Remedial Action Work Plan
Alternative I Remedial Cost Estimate (Track 1)

Rego Park Center III
Rego Park, NY
BCP Site No.: C241259
Langan Project No.: 170683801

Item No.	Description of Environmental Item	Quantity		Unit Price		Estimated Cost
REMEDIAL ACTION CONTRACTOR FEES						
1	Remediation Facilities, Equipment, Mobilization, Demobilization, Permits, and Site Maintenance- Remediation and decontamination facilities include trailer, truck cleaning facilities, etc.	–		Allowance		$70,000
2	Demolition - Demolition and removal of asphalt surface cover	–		Allowance		$210,000
3	Excavation and On-site Handling of Fill Material and Soil- Excavation of fill and soil material containing concentrations exceeding Unrestricted Use Soil Cleanup Objectives	116,423	CY	$25	per CY	$2,920,000
4	Transport and Disposal of Historic Fill Material - Transport vehicles and disposal of fill and soil exceeding Unrestricted Use Soil Cleanup Objectives at a permitted facility	174,412	Tons	$45	per Ton	$7,850,000
5	Transport and Disposal of Hazardous Lead Impacted Soil- Transport vehicles and disposal of hazardous lead impacted material at a permitted facility	215	Tons	$250	per Ton	$54,000
6	Transport and Disposal of Petroleum-Impacted Soil - Transport vehicles and disposal of petroleum-impacted at a permitted facility	10	Tons	$75	per Ton	$1,000
7	Backfill - Import and placement of clean fill material to bring site to development grade. An additional 15% of material is included to account for compaction.	69,830	CY	$40	CY	$2,794,000
8	Dust, Odor and Vapor Control - Includes odor, dust, and organic vapor control during remediation of the site. Assumes control measures will include, but not be limited to application of odor suppressant, foam or water.	10	Months	$20,000	per Month	$200,000
9	Excavation Support - Support of excavation (SOE) installation along the perimeter of the site and remedial excavation	41,778	SF	$85	SF	$3,560,000
10	Dewatering - DEP Permit, operating engineer, treatment equipment mobilization, installation, demobilization, and disposal	–		Allowance		$780,000
11	Removal of USTs - Removal of two suspected USTs in the northern portion of the site	2	Tanks	$10,000	per Tank	$20,000
					ESTIMATED CONTRACTOR FEES SUBTOTAL	**$17,659,000**
ENGINEERING FEES						
1	Confirmation Sampling - To confirm contaminated soil is removed (assumes analysis for VOCs, SVOCs, PCBs, pesticides, metals, and PFAS for each sample), plus QC/QC samples.	155	Samples	$1,331	per Sample	$210,000
2	Endpoint Sampling - To confirm contaminated soil is removed (assumes analysis for Total and TCLP Lead for each sample)	20	Samples	$60	per Sample	$1,200
3	Community Air Monitoring - This cost includes equipment rental fees associated with implementation of CAMP, which will be performed during excavation, backfill, and concrete slab restoration.	10	Months	$3,000	per Month	$30,000
5	Agency Coordination - Coordination with NYSDEC as required	–		Allowance		$20,000
6	BCP Engineering Services - Work Plans, Remedial Investigation, Remedial Design, Remedial Oversight, Closure Reporting	–		Allowance		$400,000
					ENGINEERING FEES SUBTOTAL	**$662,000**
					Remediation Contingency (10% of Contractor Fee Subtotal)	**$1,766,000**
					Total Estimated Cost	**$20,087,000**
					ESTIMATED REMEDIATION COST - ALTERNATIVE I	**$20.1 MM**

General Assumptions and Conditions:

1. Excavation depths were calculated using Remedial Investigation (RI) soil sample results, field observations, and observed fill depths.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Utilizing this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
3. A 10 month period is assumed for remediation and soil handling.
4. VOC = volatile organic compound; SVOC = semivolatile organic compound; PCBs = polychlorinated biphenyls; PFAS = per-and polyfluoroalkyl substances

Contractor Cost Assumptions:

RAWP Item No.3 - Cost estimate includes application of vapor/odor suppressing foam to open excavations and soil loaded into trucks. Labor provided by excavation, handling, and disposal contractor provided above; this line item estimate reflects material, freight, and equipment costs.

RAWP Item No. 6 - The quantity assumes removal of the four delineated hazardous-lead hotspots and a nuisance condition hotspot observed during the 2022 RI.

RAWP Item No. 8 - Backfill placement and compaction assumes soil handling and management costs for the New York City area. Backfill assumes that the site will have to be structurally backfilled to development depth with material that contains no concentrations of contaminants above Track 1 Unrestricted Use Soil Cleanup Objectives (6NYCRR-Part 375-6.8(a)). The quantity of soil has been increased by 15% to account for compaction.

Engineering Cost Assumptions:

Engineering Item No. 1 - The cost assumes collection of 155 samples plus quality assurance/quality control samples for analysis of Part 375 parameters and collection of 20 endpoint samples. Costs include subcontracted laboratory analysis by a NYSDOH ELAP-certified laboratory.

Engineering Item No. 2 - The assumed duration of the community air monitoring program (CAMP) is 10 months during remediation. CAMP costs include full-time equipment rental to facilitate perimeter dust and VOC monitoring.

Table 4
Remedial Action Work Plan
Alternative II Remedial Cost Estimate (Track 2/Track 4)

Rego Park Center III
Rego Park, NY
BCP Site No.: C241259
Langan Project No.: 170683801

Item No.	Description of Environmental Item	Quantity		Unit Price		Estimated Cost
REMEDIAL ACTION CONTRACTOR FEES						
1	Remediation Facilities, Equipment, Mobilization, Demobilization, Permits, and Site Maintenance - Remediation and decontamination facilities include trailer, truck cleaning facilities, etc.	--		Allowance		$70,000
2	Demolition - Demolition and removal of existing buildings and concrete surface cover	--		Allowance		$210,000
3	Excavation and On-site Handling of Fill Material and Soil - Excavation of fill and soil material containing concentrations exceeding Restricted Use-Retstricted Residential Soil Cleanup Objectives	51,091	CY	$25	per CY	$1,280,000
4	Transport and Disposal of Historic Fill Material - Transport vehicles and disposal of fill and soil exceeding Unrestricted Use Soil Cleanup Objectives at a permitted facility	76,416	Tons	$45	per Ton	$3,440,000
5	Transport and Disposal of Petroleum-Impacted Soil - Transport vehicles and disposal of petroleum-impacted at a permitted facility	10	Tons	$75	per Ton	$1,000
6	Transport and Disposal of Hazardous Lead Impacted Soil - Transport vehicles and disposal of hazardous lead impacted material at a permitted facility	214	Tons	$250	per Ton	$60,000
7	Backfill - Import and placement of clean fill material to bring site to development grade. An additional 15% of material is included to account for compaction.	58	CY	$40	CY	$2,300
8	Dust, Odor and Vapor Control - Includes odor, dust, and organic vapor control during remediation of the site. Assumes control measures will include, but not be limited to application of odor suppressant, foam or water.	6	Months	10,000	per Month	$40,000
9	Excavation Support - Support of excavation (SOE) installation along the perimeter of the site	38,661	SF	$100	SF	$3,870,000
10	Dewatering - DEP Permit, operating engineer, treatment equipment mobilization, installation, demobilization, and disposal	--		Allowance		$480,000
11	Removal of USTs - Removal of two suspected USTs in the northern portion of the site	2	Tanks	$10,000	per Tank	$20,000
					ESTIMATED CONTRACTOR FEES SUBTOTAL	**$8,974,000**
ENGINEERING FEES						
1	Confirmation and Documentation Sampling - To document soil conditions at the base of the excavation (assumes analysis for VOCs, SVOCs, PCBs, pesticides, metals, and PFAS for each sample), plus QC/QC samples.	70	Samples	$1,331	per Sample	$100,000
2	Endpoint Sampling - To confirm contaminated soil is removed (assumes analysis for Total and TCLP Lead for each sample)	20	Samples	$60	per Sample	$1,200
3	Community Air Monitoring - This cost includes equipment rental fees associated with implementation of CAMP, which will be performed during excavation, backfill, and concrete slab restoration.	6	Months	$3,000	per Month	$18,000
5	Agency Coordination - Coordination with NYSDEC as required	--		Allowance		$20,000
6	BCP Engineering Services - Work Plans, Remedial Investigation, Remedial Design, Remedial Oversight, Closure Reporting	--		Allowance		$350,000
					ENGINEERING FEES SUBTOTAL	**$490,000**
					Remediation Contingency (10% of Contractor Fee Subtotal)	**$898,000**
					Total Estimated Cost	**$10,362,000**
					ESTIMATED REMEDIATION COST - ALTERNATIVE I	**$10.4 MM**

General Assumptions and Conditions:

1. Excavation depths were calculated using Remedial Investigation (RI) soil sample results, field observations, and observed fill depths.

2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Utilizing this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

3. A 6 month period is assumed for remediation and soil handling.

4. VOC = volatile organic compound; SVOC = semivolatile organic compound; PCBs = polychlorinated biphenyls; PFAS = per-and polyfluoroalkyl substances

Contractor Cost Assumptions:

RAWP Item No.3 - Cost estimate includes application of vapor/odor suppressing foam to open excavations and soil loaded into trucks. Labor provided by excavation, handling, and disposal contractor provided above; this line item estimate reflects material, freight, and equipment costs.

RAWP Item No. 6 - The quantity assumes removal of the four delineated hazardous-lead hotspots and a nuisance condition hotspot observed during the 2022 RI.

RAWP Item No. 8 - Backfill placement and compaction assumes soil handling and management costs for the New York City area. Backfill assumes that the site will have to be structurally backfilled to sub-grade with material that contains no concentrations of contaminants above Track 2 and Track 4 Restricted Use-Restricted Residential Soil Cleanup Objectives (6NYCRR-Part 375-6.8(a)). The quantity of soil has been increased by 15% to account for compaction.

Engineering Cost Assumptions:

Engineering Item No. 1 - The cost assumes collection of 70 samples plus quality assurance/quality control samples for analysis of Part 375 parameters and collection of 20 endpoint samples. Costs include subcontracted laboratory analysis by a NYSDOH ELAP-certified laboratory.

Engineering Item No. 2 - The assumed duration of the community air monitoring program (CAMP) is 6 months during remediation. CAMP costs include full-time equipment rental to facilitate perimeter dust and VOC monitoring.